Reports on tasks for scientific cooperation

Report of experts participating in Task 3.2.8

March 2002

Assessment of dietary intake of Patulin by the population of EU Member States

Directorate-General Health and Consumer Protection

TASK 3.2.8 "ASSESSMENT OF DIETARY INTAKE OF PATULIN BY THE POPULATION OF EU MEMBER STATES"

Co-ordinators: Paul Majerus and Katrin Kapp*

Landesuntersuchungsamt – Institut für Lebensmittelchemie Trier
***Bundesinstitut für den gesundheitlichen Verbraucherschutz und Veterinärmedizin Berlin**

Germany

Collaborators: Christel Zimmermann and Rudolf Weber

Bundesinstitut für den gesundheitlichen Verbraucherschutz und Veterinärmedizin – Berlin – Germany

CONTENTS

FOREWORD

According to Council Directive 93/5/EEC "on the assistance to the Commission and cooperation by the Member States in the scientific examination of questions relating to food" Member States of the European Union can cooperate on problems facing the Commission in the area of food. Directive 93/5/EEC also indicates that an inventory of Tasks to be undertaken has to be published as a Commission Decision at least every six months. For each Task, the participating Member States, the Member State which provides coordination and time limit for completion will be indicated.

The rationale for each Task is to provide harmonised and reliable information to be used by the Commission for the management of problems related to food.

With this aim the Competent Authorities responsible for Scientific Cooperation in the Member States nominate experts in the specific field of interest, that will provide the Coordinator with the information necessary to prepare a final report.

In principle the final report should contain factual information, but it should be underlined that gathering and presenting scientific data, especially deriving from sources of different origin, can require a degree of interpretation by experts and by Coordinator.

It is therefore important to stress that the interpretation and views in the present report are not necessarily those of the participating Member States or those of the European Commission.

INTRODUCTION

As reported the document SCOOP/CNTM/9 Rev 3 “Council Regulation (EEC) 315/93 of 8 February 1993 provides the legal framework for establishing maximum levels for food contaminants at Community level”.

Due to the growing interest and concern of the public authorities for the presence of naturally occurring toxicants in the human food, such as mycotoxins, and to the discussions at Community level concerning the fixing of maximum limits, a more frequent control on the presence of mycotoxins and in particular Aflatoxins and Ochratoxin A, was carried out in food.

Commission Decision 2000/669/EC, of October the 18th 2000 amending Decision 94/652/EC establishing the inventory and distribution of the Tasks to be undertaken within the framework of co-operation by Member States in the scientific examination of questions relating to food, established Task 3.2.8 "Assessment of dietary intake of patulin by the population of EU Member States". Germany was designated as Member State to develop the Task.

Basic information on patulin are given in Annex 1.

In addition a specific emphasis was given to the evaluation of the presence of Fusarium Toxins (Task 3.2.10 Commission Decision 2001/773/EC, of October the 26th 2001) asking for evaluation of the exposure to these wide variety of toxins by the European population.

Following the appointment of Germany as Coordinator, the timetable of the Task (Annex 2) was decided jointly with representatives of the Commission.

After receiving the list of experts nominated by the Competent Authorities of the Member States, in June 2001, the instructions for Task 3.2.8 (Annex 3) were issued to participants, who were also asked for comments.
Basically, participants were asked to provide information on the exposure of the population to patulin in their country through the elaboration of the following categories of data:

1. Occurrence data in food and beverages, including those from different methodological approaches (i.e. total diet, duplicate test portion)
2. Consumption data
3. Best estimate of dietary intake

Additional information was also asked, among others and whenever possible, on the following issues:

- Sampling procedures employed
- Quality Assurance of Analytical data
- Regulations related to the toxin (maximum limits, sampling plans, others).

The draft version of the instructions for participants was sent in April 2001.
In May 2001 a meeting was organised in Brussels, Belgium, with the aim of illustrating and discussing the final version of the Instructions to participants, modified according to the suggestions previously received.

The format for collecting and sending data was also agreed in order to allow the drawing of summary Tables by the Co-ordinators.
Information from participants was gathered during the period June 2001-January 2002. After the evaluation and harmonisation of the provided information a set of Tables was prepared by the Coordinators.
From 13 participating countries 10 have sent results on occurrence of patulin in food, with the exception of Denmark and Netherlands for lack of actual results. Till the deadline 11.01.2002 no data or information were communicated by Ireland.

For lack of adequate consumption data no estimation was available from Norway.

Data provided by participants were collected, harmonised, and reported by the Co-ordinators according to the following criteria:

- To provide a description, harmonised at European level, of the status of patulin contamination in foodstuffs in each participating Member State
- To group available information on each raw material and/or food products
- To evaluate the best estimates of the patulin dietary intake from food, both for each participating Member State and at European level
- To evaluate the patulin dietary intake of particular groups of population (high consumers, children, babies etc.).

A glossary of the employed terms and the list of participants are reported in Annexes 4 and 5.

PATULIN OCCURRENCE IN FOOD

Calculation of the mean 1 and mean 2

Mean 1 accounts for all the individual provided values according to the following criteria:

1) If LOD and LOQ are available, participants were requested to calculate mean level using LOD/2 for results lower than the LOD. For results between LOD and LOQ, numerical values, if available, were used.

2) If only LOQ is available, or if numerical values between LOD and LOQ are not available, LOQ/6 for values below the LOQ was used.

Mean 2 accounts for all positive above LOD values and it accounts for the distribution and level of positive results.

Range of contamination and median value

The ranges of concentration were chosen in order to provide a wide spectrum of the low region of concentration.

The median value, corresponding to the 50^{th} percentile, provides an indication, along with mean 1, of the distribution of data population.

Occurrence data by each Member State

Table 1A presents the occurrence data as provided by participants (N = 10) (aggregated tables 1A1). The total number of analysed samples for each Member State is represented in **Table 1C**. According to the request of information reported in Annex 3, most of the participants have sent their information on the occurrence of patulin in various food, generally by following the food categories provided by the Co-ordinators. In order to allow the Co-ordinators to better harmonise the occurrence data by each Member State, participants were asked to send, whenever possible, also the individual data for each group or subgroup.

Occurrence data for selected commodities

In order to account for the overall incidence of patulin contamination in different food matrices in European countries, all provided data on the occurrence in juices, purees, baby food, "others" and fresh fruit are gathered in **Tables 1B1, 1B2, 1B3, 1B4 and 1B5**. In these Tables, all available occurrence data were included, even though in some cases the corresponding consumption data were not available. In order to have a realistic value for the occurrence, Austria divided the patulin levels in apple concentrate by 7, but these data were not included in the corresponding calculation of the intakes.

The Co-ordinators decided to omit in those tables the provided information on reference and year, LOQ, contamination ranges, evidence of quality assurance, sampling strategies and analytical methods.

The weighed mean 1 was partly not calculated, because the results for some commodities were rather fragmentary.

- **Juices especially apple juice**

The occurrence data for juices (nectars, drinks, concentrates) in each participating country are gathered in **Table 1B1.**

Apple juice (enclosed are nectars and drinks)
The total number of results was 4633 with 57,4 % of positive samples, which ranged from LOD 0,03 µg/kg (Italy) to 1150 µg/kg (Italy). The mean 1 ranged between 1,4 (Sweden) to 70,6 µg/kg (Italy). The weighed mean 1 was 15,2 µg/kg. Data delivered by the German fruit juice industry were not taken into consideration because the raw data were not given to the coordinators for recalculation. All participating countries provided results on this food matrix.

Apple juice concentrate
The total number of results was 1175 with 96,0 % of positive samples, which ranged from LOD 5 µg/kg (Austria, Norway) to 1227 µg/kg (Austria). The mean 1 ranged between 3,2 (Norway) to 161,49 µg/kg (Austria). The weighed mean 1 was 42,1 µg/kg. Data delivered by the Federation of the German fruit juice industry were not taken into consideration because the raw data were not given to the coordinators for recalculation. Contributions were provided by 4 countries (Austria, Germany, Norway and UK).
As apple juice concentrate is not an article available in retail, the indicated concentrations were divided by 7, to give a realistic estimation on the ready to sale apple juice after the processing in the juice plant. The weighed mean 1 was now 6,0 µg/kg.

Cider (including drinks based on cider and apple wine)
The total number of results was 339 with 37,2 % of positive samples, which ranged from LOD 2 µg/kg (France) to 1604 µg/kg (France). The mean 1 ranged between 0,83 (Spain) to 152,8 µg/kg (France). The weighed mean 1 was 55,7 µg/kg. Contributions were provided by 5 countries (Belgium, France, Germany, Norway and Spain).

Pear juice (enclosed are nectars)
The total number of results was 100 with 17,0 % of positive samples, which ranged from LOD 0,03 µg/kg (Italy) to 91 µg/kg (Germany). The mean 1 ranged between 2,5 µg/kg (Germany) to 14,3 µg/kg (Germany). The weighed mean 1 was 5,8 µg/kg. Contributions were provided by 3 countries (Germany, Italy and Portugal).

Grape juice (enclosed are musts)
The total number of results was 324 with 39,5 % of positive samples, which ranged from LOD 3 µg/kg (Germany) to 750 µg/kg (Austria). The mean 1 ranged between 4,3 µg/kg (Germany) to 23,97 µg/kg (Austria). The weighed mean 1 was 15,4 µg/kg. Contributions were provided by 3 countries (Austria, Belgium and Germany).

Other juices (enclosed are mixtures with milk)
The total number of results was 174 with 2,9 % of positive samples, which ranged from LOD 2 µg/kg (Sweden) to 32,4 µg/kg fruit juice and nectar with apple (Norway). The mean 1 ranged between 2,5 µg/kg syrup concentrate (mixture of berries and other fruits among apple juice) (Norway) to 25 µg/kg citrus juice (Italy). Contributions were provided by 4 countries (Germany, Italy, Norway and Portugal).

Comments on patulin occurrence in Juices

A considerable number of data was provided for juices and derived products, most of the data where provided by the North European countries.

- Among the individual juice commodities apple juice has been by far the most investigated, followed by apple juice concentrate. This item seems to be of bigger concern especially in relationship to GMP (good manufacturing practise) in fruit juice plants, what is shown by the high number of results from the Federation of the German fruit juice industry.
- After mathematical derivation of the patulin occurrence data from apple concentrate into juice by division with 7, the weighed mean 1 of the concentrate is somewhat lower than in the other apple juices.
- Weighed mean 1 ranged from 5,7µg/kg (pear juice) to 55,8 µg/kg (cider).
- The category cider and fresh grape must are not homogeneous, as different degrees of fermentation and sulphur dioxide addition may play an important role. Extreme values may be of local and seasonal importance only
- Pear juice and nectars may be higher affected, but the analysed number of samples throughout Europe is probably not representative
- Due to high LOD values and lack of Quality Assurance principles some of the Italian occurrence data are not taken into consideration for the intake calculation.
- Other juice commodities seem to be of lower importance

.

- **Purees**

The occurrence data for purees (compote, pulp and soup) in each participating country are gathered in **Table 1B2.**

Apple puree
The total number of results was 97 with 7,2 % of positive samples, which ranged from LOD 0,2 µg/kg (Italy) to 86 µg/kg (France). The mean 1 ranged between 1,6 (Sweden) to 10 µg/kg (Germany). The weighed mean 1 was 5,0 µg/kg. Contributions were provided by 5 countries (Belgium, France, Germany, Italy and Portugal).

Other purees
The total number of results was 50 with 0 % of positive samples, which ranged from LOD 2 µg/kg (Sweden) to 10 µg/kg (Italy). The mean 1 ranged between 1,4 (Sweden) to 10 µg/kg (Germany). Contributions were provided by 4 countries (Germany, Italy and Portugal and Sweden). A weighed mean was not calculated.

Comments on patulin occurrence in Purees

Even if these commodities seem to play a more or less important role in Germany and Sweden, the reported values have not to be considered so far.

- **Baby food**

The occurrence data for baby food in each participating country are gathered in **Table 1B3.**

The total number of results was 312 with 13,8 % of positive samples, which ranged from LOD 0,2 µg/kg (Italy) to 68 µg/kg (Germany). The mean 1 ranged between 0,55 (Italy) to 11,7 µg/kg (Germany). The weighed mean 1 was 3,8 µg/kg. Contributions were provided by 5 countries (Austria, Belgium, France, Germany and Italy).

Comments on patulin occurrence in Baby food

Even if the number of reported results was rather small, the overall median was fortunately low even if some samples were unexpectedly high.
Due to high LOD values and lack of Quality Assurance principles some of the Italian occurrence data are not taken into consideration for the intake calculation.

- **Other commodities**

The occurrence data for other food commodities from each participating country are gathered in **Table 1B4.**

The total number of results was 73 with 5,5 % of positive samples, which ranged from LOD 3 µg/kg (Germany) to 320 µg/kg dry apple (Italy). The mean 1 ranged between 1,7 (Germany) to 90 µg/kg (Italy). The weighed mean 1 was 13,3 µg/kg. Contributions were provided by 3 countries (Belgium, Germany and Italy).

Comments on patulin occurrence in other food commodities

Even if the number of reported results was rather small, dried apples and tomatoes purees may be of future relevance.
Due to high LOD values and lack of Quality Assurance principles some of the Italian occurrence data are not taken into consideration for the intake calculation.

- **Fresh fruits**

Occurrence data in fresh fruit (apples, pears and peaches) were provided only by Italy and reported in **Table 1B5.**

The total number of results were 64 with 23 % of positive samples (45 apples samples (24 with peel and 21 without peel), 12 pears samples, and 7 peaches samples), which ranged from LOD 0,2 µg/kg to 1166 µg/kg apples with peel. The mean 1 ranged between 5,5 µg/kg for apples without peel, 107,8 µg/kg for apples with peel, 172,8 µg/kg for pears and 4,83 µg/kg for peaches.

Comments on patulin occurrence in fresh fruits

Due to high LOD values and lack of Quality Assurance principles not all the results were used for the intake calculation.

CONSUMPTION DATA

Table 2A presents the consumption data (mean, median and 95th percentile) and the information on the adopted methodology for recording the consumption data were provided by the participants (N = 10) (aggregated tables 2A1).

Most countries provided consumption data for all population. In addition since in the instruction for participants it was requested, whenever possible, to provide consumption data also for specific groups of consumers (consumers only, by age, by gender, by living area), Austria, Belgium, France, Germany, Italy, Sweden and UK provided also information in this respect.
Consumption data was either provided as grouped foods and/or as individual foods by almost all participants.
A strong lack of information exists on baby food (juice and pap).

For a better overview on the best estimates of the different countries, food and consumer groups the Co-ordinators decided to omit in the **Table 2B** the provided information on reference and year, survey methods, typology of data, sample size, data collection, geographical level, method region and representativeness for the member state.

PATULIN DIETARY INTAKE

In order to obtain the overall European scenario of the exposure to patulin, through the combination of patulin occurrence data in food products and consumption data, various approaches were followed, namely by country, by food commodity and by groups of population.

Best estimate of the dietary intakes

In general on the basis of the provided data, four different estimates of **dietary intakes** from each food commodity, as derived by the combination of the above sets of data, could be calculated theoretically:

A. Mean food consumption and mean 1 occurrence data
B. Mean food consumption and mean 2 occurrence data
C. 95^{th} percentile food consumption (if available) and mean 1 occurrence data
D. 95^{th} percentile food consumption (if available) and mean 2 occurrence data

A summary for all Member States of the best estimates of daily intake of patulin for different groups of population is given in **Table 3A** including the calculated intakes A, B and C. Dietary intake D was not calculated, since it would represent a gross overestimation. The intake estimates were calculated as referred both to person and per kg of body weight (bw).
Only dietary intake values related to commodities on which both occurrence and consumption data were available, the corresponding consumption and occurrence data could be reported.

Total dietary intake in participating countries

For each Member State, the best estimate of **total dietary intake** (ng/kg bw/day) for all population and/or for specific groups of population was calculated by summing up the dietary intakes A and C from each food commodity from Table 3A, since this approach provides the value closest to the real situation (**Table 3B**). As far as dietary intake B is concerned, it had been agreed previously that the summing up of the contribution from each commodity would provide an overestimation of the total dietary intake. Instead of summing up the daily intakes of each commodity the French representative proposed to do the calculation of the daily intake of patulin with the real disaggregated data on individuals from all the commodities.

Consistently with the consumption data provided, most countries calculated the best estimates for "all population". Many countries have provided consumption data for specific groups of population and the dietary intakes were calculated also for those groups. Main categories considered by participants included consumers only, children and adults. Dietary intakes for these groups of population allow for the recommendations outlined in the CODEX guidelines (1999), related to the evaluation of dietary intake of food chemicals. According to these recommendations "……as appropriate, risk assessors and risk managers should consider differences in food consumption patterns across population and in vulnerability to toxicity within population as they estimate exposure to, and potential human health consequences resulting from exposure to chemicals found in foods……..".

Ranking of total dietary intake

In addition rankings of the total dietary intakes A (mean 1 x mean food consumption) and C (mean 1 x 95^{th} percentile food consumption) (ng/kg bw/day) for adults and children (3- 6 years old) are listed in **Tables 3C and 3D**, after checking that apple juice/nectar was in majority the main

contributor (exception for France where it was apple puree for all population instead of apple juice for consumers and Italy where it was fresh fruit). But for the calculation of the daily intake of patulin the coordinators used only the derived products for Italy.

The weighed mean 1 is calculated by multiplication of mean1 from each country with its number of inhabitants, all summed up and divided by the sum of all viewed countries. The equal age distribution in the member states was assumed for this calculation. The calculation of the weighed mean (1) and high level for the two different population groups in the Member States results in the following figures

All population

Mean (1)	adults	:	3,0/1,3*	ng/kg bw/d (76% / 64%*)
Mean (1)	children	:	28	ng/kg bw/d (40%)
high level	adults	:	22/6,6*	ng/kg bw/d (61% / 46%*)
high level	children	:	93	ng/kg bw /d (40%)

Consumers only

Mean (1)	adults	:	21/13*	ng/kg bw/d (77% / 61%*)
Mean (1)	children	:	64	ng/kg bw/d (59%)
high level	adults	:	57/33*	ng/kg bw/d (75% / 59%*)
high level	children	:	199	ng/kg bw/d (59%)

*without Italy

These data stay for the following percentage of the European population which is shown in the parenthesis, with the reservation that the majority of the data was collected in Northern European Member States, but where on the other hand the consumption of fruit juice, mainly apple juice, is much higher.

Comments from the participants on patulin levels, consumption data or dietary intake

Austria: Consumption data on grape must are missing as this article is only consumed during a very short period of the year.

Belgium: Data are not representative because of the age group (14-18 years) and the region (Gent) selected.

Denmark: Unfortunately no occurrence data could be reported from 1997 or later. The newest data were from 1994.

France: The French authors made no estimation data of patulin intake with baby puree data because the food intake survey covers only adults and children over 3 years. They have many contamination data on drinks or aperitifs based on cider but none on the consumption of this commodity because the consumption is very marginal. They can only calculate the patulin intake for cider.

Germany: Occurrence data for baby food could not be separated in juice and puree. The intake calculation was done under the assumption that the complete product was apple because the German participants had only data from the DONALD-Study for all fruits.

Italy:	The Italian authors consider the occurrence reported results are partly not representative for the national situation, and they have been skipped for intake calculation
Netherlands:	No occurrence data could be reported from 1997 or later
Portugal:	Consumption data on apple and pear juices are missing. They only have data concerning the total of juices consumed, and they estimated that an average of about 5 % were related to each kind of apple and pear juices consumption.
Spain:	Patulin occurrence data have been determined only in apple juice. Data on apple juice consumption are lacking, so the followings have been used: National data of all fruit juices except grape, orange, peach and pineapple, obtained using a household budget survey and regional data of all fruit juices obtained from a Dietary survey based on 24 h recall and a food frequency questionnaire.
Sweden:	Except the food products analysed and reported patulin might be found in different types of jam. Earlier calculations showed that a possible intake from these products is 0,5 – 4,3 ng/kg day.
United Kingdom:	Manufacturers reject any apple product that contains more than 50 µg/kg of patulin (some as low as 35 µg/kg), which are diverted into cider or vinegar production. As these particular batches would not be available for retail sale in the UK, levels above were not considered for calculation. The UK data for all ages are calculated to reflect a worst case scenario, all juice consumed being assumed to be apple juice.

DISCUSSION AND CONCLUSIONS

Participating countries provided a conspicuous number of data on patulin occurrence, related to food commodities considered as the most susceptible to patulin contamination, and on their consumption. The bulk of information allows to draw relevant conclusions from different points of view and to provide recommendation for future work.

OCCURRENCE

Status of patulin contamination levels of foodstuffs (**Table 4**):

- the percentages of positive samples higher than 25 respectively 50 µg/kg was 17,5 respectively 2,4% (calculation with the number of positive samples of apple concentrate after division by 7).
- in consideration of the hypothetical level of 50 µg/kg of JECFA, the provided occurrence data for apple juice and products showed very few higher levels of contamination, leading to the general conclusion that products circulating in EU are of good sanitary quality with respect to patulin contamination. Concerning the setting of lower limits to ensure the protection of children and individuals that are regular consumers of high quantities of apple juice the figures were very low for purees and baby food, but not generally for all apple juice and freshly pressed grape juices.
- the lack of harmonisation in sampling procedures and in analytical methods could in some cases influence the soundness of the results. Nevertheless the provided information on the patulin occurrence depicted a sufficient overall scenario of patulin contamination, to be used as the benchmark for future European legislation.
- For reaching a more sure statement about the occurrence data of patulin in organic fresh food and baby food the participant members suggest to make a further SCOOP-study.
- The occurrence data are not corrected for the recovery (80 – 100 % see Table B in Annex 1). The real occurrence data could therefore be higher for juice or lower for other commodities.
- Fresh Austrian grape must is not fermented or heated, why patulin contamination may be higher than in commercial grape juice.

CONSUMPTION

- There is an significant lack of consumption data in some countries. In particular, information on special fruit juices and baby food are generally not available.

- In addition, it has not been possible to handle the provided data homogeneously, since they were referred, in some cases, to all population or consumers and in other cases to specific groups of population.

DIETARY INTAKE

The summary of contribution to dietary intake A (mean level for food consumption and mean 1 level for patulin occurrence), from each group of commodities in participating Member States is presented in **Table 5,** both for all population and for specific groups of population (ng/kg body

weight /day). The **total** dietary intake, as obtained by the summing up of contributions from the data available for commodities is also given. Only the dietary intake A was taken into consideration due to its closeness to real situation**.**
Each commodity considered in Table 5 contributed to the patulin intake, but it should be noted that no participating country could estimate intakes from all the commodities known to be susceptible to patulin contamination.
For Italy three total dietary intakes are reported: one for fresh fruit, one for juices and purees, and one for baby foods. This because in the opinion of the Italian representative, the possibility to find patulin also in fresh fruit is considered noteworthy.
In consideration of the already mentioned limiting aspects (see occurrence and consumption sections) some factors contribute to overestimate or underestimate the calculated total dietary intake:

- since it is rather unlikely that one single person is a consumer of all the considered food groups, the calculated total dietary intake should be considered overestimated when applied to consumers only.
- for each country, the fewer the number of the tested food groups, the more underestimated should the result of the total dietary intake be considered.
- since in most cases, occurrence data were not corrected for recovery factors, an additional underestimation of the intakes should be considered.

Therefore, as shown in Table 5 and keeping into due consideration the limitations above mentioned, the following are the resulting contributions of each commodity to the total exposure in each country (the number of countries that provided data for the considered commodity is indicated in brackets):

- Apple juice/apple nectar (8 countries) represents the main source of intake in Austria, Belgium, France, Germany, Portugal and UK for all groups of population taken into consideration, particularly for young children. Exceptionally they do not represent the major source of intake for Sweden (Ref. Riksmaten) and for all population by adults, females and males in France. Italy, Spain and Sweden (Ref. Hulken) did not provide any food consumption data on apple juice, only for not differentiated fruit juice. In Norway apple nectar represents the main source of patulin intake.
- Pear juice (2 countries) contributes to the total intake to a low extent in Germany and Portugal.
- Grape juice (3 countries) contributes to the total intake to a low extent.
- Fruit juice (4 countries) represents the main source of intake in Italy, Sweden and Spain. In Italy and Spain the fruit juice enclosed the apple juice.
- Cider (2 countries), including drinks based on cider, provides a considerable contribution to the total intake of consumers in France; for male adults in France it is the main contribution.
- Purees (4 countries) contribute to a low extent to the total intake, with the exception of female adults and adults (all population) in France where it is the main source for patulin intake.
- Baby food (2 countries) has a higher level for intake for 1 to 3 years old children in Germany than in Italy, with the reservation that Italy only took into account pap (baby food with or without milk powder), but Germany pap and juice.
- Tomato canned and concentrated (1 country) contribute generally to a low extent to the total intake.
- Among the category “Others”, jellies and tomato products may be susceptible commodities.
- Fresh fruit represents the main source of intake in Italy.

It should be underlined that, as shown in Table 5, most countries did not provide information on all food products potentially affected by patulin contamination; therefore the total dietary intake A by country should be generally considered underestimated.

As far as the comparison with PMTDI (0,4 µg/kg bw/day) is concerned, from the observations reported in Tables 3C, 3D and 5, the exposure seems to be quite below the value indicated by JECFA and SCF. Nevertheless, some countries seem to be suffering from a more relevant contamination, still under the PMTDI, especially in a worst case situation and if specific group of consumers especially small children are considered.

FUTURE NEEDS

Occurrence

As far as the factors influencing the reliability of data are concerned, some lack of information still persists. In fact, harmonised sampling plans and methods of analysis, number and type of analysed commodities, quality assurance of data, information on the role of technological processing on the fate of patulin should be improved.
In consideration of the provided limited number of data on fresh fruit, monitoring plans on this commodity aimed at the evaluation of patulin contamination should be put forward.

Consumption

In consideration of the wide spectrum of methodologies used in each Member State to calculate consumption data, research projects should be launched by EU in order to define specific guidelines aimed at improving the harmonisation of methodology for the survey on consumption data to be adopted by each Member State.
In addition, to assess more accurately the exposure of European population, data for consumers only should be collected.
Additional data based upon total diet or duplicate test portion should be developed in order to overcome uncertainties due to many factors including not representative sampling procedures, and inaccurate consumption data

ACKNOWLEDGEMENTS

The Co-ordinators would like to thank all participants Mr. Verstraete, Mrs. Andrews, Mr. De Klerck and Mrs. Testori-Coggi for their co-operation during this Task.

Annex 1

Basic information on Patulin

Sources and properties

Patulin 4-hydroxy-4*H*-furo[3,2c] pyran-2(6H)-one is a lactone-containing secondary metabolite produced by fungi belonging to several genera, including *Penicillium*, *Aspergillus* and *Byssochlamys* species. Patulin is a colourless crystal with a molecular weight of 154 Daltons and a melting point of 111°C. It is soluble in water, ethanol, acetone, ethyl acetate, ethyl ether and chloroform, but insoluble in benzene and petroleum ether, and it is stable to heat processing at pH<6. Patulin is gradually destroyed during storage in the presence of sulphites, sulfhydryl groups and ascorbic acid (1). Patulin is completely degraded in 15 s in aqueous solution by 10 wt % ozone (2). Fermentation of apple juice to produce alcoholic beverages destroys Patulin (3).

Biosynthesis of Patulin

Although patulin can occur in many mouldy fruits, grains and other foods, the major sources of patulin contamination so far are apples and apple products.

Toxicity

Patulin has antibiotic properties and an LD_{50} (ip) in mice of 5 mg/kg (4). Even if patulin failed to give any indication of mutagenic potential in Salmonella typhinurium bacteria in the Ames test, it produces chromosomal damage (5,6). The UK Committee on Mutagenicity has classified patulin as mutagenic (7). A recent review by JECFA concluded that it has no reproductive or teratogenic effects, but shows embryotoxicity accompanied by maternal toxicity (8). At relatively high doses, patulin has immunosuppressive properties (8), although a recent study in mice based on realistic human exposures failed to demonstrate any immunotoxicity (9). Based on available experimental results, it was concluded that patulin is genotoxic, but that no adequate evidence existed for carcinogenicity in experimental animals (8).

Recommendations for maximum exposure

The Scientific Committee on Food expressed an Opinion on patulin in 1994 in which it stated: “The Committee agrees for the time being with the JECFA and IARC conclusions. It proposes to reconsider its opinion in the light of new information.” (10).
The background for this opinion was the JECFA evaluation of 1990 when a provisional tolerable weekly intake (PTWI) when a provisional tolerable weekly intake (PTWI) of 7 µg/kg was established, based on a no-effect level (NOEL) of 0,1 mg/kg bw/day in a combined reproductive toxicity /long term toxicity/carcinogenicity study in rats, and the IARC conclusion that no evaluation could be made of the carcinogenicity of patulin to humans and that there is inadequate evidence in experimental animals (11,12).
Patulin was reviewed by JECFA in 1995 and it appeared that, although several more studies were incorporated, the above mentioned study was still the most sensitive. Since it became apparent that patulin was administered only three times per week during 24 months, the NOEL in this study was recalculated to be 43 µg/kg bw/day. As patulin doesn’t accumulate in the body and in the light of consumption pattern, the PTWI was changed to a provisional maximum tolerable daily intake (PMTDI). Based on a NOEL of 43 µg/kg bw/day and a safety factor of 100, a PMTDI of 0,4 µg/kg bw was established (13).

Patulin regulation in EU Member States

As far as regulation is concerned, 8 countries have set specific regulations for patulin in one or more commodities at a level of 50 µg/kg (14).

Table A
Present regulations of Patulin in the EU Member States

Country	Commodity	Maximum limit (µg/kg)	Legal basis	Reference
Austria	Fruit juice	50		BGBl. Nr. 251 (1986)
Finland	All foods	50	Official	?
France	Apple juice and derived Products	50	Recommandation	?
Germany	Apple juice	50	Guideline limit	Bundesgesundhbl. 28,51(1985)
Italy	Fruit juice	50	Guideline level	Circular n. 10 of 9.06.1999 published in Italian Official Gazette n. 135 of 11 June 1999
Norway	General	50		?
Sweden	Berries and products of berries	50		SLV FS 1997:34
United Kingdom	Apple juice	50	Guideline limit	MAFF (1993) Food surveillance paper No.36 HMSO 61,64

Analysis

Recently the development of the chromatographic determination of patulin in the last 25 years was reviewed (15). The first methods for determination of patulin in apple juice involved ethyl acetate extraction and silica gel column cleanup. Detection was achieved after development on thin layer silica gel plates and by spraying with 3-methyl-2-benzothiazolinone (MBTH) with a detection limit of approximately 20 µg/l (16). HPLC techniques coupled with UV detection followed as they were less time consuming, gave improved resolution from the common contaminant, 5-hydroxymethylfurfural (HMF) and achieved higher sensitivity (17). Although HPLC methods have mostly been preferred, several authors have published methods following formation of different derivatives (18,19,20), but these techniques did not gain much interest because of incomplete derivatization, losses through evaporation, decomposition prior to analysis and lack of a suitable internal standard. The omission of the derivative formation by gas chromatography/chemical ionisation MS with negative ion detection avoids these problems and saves time (21). Many efforts have already been accomplished to develop an enzyme-linked immunosorbent assay, but unfortunately due to the instability of patulin conjugates, no ELISA product or cleanup by immunoaffinity columns is commercially available up to date.

Beside photodiode array detection, GC with the notorious disadvantages has been the only possibility for confirmation of patulin so far. But the synthesis of a carbon-13-labeled patulin [$^{13}C_2$-Pat] as internal standard to be used in a stable isotope dilution assay may represent a big progress (22). By way of example two assays have been published (23). One method was performed by means of LC/MS in negative electrospray ionisation mode without derivatization, the other used HRGC/HRMS after trimethylsilylation. LC/MS showed a much lower performance compared to HPLC/UV or HRGC/HRMS. Most recently an HPLC-MS-MS method with selected reaction monitoring (SRM) was described. MS detection was accomplished following atmospheric pressure chemical ionisation (APCI) in both positive and negative ion modes. The detection in the negative ion mode proved to be superior (24).

Actually most of the patulin analysis are accomplished according to the prEN 14177:2001 which has also been recommended to be adopted Official First Action by AOAC (25).
In principle cloudy apple juice and apple puree are treated with a pectinase enzyme. Patulin is then extracted from apple juice or enzyme treated puree with ethyl acetate. The solvent extract is cleaned up by liquid-liquid extraction with aqueous sodium carbonate solution. The ethyl acetate extract is dried with anhydrous sodium sulphate. After evaporation of ethyl acetate, patulin is quantitatively determined by high performance liquid chromatography (HPLC) with ultraviolet (UV) or photodiode array (DAD) detection. The use of DAD to distinguish patulin spectrally from co-extracted compounds is providing further confirmation on the purity of the chromatographic peak (26).

Preparation of Standard Solutions

The stock solution is prepared by dissolving 5 mg of patulin with ethyl acetate in the purchased sealed ampoule. Transfer the contents of the ampoule to a 25 ml volumetric flask and make up to volume with ethyl acetate.

A calibrant solution containing ~ 10 µg/ml of patulin in ethanol is then prepared. Evaporate 1000 µl of the stock solution to dryness under nitrogen and dissolve it immediately in 20 ml ethanol. The exact concentration is determined by measuring the optical density at 276 nm (peak absorption wavelength for this toxin) and by applying the following formula:

$$\text{µg of patulin/ml} = \frac{A_{max} * M * 100 * CF}{\varepsilon * d}$$

A_{max} = absorbance determined at the maximum of the absorption curve (here approx. at 276 nm)
M = relative molecular mass of patulin (154,12 g/mol)
ε = relative molar absorption coefficient of patulin in ethanol (1460 m^2/mol)
CF = Correction Factor
d = the path length of the quartz cell in centimetres
Store the stock solution in a freezer at –20°C and the calibrant solution in a fridge at 4°C. Solutions stored this way will be stable for several months.
For the preparation of working calibrant solution of 1 µg/ml, evaporate 500 µl of the stock solution or an aliquot which is equivalent to an absolute amount of 5 µg of patulin to dryness and dilute in 5 ml pH4 water.

More information on the preparation of standards are given by the AOAC Official Methods of Analysis (27).

Preparation of the test materials

For clear apple juice no preparation is required. For cloudy juices measure 20 ml of sample into a centrifuge tube and add 10 drops of enzyme solution. Leave overnight at room temperature or for 2 hours at 40°C, after which centrifuge the sample at 4500 g for 5 minutes. For apple puree weigh 10 g of sample into a centrifuge tube, add 10 drops of enzyme solution followed by 10 ml of water and mix thoroughly. Leave the sample at room temperature overnight or for 2 hours at 40°C, after which centrifuge at 4500 g for 5 minutes.

Extraction

Pipette 10 ml of sample of clear juice (or cloudy juice or puree as prepared before) into a 100 ml separating funnel. Add 20 ml of ethyl acetate and shake for 1 minute. Allow the layers to separate, then drain them into two separate conical flasks. Transfer the aqueous layer back into the same separating funnel and re-extract with a second 20 ml portion of ethyl acetate . Allow the layers to separate and drain the lower aqueous layer

into an empty conical flask and drop and the top layer into the conical flask containing the ethyl acetate layer from the first extraction. Repeat this extraction procedure for a third time, but after allowing the layers to separate pour the lower aqueous layer to waste. Combine the three ethyl acetate phases in the separating funnel. Rinse the conical flask used to collect the ethyl acetate phases with a further 5 ml ethyl acetate and add this to the ethyl acetate in the separating funnel.

Clean-up by removing interfering acidic compounds

Add 4 ml sodium carbonate solution to the separating funnel and shake for 0.5 minute. Allow the layers to separate, then pour off the lower aqueous layer into a conical flask. Pour the top layer into a round bottomed flask through a funnel and filter paper containing 15 g anhydrous sodium sulphate. Transfer the aqueous layer back into the separating funnel, rinse the conical flask with 10 ml ethyl acetate, add this to the separating funnel and shake for 0.5 minute. Allow the layers to separate, pour off the lower layer to waste and pour the top layer through the sodium sulphate into the round bottomed flask. Wash the sodium sulphate with 2 x 10 ml of ethyl acetate and collect in the round bottomed flask. (Note: patulin is not stable in alkaline solutions, therefore this stage of the method must be carried out as quickly as possible to avoid losses).

HPLC Analysis

Evaporate the sample to dryness and dissolve in a final volume of 1 ml (500 µl for puree samples) pH4 water. Transfer to an HPLC vial.

Prepare a calibration graph by injecting at least 5 standard solutions of different suitable concentrations. Plot the area (or height) values of the patulin calibration solutions against the concentration in µg/kg. Inject aliquots of the test solutions using the same conditions. Identify the patulin peak of the test solution by comparing the retention time of the sample with that of the calibrants. Determine the content of patulin in the test material in µg/kg directly from the calibration curve.

HPLC column and operating conditions

Column: Octadecylsilane (ODS) – End Capped with
a length of 250 mm
an internal diameter of 4.6 mm
stationary phase with particle size of 5 µm
carbon loading of 12 – 18.5 %

Precolumn: ODS
a length of 10 mm
an internal diameter of 4.6 mm
stationary phase with particle size of 5 µm

Mobile phase: acetonitrile:perchloric acid (0.095 %) (7:93)
Flow rate: 0.75 ml/min
Injection volume: 50 µl
Detection: UV detector set at 276 nm or diode array detection

For statistical analysis of the collaborative trial (25) see Table B

Table B Statistical analysis of collaborative trial results for patulin (25)

Food/drink	Added (ng/ml)	Average (ng/ml)	s_r	RSD_r (%)	S_R	RSD_R (%)	Recovery (%) (± 1 SD)
Clear apple juice	75	67	8,4	13	15,3	23	89±20
	nc(b)	26	3,7	14	8,4	33	
	nc(c)	54	6,0	11	13,6	25	
	nc(d)	128	9,9	8	14,0	11	
Cloudy apple juice	75	60	7,8	13	12,5	21	80±16
	nc(b)	26	8,9	35	8,9	35	
	nc(c)	69	4,3	6	10,0	14	
	nc(d)	106	10,2	10	12,9	12	
Apple puree	75	69	7,5	11	9,2	13	92±12
	nc(b)	23	6,4	27	8,5	36	
	nc(c)	38	3,8	10	12,6	33	
	nc(d)	121	23,6	19	34,8	29	

nc: naturally contaminated samples (b), (c) and (d)

References

1- M.W.Trucksess and Y.Tang
Journal of AOAC International, 82, 1109-1113 (1999)

2- K.S.McKenzie, A.B.Sarr, K.Mayura, R.H.Bailey, D.R.Miller, T.D.Rogers, W.P.Norred, K.A.Voss, R.D.Plattner, L.F.Kubena and T.D.Philips
Food Chem. Toxicol., 35, 807-820 (1997)

3- J.Harwig, P.M.Scott, B.P.C.Kennedy and Y.K.Chen
J.Inst.Can.Sci.Technol.Aliment. 6, 45-46 (1973)

4- R.J.Cole, R.H.Cox
Handbook of Toxic Fungal Metabolites, Academic Press, New York 1981

5- J.Hopkins
Food Chem. Toxic. 31, 455ff. (1993)

6- E.Pfeiffer, K.Gross and M.Metzler
Carcinogenesis 19, 1313ff. (1998)

7- United Kingdom Committee on Toxicity, Mutagenicity and Carcinogenicity of Chemicals in Food, Consumer Products and the Environment, Annual report, HMSO, London 1992

8- Food and Agricultural Organization, World Health Organization , Evaluation of Certain Food Additives and Contaminants, 44th report of the joint FAO/WHO Expert Committee on Food Additives, Tech. Report Series Volume 859, WHO, Geneva 1995

9- G.C.Llewellyn, J.A.McCay, R.D.Brown, D.L.Musgrove, L.F.Butterworth, A.E.Munson, K.L.White
Food Chem. Toxic. 36, 1107ff. (1998)

10- SCF 1996: Reports of the Scientific Committee for FOOD (Thirty-fifth series), 1996

11- JECFA 1990: Evaluation of certain food additives and contaminants. WHO Technical Report Series, No.789,1990, and corrigenda

12- IARC 1986: IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Humans, Vol.40,1986

13- JECFA 1995: Evaluation of certain food additives and contaminants. WHO Technical Report Series, No.859,1995
14- H.P. van Egmond
Current situation on regulations for mycotoxins. Overview of tolerances and status of standard methods of sampling and analysis
Food Additives and Contaminants, 6, 139-188 (1989)
15- G.S.Shephard and N.L.Leggott
J.Chromatography A 882, 17-22 (2000)
16- P.M.Scott
J.Assoc.Anal.Chem. 57, 621-625 (1974)
17- S.J.Kubacki, in: P.S.Steyn, R.Vleggaar (Eds.), Mycotoxins and Phycotoxins, Elsevier, Amsterdam, 1986, p.293
18- J.D.Rosen and S.R.Pareles
J.Agr.Food Chem. 22, 1024-1026 (1974)
19- B.Bergner-Lang, M.Kächele and E.Stengel
Deutsche Lebensmittel-Rundschau 79, 400-404 (1983)
20- M.Kellert, W.Baltes, W.Blaas and M.Wittkowski
Fresenius Z. Anal. Chem. 315, 165-170 (1983)
21- J.A.G.Roach, K.D.White, M.W.Trucksess and F.S.Thomas
Journal of AOAC International 83, 104-112 (2000)
22- M.Rychlik and P.Schieberle
J.Agr.Food Chem. 46, 5163-5169 (1998)
23- M.Rychlik and P.Schieberle
J.Agr.Food Chem. 47, 3749-3755 (1999)
24- V.Sewram, J.J.Nair, T.W.Nieuwoudt, N.L.Leggott and G.S.Shephard
J.Chromatography A 897, 365-374 (2000)
25- S.McDonald, M.Long, J.Gilbert and I.Felgueiras
Liquid Chromatographic Method for Determination of patulin in clear and cloudy apple juices and apple puree: Collaborative Study
Journal of AOAC International, 83, 1387-1394 (2000)
26- B.Bartolome, M.L.Bengoechea, F.J.Perez-Ilzarbe, T.Hernandez, I.Estrelle and C.Gomez-Cordoves
J.Chromatography A 664, 39ff. (1994)
27- AOAC, Official Method of Analysis of the Analytical Chemist. 15th Edition, 1990, chapter 49

Annex 2

Timetable

Event	Scheduled time	Place
I step: Planning of methodologies		
Identification of participants at national level	December 2000	
Suggestions for the creation of guidelines for a questionnaire to be sent to the participants	December 2000/ January 2001	
Development of a draft questionnaire and guidelines for its completion	January 2001	
II step: Request of date		
Mailing (by fax or e-mail) of the draft of the developed questionnaire to the participants for comments, suggestions and the identification of possible difficulties at national level	April 2001	
Deadline for comments	15 may 2001	
Meeting of participants for exchange of view and instruction	16 may 2001	Brussels
Mailing of the final draft of the questionnaire	Beginning of June 2001	
Deadline for receiving data from participants	End of September 2001	

Elaboration of data derived from the questionnaire and preparation of the preliminary report	End of November 2001	
Informal meeting between coordinators and EU representatives for the discussion of the preliminary report		

III step: Finalisation of the task

Preparation of a draft report of obtained results and conclusions	December 2001 – January 2002	
Formal meeting between coordinators end EU representatives for the discussion of the draft report		
Circulation of the draft report among participants for comments	28 January 2002	
Final meeting	19 February 2002	Brussels
Preparation of the second draft of the task report and circulation among participants for comments		
Deadline for comments		
Preparation of the final report	March 2002	
Deadline of the task	**11 March 2002**	

Annex 3

Instruction for participants

Subject: SCIENTIFIC COOPERATION ON QUESTIONS RELATING TO FOOD; Task 3.2.8
"Assessment of dietary intake of Patulin by the population of EU Member States"

Dear Participant,

according to our previous correspondence and our first meeting for exchange of views in Brussels, please find enclosed the final draft of the ‚Instruction to participants" for the development of the task 3.2.8 . The document has been developed to fulfil the following requirements

- provide the information in a form which allows the best achievable level of comparability between Member States
- obtain sufficient information to allow the evaluation of reliability and limitations of the provided data
- allow flexibility to accommodate the wide variety of data
- gather as much as possible other useful information on patulin, even though for SCF purposes the final report should primarily focus on basic data.

Best regards

Paul Majerus

INFORMATION TO PARTICIPANT INSTITUTES

Task 3.2.8 "Assessment of dietary intake of patulin by the population of EU Member States"

BACKGROUND

Council Regulation (EEC) 315/93 of 8 February 1993 provides the legal framework for establishing maximum levels for food contaminants at Community level.

In 2000 task 3.2.7. concerning the assessment of dietary intake of Ochratoxin A by the population was completed and will result in a EUR report "Assessment of dietary intake of Ochratoxin A by the population of EU Member States.

A growing interest and concern of the public authorities for the presence of naturally occurring toxicants in the human food, such as Aflatoxins or Ochratoxin A, and the discussions at Community level concerning the fixing of maximum limits, have resulted in a more frequent control on the presence of naturally occurring toxicant.

Commission Decision 2000/669/EC, of 18 October 2000 amending Decision 94/652/EC establishing the inventory and distribution of the task to be undertaken within the framework of co-operation by Member States in the scientific examination of questions relating to food, established task 3.2.8 "Assessment of dietary intake of patulin by the population of EU Member States". Germany was designated as the Member State to develop the task.

OBJECTIVES

To provide the scientific basis for the evaluation and management of risk to public health arising from dietary exposure to patulin, taking into account recent available data. Particular emphasis is placed on evaluation of dietary intake of patulin in each of the Member States and in high-risk sub-groups of the population.

TIME SCALE

The timescale for the task is attached in Annex 1

The coordinator takes overall responsibility for carrying out the agreed work, including inviting further experts to participate, after consultation of the secretariat, and preparing the working document to fulfil the objective of the task.

In this respect the coordinator will:

- Establish a common format for the submission of information
- Obtain and collate relevant information available to the Member States, exploring the quality or validity of data submitted with the expert submitting that data and if necessary with the task group as a whole
- Prepare the working document in an agreed format
- Maintain an agreed time-scale

The participating institutes will provide the coordinator with the latest national information in accordance with the agreed format. They should also:

- Ensure that information provided to the task group and any working papers is regarded as confidential until the final report has been endorsed by the SCOOP Working Group, except where information is already of public domain.
- Ensure that information submitted as part of the task meets the required specification and is provided by the agreed date.

INFORMATION TO BE COLLECTED BY THE PARTICIPATING INSTITUTES

Participating institutes from each country, on the basis of information available in their country (publications, reports and results of surveillance programmes), are requested to provide information related to patulin.

Any relevant information collected over the last four years should be included i.e., from 1997 inclusive. Also recent data intended for publication should be included.

Since, in principle, minimum data aimed at gathering information on exposure to patulin in support to SCF work are requested, the basic requested information deals with:

1. The occurrence of patulin in apple juice, other juices and apple puree imported and commercialised in their country, baby or any other food, where data are available

2. Consumption data of the relevant food commodities and population groups

3. Dietary intake of patulin for population or specific consumers calculated on the basis of the occurrence and consumption data

4. Regulations related to patulin (maximum limits, sampling plans, others)

However, in view of the peculiarity of the contaminant under discussion and the relevance of several issues, additional data are welcome. Such data may include information, gathered in participant country, dealing with different topics. Dietary intake and sensitivity of particular group of population are particularly relevant. Also information on influence of technological procedures, changes in agricultural techniques, prevention actions, consideration in HACCP or other systems etc. could be a separate part of the report.

It is accepted that participants will not always be able to provide the information requested, but all information available, even partial, for example on consumption and/or occurrence data, is welcome. All the information should be given in English.

GUIDELINES FOR PARTICIPANTS

Participating institutes are asked to provide summaries of the data for their countries as described in the sections 1-5 using the given tables and forms. The tables and forms should be copied in needed quantities by the participants. With respect to numeration of the tables, each number (1,2) refers to a topic (occurrence, consumption etc.) and is subdivided in appropriate issues. In addition the participants are kindly requested to report all their raw data in the requested form (raw_data.xls).

The rationale in the organisation of the task is that the part of the tables will provide the basic information for the SCF, while others will contribute with additional information that will be included in the final report and could be taken into consideration by SCF.

Original reports, publications and analytical raw data cannot be evaluated, but copies of the original literature (original reports, publications etc.) should be sent to the coordinator in a reasonable extent (at least main tables and figures from the original literature). All the used references should be numbered consecutively and the numbers should be used in tables and forms for identification.

References should be provided in the format prescribed by the journal 'Food Additives and Contaminants' e.g.,
HOAD, A. B., and LUMLEY, R., 1981, Leaching of antioxidants by packaged cheese from film wrappings. Journal of Food Packaging, 18, 179-188.

FOOD CATEGORISATION SYSTEM

As the grouping of the data is rather simple, since patulin has only been found in a restricted food categories, the coordinator proposes one group for juices and one for purees. However, if this will not be adequate to the purpose, it will be necessary to make further subdivisions of the groups. Following the suggestions of the participants a draft of modified system for food labelling and food grouping and sub grouping will be presented at the meeting. However it is suggested that you also use a free categorisation system in separate tables in order to arrange groups that best fit with data available in your country or that could in principle benefit the reliability of the final result.
As an example it might be necessary to combine kind of foods in one group, because only consumption data are available for that group and not for the separate products and vice versa. It is very important that you make the scientific evaluation of the occurrence and consumption data available in your country and combine them in a way which gives the best estimate of the patulin intake in your country.

1. OCCURRENCE DATA

Participants are requested to summarize occurrence data for patulin in juices and purees.
Data could be referred to:

- goods collected at port of entry (in bulk or in packaging)
- juices and purees sold at retails
- data related to studies on total diet, market basket, duplicate portion

Please note that:

- Data related to points 1 and 2 will be reported in tables 1A1
- Data related to point 3 will be reported in tables 1A2
- Summary of best estimate will be reported in table 1B

Comments on tables related to occurrence data

All concentrations should be in µg/ kg with the results given on fresh weight basis. In the case of data that are not reported on fresh weight basis the participant is kindly requested to make the necessary conversion, according to the characteristics of the food in their country.

Food or group: Name of food or beverage use

Ref and year: Reference identification number (source of the occurrence data) and year of sampling

No. of samples: Number of samples

LOD/LOQ: Limit of detection (LOD) or limit of quantification (LOQ)

No. of samples < LOD (or LOQ): Number of samples less than LOD or LOQ

No. of samples containing patulin in the range: Subdivision of the data of positive sample results into ranges LOD (or LOQ) -9.9, 10.0-24.9, 25-50 and > 50 µg/kg or µg/l. If this subdivision is considered inadequate, please fill the table in the best possible way and in addition report the same data in a similar table with “free" subdivision.

Maximum value: The highest concentration found

Mean (1): Arithmetic mean value of all samples (both positive and negative samples), whereby negative or results <LOD respectively <LOQ are to be taken into account with half of the LOD or LOQ/6

Mean (2): Arithmetic mean value of all positive samples

Median: 50% percentile

Evidence of AQA: Evidence of Analytical Quality Assurance both for sampling and for analysis: Yes or no; more information (accreditated laboratories etc.) can be given in form 1.

Random or target: Were the samples taken for suspicion control or randomly for survey?

Sampling strategy : procedures employed for the sampling (both from bulk and at retails)

Representative for the member state: Are the data evaluated to be representative for the contamination level of patulin in the given food in the member state: Yes or no; more, information can be given in form 1

Analytical principle: HPLC/UV, HPLC/Fluorescence, TLC , GC, GC/MS, LC/MS.... possibly provide reference of the employed methodology if different from the authors of the occurrence data

For each food or beverage, where results from more than one survey are available, best estimates should be given in table 1B. These best estimates should be used for the intake calculation described in section 3.

In addition please consider that

- If only occurrence data are available for unprocessed fruits, for instance apples, and consumption data are available for apples, it will be necessary to calculate how much apple there is in the juice taking water content, extraction rate etc. into consideration.
- If data are available for both foreign and home made or grown juices please report them separately. In relation to the estimation of the patulin intake the used data should naturally reflect the consumed juices in the country, so information on the ratio between foreign/home made or grown juices consumed is needed.
- Since different definitions are used for the limit of quantification (LOQ), determination, detection (LOD), participant must use the occurrence data as they are available and describe in form 1 and form 4 how the used limits are defined and used .

Comments on Form 1

Every reported reference should be described in form 1. Participants are strongly requested to give their opinion on the overall level of reliability of the data given in the reference, in relation to the contribution to the estimate of the overall intake of patulin.

Additional comments on raw data table (raw_data.xls)

In the raw_data.xls table there exists one sheet for each food group.
Sample code: Sample identification code of the analysing institute
Country of origin: national geographic origin of the raw fruits or processed material if available
Ingredients: percentage of the possibly patulin-contaminated ingredients
Processing details: i.e. concentrating process
Conventional or ecological producer according to EEC Regulation No. 2092/91 on organic production of agricultural products
Home made or regional producer means relatively small firms pressing self collected fruits from local producers
Large scale producer means firms which don’t press fruits any more, only dilute concentrates

2. FOOD CONSUMPTION DATA

Institutes should provide an estimate of the food consumption data for an average adult person in the member state even for food items for which occurrence data on patulin are not available in that member state. Where possible, values for mean/median and high level consumption (95% percentile) for an average adult and data for sub-group of population (population adult males, adult females, adolescents, children, infants , vegetarians, ethnic etc.) should be provided. In all cases the age and the body weight ranges should be specified.

In addition, since the difficulties in obtaining food consumption data exactly relevant to a specific food category are well known, it is suggested that the institutes provide any information that they have available on consumption of relevant foods and beverages together with comments to allow the estimate of the limitations for the provided data (reliability of consumption data relevant to that specific food).

Therefore participants are requested to fill in the following tables:

1) Tables 2A1, 2A2, 2A3 for each source of data and for each population group system
2) Tables 2B1, 2B2, 2B3 for the best estimate of the mean consumption and high consumption (95th), for an average person (population and/or consumer), belonging to group of population

The best estimates in tables 2B should be used for the intake calculation described in section 3.

Comments on tables 2 :

Food or group: Name of food or beverage

Ref and year: Identification number of the reference (source of the consumption data) and period over which data were collected

Survey methods: dietary records/diary/length of the observation (specify period and frequency weighed intake, interview, purchase records) .

Typology of Data: (all foods and beverages consumed, food intake, purchase records, home grown food, foods eaten outside the home)

Sample size: Number of subjects

Data Collection: Spot, continuous (specify frequency)

Geographical level: National, regional, urban, rural (specify geographical region covered)

Mean: The arithmetic mean consumption (g/person/day)

Median: The median (50% percentile) (g/person/day)

95% percentile: Estimate of high consumption (g/person/day)

Method: Method for obtaining food consumption data: Food balance sheets, household budget surveys, dietary surveys ..

Region : Specify geographical region covered (national, regional, urban, rural)

Representative for the member state: Are the data evaluated to be representative for the average consumption of the item for an average adult person in the member state: Yes or no; more information can be given in form 2. For each source of the food consumption data, information requested in form 2 should be given.

3. ESTIMATE OF DAILY INTAKE OF PATULIN

Please use table 3 and form 3.

Comments on table 3:

Body weight: The body weight related to the group under consideration (average adult person (kg), adult male, adult female….) in the country

Food or group: Name of food, group or beverage

Intake Mean: Best estimate from table 2 (referred to the corresponding group of population).

High level 95% percentile: Best estimate from the corresponding table 2.

Mean patulin level in food: Best estimate from table 1.

Intake of patulin (ng/day):
Mean: (mean intake of food) x (mean level in food)
High level: (high level intake of food) x (mean(1) level in food)

Intake of patulin (ng/day/kg body weight):
Mean: (mean intake of food) x (mean level in food) / (body weight)
High level: (high level intake of food) x (mean(1) level in food) / (body weight)

The best estimate of the total mean intake of patulin for an average adult person should be given at the bottom of table 3. The total mean intake is simply calculated as the sum of the mean intakes of patulin through the different foods and beverages reported.

4. OTHER SOURCES OF PATULIN INTAKE

It is recognized that their exist beneath juices and purees other sources for patulin exposure for human. Participants are requested to fill in form 4 with data concerning those sources of patulin intake, wherever available.

5. PRESENT REGULATIONS FOR PATULIN

Information on present maximum limits or guidance levels for content of patulin in food and beverages is to be given in form 5.

Acknowledgement: This document has been elaborated taking into account the previous ones distributed by Mr.Jørgensen, Mrs.Miraglia and Mr.Brera to whom we give due thanks.

Form 1. Occurrence data **Country: _____**

Reference No.

Summary:
(main tables, figures and summary from the reference can be copied and attached to this form)

Comments on:

Evidence of Analytical Quality Assurance (AQA):
(Is it an accredited laboratory, which also participates in national or international proficiency test schemes)

Limits of quantification (LOQ) or limits of detection, determination (LOD):
(How is the limit defined, difference in LOQ/LOD for different foods)

Analytical method: (validation of method; reproducibility, repeatability, normal recovery range, are the data corrected for recovery etc.)

Why, the data are / are not evaluated to be representative for the member state:
(sampling procedures, target or random, geographical origin, weather conditions (e.g. average, wet or dry climate during harvest), difference in agricultural techniques (drying. storing. etc), quality of analysis)

Other comments:

Form 2. Food consumption data Country: _____

Reference No.:

Summary:
(main tables, figures and summary from the reference can be copied and attached to this form)

Comments on:

Why the data **are / are not** representative for the consumption of the food item in the member state:

Other comments:

Country: _____

Form 3: Estimate of daily intake of patulin for an average adult person

Comments on estimated daily intake of Patulin

(adequacy of the data available, need for additional information etc.)

Other comments:

Form 4. Other sources of patulin exposure Country: _____

Reference No.

Summary:
(main tables, figures and summary from the reference can be copied and attached to this form)

Comments on:

Evidence of Analytical Quality Assurance (AQA):
(Is it an accredited laboratory, which also participates in national or international proficiency test schemes)

Limits of quantification (LOQ) or limits of detection, determination (LOD):
(How is the limit defined, difference in LOQ/LOD for different foods)

Analytical method:
(validation of method; reproducibility. repeatability, normal recovery, range, are the data corrected for recovery etc.)

Other comments:

Form 5. Present regulations for patulin **Country: _____**

Present maximum limits of patulin for foods and beverages:

Food/beverages	Maximum limit	Remarks	Reference

Table 1 A1. Summary of occurrence data by food group

Country Units: µg/kg

Food or group	Ref and year	No samples	LOD/ LOQ	No samples <LOD/ LOQ	No samples containing patulin in the range LOD/LOQ –9.9, 10-24.9, 25-50, >50				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic. method	Sampling strategy

Table 1A2 Summary of occurrence data related to studies on total diet, market basket, duplicate portion

Country ..... Units: µg/kg

Food or group or study	Ref and year	No samples	LOD/ LOQ	No samples <LOD/LOQ	No samples containing patulin in the range LOD/LOQ –9.9, 10-24.9, 25-50, >50				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic. method	Sampling strategy

Table 1B. Summary of best estimates of data reported in tables 1A1, 1A2

Country ..... Units: µg/kg

Food or group	No samples	Maximum value	Mean (1)	Mean (2)	Median
Food grouping (Tab 1A1)					
Total diet, market basket etc. (Tab.1A2)					
Overall best estimate					

Tables 2A1 (or 2A2, 2A3): Estimate of food consumption for an average person belonging (1) to the group

Country

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geographical level	Mean	Median	95% percentile	Method	Region	Representative for the member state

(1) use a different table for each population group and specify all characteristic identifying the group (total sample or specific sex and/or age, food habits (vegetarian, ethnic etc.), geographical area etc.

Table 2B1 (or 2B2, 2B3):
Best estimate of the mean, median and high consumption (95th percentile)for an average person (population and/or consumer)(*) belonging to the group

Country .....

Food or group	Mean	Median	95% percentile

(*) use a different table for each population group and specify all characteristic identifying the group (total sample or specific sex and/or age, food habits (vegetarian, ethnic etc.), geographical area etc.

Table 3A1 (3A2, 3A3): Estimate of daily intake of patulin for group of population (*)

Country

Food or group	Food Consumption g/person/day		Mean of patulin level in food (µg/kg)			Intake of patulin ng/person/day/			Intake of patulin ng/kg body weight/day		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)

(*) use a different table for each population group and specify all characteristic identifying the group (total sample or specific sex and/or age, food habits (vegetarian, ethnic etc.), geographical area etc.)
(**) mean(1)

Table 3B: Summary of daily intake by body weight of patulin

Country .....

Population group	Mean(1)	High Level

Annex 4

Glossary

AOAC	Association of official analytical Chemists
AQA	Analytical Quality Assurance
APCI	atmospheric pressure chemical ionisation
bw	body weight
DAD	photodiode array detection
GC	Gas Chromatography
HACCP	Hazard Analysis Critical Control Point
HPLC	High Performance Liquid Chromatography
HR	High Resolution
IARC	International Agency for Research on Cancer
JECFA	Joint Expert Committee on Food Additives
LC	Liquid Chromatography
LOD	Limit of Detection
LOQ	Limit of Quantification (determination)
MS	Mass Spectrometry
NOEL	no effect level
PMTDI	provisional maximum tolerable daily intake
PTWI	provisional tolerable weekly intake
prEN	preliminary European Norm
SCF	Scientific Committee for Food
SCOOP	Scientific Co-operation on Question relating to Food (Directive 93/5/EEC)
SRM	single reaction monitoring
TLC	Thin Layer Chromatography
UK	United Kingdom
UV	Ultra Violet

Annex 5

List of participants of the Member States

Country	Title	Name of Participant	Name of Institution	Address	Phone / Fax number	E-mail-Address
Germany		Christel Zimmermann	Bundesinstitut für gesundheitlichen Verbraucherschutz und Veterinärmedizin	Thielallee 88 - 92 D - 14195 Berlin	+ 49 30 84 12 35 32 / + 49 30 84 12 33 74	c.zimmermann@bgvv.de
		Paul Majerus	Landesuntersuchungsamt Institut für Lebensmittelchemie	Maximineracht 11 a D - 54295 Trier	+ 49 651 1446 242 / + 49 651 210 28	Paul.Majerus@lua.rlp.de
Austria	Dr.	Franz Vojir	Bundesanstalt für Lebensmitteluntersuchung und -forschung (BALUF)	Kinderspitalgasse 15 A - 1090 Wien	+ 43 1 40490 27 825 / + 43 1 40490 92 78	Fvojir@baluf.gv.at
Belgium	Dr.	C. Vinkx	Algemene Eetwareninspectie	R.A.C. Esplanadegebouw bur. 119 Pachecolaan 19, bus 5 B - 1010 Bruxelles	+ 32 2 210 48 37 / + 32 2 210 48 16	Christine.vinkx@health.fgov.be
	Dr.	J. M. Degroodt	Scientific Institute of Public Health - Louis Pasteur	Rue Juliette Wytsman, 14 B - 1010 Bruxelles	+ 32 2 642 51 25 / + 32 2 642 56 91	Jean-marie.degroodt@iph.fgov.be
Denmark		Kevin Jørgensen	Institute of Food Research and Nutrition	Markhoj Bygade 19 DK - 2860 Soborg	+ 33 95 64 93	kej@fdir.dk
France		Marc Chambolle	Agence française de sécurité sanitaire des aliments (AFSSA)	23, avenue du Général de Gaulle BP 19 F - 94701 MAISONS-ALFORT Cédex	+ 33 1 49 77 26 14 / + 33 1 49 77 26 13	m.chambolle@afssa.fr
		Jean-Luc Volatier	Observatoire des Consommations Alimentaires (OCA) Direction de l´évaluation des risques nutritionnels et sanitaires (DERNS) Agence française de sécurité sanitaire des aliments (AFSSA)	23 avenue du Général de Gaulle BP 19 F - 94701 MAISONS-ALFORT Cédex	+ 33 1 49 77 38 04 / + 33 1 49 77 38 92	jl.volatier@afssa.fr

Country	Title	Name of Participant	Name of Institution	Address	Phone / Fax number	E-mail-Address
Ireland	Dr.	Helena McGrath	Public Analyst´s Laboratory	Seamus Quirke Road Galway / Ireland	+ 353 91 581 1 22 / + 353 91 581 2 12	palgi@iol.ie
Italy	Dr. Dr.	Carlo Brera Silvana Grossi	Istituto Superiore di Sanita Laboratorio Alimenti	Viale Regina Elena, 299 I - 00161 Roma	+ 6 49 90 23 67 / + 6 49 90 23 77	carlo.brera@iss.it
Netherlands	Dr.	Hans Jeuring	Reichsinstitut Fusarientoxine Chief inspector for Health protection	Postbox: 20350 NL - Den Haag	+ 31 70 340 55 85 / + 31 70 340 54 35	Hans.Jeuring@kvw.nl
Norway	Dr.	Karl Olav Gjerstad	Naeringsmiddeltilsynet for Midt-Rogaland	Forusbeen 3 N - 4033 Stavanger	+ 47 51 81 68 00 / + 47 51 81 68 50	gjerstad@nmt-mrog.rl.no
Portugal	Dr.	Ilidia Felgueiras	Departamento de Technologie das Industrias Alimentares INETI-DTIA	Estrada do Paco Lumiar, 22 P - 1694-036 Lisboa	+ 351 21 7127143 / + 351 21 7127162	Ilidia.felgueiras@mail2.ineti.pt
Spain	Dr.	Isabel García Fajardo	Dirección General Salud Pública Ministerio Sanidad y Consumo	Pº Prado 18-20 E- 28071 Madrid	+34 91 5961999 +34 91 5964487	igarciaf@msc.es
	Dr.	Mercedes Jalón	Dirección de Salud Pública Departamento de Sanidad Gobierno Vasco	C/Donostia 2 E-01010- Vitoria	+34 94 5019209 +34 94 5019192	riesgos-san@ej-gv.es
Sweden		Lilianne Abramsson Zetterberg	Livsmedelsverket	P.O.Box 622 S - 75323 Uppsala		liab@slv.se
United Kingdom	Dr.	Wendy Matthews	Food Standards Agency	7 th Floor - Aviation House 125 Kingsway London - WC2B 6NH	+44 20 7276 8707 +44 20 7276 8717	Wendy.matthews@foodstandards.gsi.gov.uk

Annex 6

References

Austria:

Consumption data

1. Austrian Study of Nutritional Status (Inst. of Nutritional Sciences, Vienna, Univ.Prof.Dr.I.Elmadfa)
2. Study Inst. of Nutritional Sciences, Vienna, Univ.Prof.Dr.I.Elmadfa

Daily intake

3. Verordnung über den Höchstgehalt von Mykotoxinen bei Lebensmitteln. BGBl. Nr. 251, 1986

Belgium:

Occurrence data

1. Unpublished results of the Food Inspection Service (sampling) and the Scientific Institute for Public Health (analysis)

Consumption data

2. Report from S. De Henauw and C. Matthys, 1998, "Voedingsgewoonten bij jongeren van 14-18 jaar"
   Extended abstract in:
   De Henauw S, Matthys C, De Backer G (2001) Differences in overall food and nutrient intake profile between breakfast users and breakfast skippers in a representative sample of 14-18 year old Belgian adolescents. Public Health Nutrition 4(2A), 419.

France:

Occurrence data

1. The contamination data come from DGCCRF (Competition, Consumption and Fraud Squad General Direction) of the French Ministry of Finance. Analyses were conducted by 2 national reference laboratories from the DGCCRF.
2. HENRY M.P., LEMETAYER N., 1996 ,"Liquid chromatographic determination of Patulin in French apple ciders". *Journal of AOAC International*, vol 79, n°5, pages 1107-1109.
3. The contamination data come from the UNPJF (French union of producers and distributors of fruit juice). The data concern apple juice packaged and sold in France between 1997 and 2000.

Consumption data

4. The food consumption data are based on the INCA survey (Individual and national French food intake survey).
5. VOLATIER, J.-L. (coordinator), 2000, *Enquête INCA individuelle et nationale sur les consommations alimentaires*, editions TEC&DOC.

Daily intake

6. AFSSA, April 2001, technical note OCA/AD/2001-204 "Assessment of the consumption of apple juice and apple puree and theoretical maximum exposure to Patulin in these products".

Germany:

Occurrence data

1. The occurrence data were collected from the different laboratories of the German Bundesländer
2. Verband der deutschen Fruchtsaftindustrie e.V. , Bonn

Consumption data

3. Nationale Verzehrsstudie, 1985-1988
4. DONALD-Studie: Was Kinder essen – und was sie essen sollten, Forschungsinstitut für Kinderernährung Dortmund, U. Alexy, M. Kersting, 1999, Hans Marseille Verlag GmbH, München

Italy:

Occurrence data

A Patulin in apple-based foods: occurrence and safety evaluation Food additives and Contaminants, 2000, Vol. 17, No 5, 399-406

B Unpublished data
Method: Journal of AOAC International Vol. 83, No. 6, 2000.

C Valutazione del contenuto di Patulina in prodotti per la prima infanzia a base di mela . La rivista di Scienza della Alimentazione, anno 27 n.4,1998

D Unpublished data

Consumption data

1. Original communication, Food Consumption patterns in Italy: the INN-CA study 1994-1996 European journal of clinical nutrition (2001) **55,** 571-588

Norway:

Occurrence data

1. SNT 2000: SNT-report 2000; "Patulin i epledrikker", Næringsmiddeltilsynet for Midt-Rogaland, 2000.
2. Trucksess, M.W. and Tang, Y, 1999.; " Solid-phase extraction method for patulin in apple juice and unfiltered apple juice"; J AOAC Int.; Sep-Oct; 82 (5), p. 1109-13
3. AOAC Official methods of Analysis of AOAC International, 1997, 16th edition; metode 995.10; kapittel 49.6.02; side 41-44

Consumption data

4. Johansson, L., Solvoll, K. et.al. 1997, "Dietary habits among Norwegian men and women", Scandinavian Journal of Nutrition, Vol. 41: 63-70
   The results which the article is based on is presented in this report: Norkost 1997, "Landsomfattende kostholdsundersøkelse blant menn og kvinner i alderen 16 –79 ar", rapport nr. 2/1999, Statens råd for ernaering og fysisk aktivitet, Oslo 1999.

Portugal:

Occurrence data

1. Ministério da Economia, Instituto Nacional de engenharia e technologia industrial, deparamento de technologia das industrias alimentarias: Relatório, Lisboa, 2001
2. Journal of AOAC International, vol. 83, No. 6, 2000 " Liquid Chromatographic Method for Determination of Patulin in Clear and Cloudy Apple Juices and Apple Puree: Collaborative Study".

Consumption data

3. Instituto Nacional de Estatística - Balança Alimentar Portuguesa (BAP), Estudo nº 79, 1990-1997

Sweden:

Consumption data:

1. Hulken (1994): Befolkningens kostvanor och näringsintag i Sverige 1989. Statens Livsmedelsverk
2. Riksmaten (2001 in press): Befolkningens kostvanor och näringsintag i Sverige 1997-98. Statens Livsmedelsverk
3. Dietary intake of some important mycotoxins by the Swedish population, Food Additives and Contaminants, 2001, Vol.18, No. 8, 696-706
4. SLV FS 1997:37, Statens livsmedelsverks kungörelse med föreskrifter och allmänna råd om provtagning, undersökning av prov mm vid tillsyn enl. livsmegelslagen

Spain:

Occurrence data

1. Unpublished Data. Internal survey conducted by Centro Nacional de Alimentación (Ministry of Health and Consumption)
2. Armentia, A., Jalon, M., Urieta, I. and Macho, M.L., 2000, Vigilancia de la presencia de patulina en zumos de manzana y sidras comercializados en la Comunidad Autónoma del País Vasco. Alimentaria, 310, 65-70.

Consumption data

Ref 1 "La alimentación en España" published in 1998 by the Ministry of Agriculture, Fishery and Food.

Ref 2 Departamento de Sanidad, Gobierno Vasco, 1994, Encuesta de Nutrición de la Comunidad Autónoma del País Vasco. Servicio Central de Publicaciones de Gobierno Vasco, Vitoria-Gasteiz.

United Kingdom:

Occurrence Data

1. Ministry of Agriculture Fisheries and Food (1993). Food Safety Directorate Bulletin No. 34
2. British soft Drinks Association, Code of Practice for the Production of Apple Juice. Nov 1993
3. Proposed draft Code of Practice for prevention of Patulin contamination of Apple Juice and Apple Juice Ingredients in Other Beverages. CX/FAC 01/23
4. Ministry of Agriculture Fisheries and Food (1999). Survey of apple juice for Patulin. *Food Surveillance Information Sheet Number* **173**

Consumption Data

5. Ministry of Agriculture Fisheries and Food (1994). Dietary and nutritional survey of British Adults: Further analysis. HMSO.
6. Gregory J., e. a. (2000). National diet and nutrition survey: Young people aged 4-18 years. The Stationary Office.
7. Gregory, JR., e. a. (1995). National diet and nutrition survey; Children aged 1.5 4.5 years. Volume 1: Report of the diet and nutrition survey. HMSO.

Daily Intake

8. JECFA (1995) Evaluations of certain food additives and contaminants. WHO Technical report Series, No. 859
9. SCF minute, Statement on Patulin, 8th March 2000.
10. Ministry of Agriculture Fisheries and Food (1993) Mycotoxins: Third report, Food Surveillance Paper No.36. HMSO, 61,64.

Table 1A. Summary of patulin occurrence data by food group and country

Units: µg/kg

Austria

Food or group	Ref and year	No samples	LOQ	No samples <LOQ	No samples containing patulin in the range LOQ-9.9, 10-24.9,25-50,>50				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic method	Sampling strategy
					LOQ-9.9	10-24.9	25-50	>50								
apple juice	1966	5	4 - 5	4	0	0	1	0	36	7,8	36	0.8 (<LOQ)	yes	random	HPLC/UV	bulk, retail
apple juice	1997	55	4	2	24	18	11	0	50	15,6	16,2	10,7	yes	random	HPLC/UV	bulk, retail
apple juice	1998	127	4 - 10	89	20	14	4	0	36	4,2	11,7	0.8 (<LOQ)	yes	random	HPLC/UV	bulk, retail
apple juice	1999	31	4 - 10	26	2	3	0	0	22	3,5	14,8	1.7 (<LOQ)	yes	random	HPLC/UV	bulk, retail
apple juice	2000	18	4 - 8	15	2	0	1	0	41	4,1	18,5	1.3 (<LOQ)	yes	random	HPLC/UV	bulk, retail
apple juice	2001	6	4 - 16	2	0	2	2	0	32	15,2	22,0	12,5	yes	random	HPLC/UV	bulk, retail
grape juice	1996	8		0	5	3	0	0	17	6,4	6,4	5,7	yes	random	HPLC/UV	bulk, retail
grape juice	1997	5	4 - 5	2	1		2	0	37	15,5	25,3	4	yes	random	HPLC/UV	bulk, retail
grape juice	1998	47	4 - 5	21	12	5	9	0	41	9,8	17,1	4,3	yes	random	HPLC/UV	bulk, retail
grape juice	1999	5	4 - 8	5	0	0	0	0					yes	random	HPLC/UV	bulk, retail
grape juice	2000	21	8	19	0	2	0	0	22	3,1	19,5	1.3 (<LOQ)	yes	random	HPLC/UV	bulk, retail
baby food	1996	10	8 - 10	9	0	1	0	0	10	2,3	10	1,5	yes	random	HPLC/UV	bulk, retail
baby food	1997	11	5 - 8	11	0	0	0	0					yes	random	HPLC/UV	bulk, retail
baby food	1998	35	5 - 8	33	1	1	0	0	13	1,4	11	0.8 (<LOQ)	yes	random	HPLC/UV	bulk, retail
baby food	2000	16	8	16	0	0	0	0					yes	random	HPLC/UV	bulk, retail
baby food	2001	11	8	11	0	0	0	0					yes	random	HPLC/UV	bulk, retail
grape must	1996	37	4	5	5	8	9	10	162	38,4	44,3	25,0	yes	random	HPLC/UV	bulk, retail
grape must	1997 [1]	110	5	69	13	15	4	9	107	10,4	26,6	0.8 (<LOQ)	yes	random	HPLC/UV	bulk, retail
grape must	1998	11	8	0	3	2	1	5	750	120,5	120,5	28	yes	random	HPLC/UV	bulk, retail
grape must	2000	6	8	4	0	2	0	0	23,6	6,6	17,0	1.3 (<LOQ)	yes	random	HPLC/UV	bulk, retail

Food or group	Ref and year	No samples	LOQ	No samples <LOQ	No samples containing patulin in the range LOQ-69.9, 70-174,9,175-350,>350				Max value	Mean (1)	Mean (2)	Median	Max value / 7	Mean(1) / 7	Mean(2) / 7	Median / 7	Evidence of QA	Random or target	Analytic method	Sampling strategy
					LOQ-69.9	70-174.9	175-350	>350												
apple juice conc	1996	11	5	2	2	2	5	0	315	140,0	170,9	137	45	20,0	24,4	19,6	yes	random	HPLC/UV	bulk, retail
apple juice conc	1997	214	5	2	69	52	50	41	1227	214,6	216,7	129,5	175,3	30,7	31,0	18,5	yes	random	HPLC/UV	bulk, retail
apple juice conc	1998	32	5	1	22	5	2	2	414	82,3	82,3	38,5	59,1	11,8	11,8	5,5	yes	random	HPLC/UV	bulk, retail
apple juice conc	2000	9	5 - 20	6	3	0	0	0	65	16,8	45,3	3,3	9,3	2,4	6,5	0.5 (<LOQ)	yes	random	HPLC/UV	bulk, retail

Belgium

Food or group	Ref and year	No Samples	LOD/ LOQ	No samples <LOD/LOQ	No samples containing patulin in the range LOD/LOQ –9.9, 10-24.9, 25-50, >50				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic. Method	Sampling strategy
					LOQ-9.9	10-24.9	25-50	>50								
apple juice	1997	50	LOQ: 5	32	6	11	1		30 (a)	5.15	12.8	<5	+- yes	Random	HPLC-UV ISO 8128-1:1993	retail
apple juice	1999	10	LOQ: 10	8		1		1	52	8.2	34.5	<10	Yes	Random	HPLC-UV	retail
apple juice	2000	27	LOQ: 5	22	1	3		1	59	4.4	20	<5	Yes	Random	HPLC-UV	retail
apple juice	2001	30	LOQ: 7-8	28	1	1			19	2.2	14	<8	Yes	Random	HPLC-UV	retail
apple compote	2000	6	LOQ: 5	6					<5	<5	<5	<5	+- yes	Random	HPLC-UV	retail
apple compote	2001	5	LOQ: 16-21	5					< 20	<20	<20	<20	+- yes	Random	HPLC-UV	retail
baby-food (b)	2000	4	LOQ: 5	4					<5	<5	<5	<5	(+-) yes	Random (containing apple)	HPLC-UV	retail
baby-food (b)	2001	15	LOQ: 7-17	14		1			15	2.3	15	<LOQ	(+-) yes	Random (containing apple or grape)	HPLC-UV	retail
grape juice	2000	5	LOQ: 6	5					<6	<6	<6	<6	+- yes	Random	HPLC-UV	retail
grape juice	2001	5	LOQ: 7	4			1		36	8.1	36	<7	+- yes	Random	HPLC-UV	retail
canned pears	2000	5	LOQ: 5	5					<5	<5	<5	<5	+- yes	Random	HPLC-UV	retail
cider	2001	5	LOQ: 7	5					<7	<7	<7	<7	Yes	Random	HPLC-UV	retail

(a) one sample of concentrated juice contained 94 µg/l, however this means 19 µg/l as consumed (5 x diluted as advised), so this sample is treated as containing 19 µg/l and is not the maximum.
(b) results given as sold, not as consumed, although most products are concentrated juices to be diluted

France

Food or group	Ref and year	No samples	LOD	No Samples <LOD	No samples containing patulin in the range				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic method	Sampling strategy
					<10	10-24.9	25-50	>50								
apple juice	DGCCRF-1998-2001	67	2	30	21	12	3	1	130	8.37	14.3	3	Yes	Control	HPLC/UV	
apple puree	DGCCRF-2000	17	0.7	12	4	0	0	1	86	6.28	20.5	0.35	Yes	Control	HPLC/UV	
cider	DGCCRF-1998-2001	92	2	64	8	14	5	1	101	6.18	18.0	1	Yes	Control	HPLC/UV	
drink based on cider	DGCCRF-1999-2001	118	2	25	14	16	13	50	1604	152.8	193.5	28.5	Yes	Control	HPLC/UV	
baby food	DGCCRF-2000	10	0.7	8	1	0	0	1	58	6.3	30.1	0.35	Yes	Control	HPLC/UV	
apple juice	UNPJF-1997-2000	122	5	73	31	15	3	0	37	5.3	11.6	1.7			HPLC/UV	

Germany

Food or group	Ref and year	No samples	LOD	No Samples <LOD	No samples containing patulin in the range				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic method	Sampling strategy
					<10	10-24.9	25-50	>50								
apple juice	1997	337	2-5/5-13,6	251	38	29	13	6	279	8,1	21,3	5	yes	random	HPLC/UV	retail
apple juice	1998	313	2-5/5-13,6	243	24	31	13	2	100	6,4	17,2	5	yes	random	HPLC/UV	retail
apple juice	1999	279	2-5/5-10	209	16	27	23	4	77	7,6	22	3,6	yes	random	HPLC/UV	retail
apple juice	2000	249	2-5/5-10	182	30	23	8	6	415	9,7	30	2,5	yes	target, random	HPLC/UV	retail
apple juice	2001	70	2-5/5-10	43	18	4	1	4	155	8,8	18,9	4,5	yes	random	HPLC/UV	retail
apple juice	1997	66	10/20	66	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
apple juice	1998	31	10/20	31	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
apple juice	1999	51	10/20	49	0	1	1	0	32	10,7	28	10	yes	random	HPLC/UV	retail
apple juice	2000	14	10/20	11	0	0	1	2	95	21,1	62	10	yes	random	HPLC/UV	retail
apple juice	2001	9	10/20	9	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
apple concentrate	1997-2001	5	10/20	5	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
apple drink	1998-2000	64	2-3/5	53	6	5	0	0	23	3,1	10,4	1,5	yes	random	HPLC/UV	retail
quince juice	1997-2000	4	10/20	4	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
quince juice	1997-2001	3	3/10	3	0	0	0	0	-	3,8	-	5	yes	random	HPLC/UV	retail
pear juice	1997-2001	19	10/20	18	0	0	0	1	91	14,3	91	10	yes	random	HPLC/UV	retail
pear juice	1997-2001	58	2-5/5-10	48	7	2	1	0	25,4	3,7	8,2	2,5	yes	random	HPLC/UV	retail
pear nectar	1997	2	5/10	2	0	0	0	0	-	2,5	-	2,5	yes	random	HPLC/UV	retail
grape juice	1997	3	10/20	3	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
grape juice	1999-2000	61	3-5/5-10	59	0	0	2	0	31,5	4,3	29,3	2,5	yes	random	HPLC/UV	retail
berry juice	1999	1	10/20	1	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
berry juice	1998-2000	6	3/10	6	0	0	0	0	-	5	-	5	yes	random	HPLC/UV	retail
stone fruit juice	1997	2	10/20	2	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
stone fruit juice	1997-2000	8	5/10	8	0	0	0	0	-	3,8	-	3,8	yes	random	HPLC/UV	retail
juice of a fruit mix	1997-2001	20	10/20	20	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail

Food or group	Ref and year	No samples	LOD	No Samples <LOD	No samples containing patulin in the range				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic method	Sampling strategy
					<10	10-24.9	25-50	>50								
juice of a fruit mix	1997-2001	57	2,3-5/5-10	56	0	0	1	0	30	3,1	30	1,8	yes	random	HPLC/UV	retail
juice with exotic fruits	1997	2	10/20	2	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
juice with exotic fruits	1998-2000	7	3/10	7	0	0	0	0	-	5	-	5	yes	random	HPLC/UV	retail
tomato juice	1997	1	-/10	1	0	0	0	0	-	5	-	5	yes	random	HPLC/UV	retail
tomato puree concentrated	2000	10	10/20	10	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
apple puree	1997-2001	16	10/20	16	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
apple puree	1997-2000	33	3-5/5-10	33	0	0	0	0	-	1,6	-	1,5	yes	random	HPLC/UV	retail
tomato puree	2000	13	3/5	12	1	0	0	0	3,5	1,7	3,5	1,5	yes	random	HPLC/UV	retail
apple and mango/apple pulp	1998-1999	2	5/10	2	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
apple compote	1997-1998	2	10/20	2	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
apple compote	1998	3	5/10	3	0	0	0	0	-	2,5	-	2,5	yes	random	HPLC/UV	retail
baby food	1997-2001	34	10/20	33	0	0	0	1	68	11,7	68	10	yes	random	HPLC/UV	retail
baby food	1997-2001	80	3-5/5-10	78	0	0	2	0	44	4,8	42,5	5	yes	random	HPLC/UV	retail
apple wine	1997-2000	3	5/10	3	0	0	0	0	-	2,5	-	2,5	yes	random	HPLC/UV	retail
apple wine	1998	3	10/20	3	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
cranberry	1998	1	5/10	1	0	0	0	0	-	2,5	-	2,5	yes	random	HPLC/UV	retail
jam and jelly	1997-2000	13	-/10	13	0	0	0	0	-	5	-	5	yes	random	HPLC/UV	retail
jam and jelly	1999-2001	10	10/20	10	0	0	0	0	-	10	-	10	yes	random	HPLC/UV	retail
fruit dry	1998	1	-/10	1	0	0	0	0	-	5	-	5	yes	random	HPLC/UV	retail
fruit vinegar	1998	12	5/10	12	0	0	0	0	-	2,5	-	2,5	yes	random	HPLC/UV	retail

Data collected by the German federation of fruit juice industry

Food or group	Ref and year	No samples	LOD	No Samples <LOD	No samples containing patulin in the range				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic method	Sampling strategy
					<10	10-24.9	25-50	>50								
apple juice	1988-2001	631	-/5	525	14	50	22	20	54*	2,95*	N.a..	2,70*	yes		HPLC/UV	
apple concentrat	1988-2001	4931	-/5	1956	655	1708	656	606	3533**	27,2**	N.a..		yes		HPLC/UV	

N.a.. No answer

* evaluation with a filter: 2s, 613 samples are evaluated, if the sample value <LOD the value equates with 0

** evaluation with a filter: 2s, 4924 samples are evaluated, if the sample value <LOD the value equates with 0

Food or group	Ref and year	No samples	LOD	No Samples <LOD	No samples containing patulin in the range				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic method	Sampling strategy
					<10	10-19,9	25-49,9	>50								
apple concentrate	1997	285		7	21	42	18	11	N.a.	N.a.	N.a.	N.a.	yes			
apple juice of concentrate		201		45	39	12	2	1	N.a.	N.a.	N.a.	N.a.	yes			
apple juice		114		78	14	6	1	0	N.a	N.a	N.a	N.a	yes			
apple concentrate	1998	320		9	18	38	24	10	N.a.	N.a.	N.a.	N.a.	yes			
apple juice of concentrate		180		39	46	10	3	1	N.a.	N.a.	N.a.	N.a.	yes			
apple juice		128		69	23	5	2	0	N.a.	N.a.	N.a.	N.a.	yes			
apple concentrate	1999	314		11	29	41	14	4	N.a.	N.a.	N.a.	N.a.	yes			
apple juice of concentrate		151		48	35	14	1	1	N.a.	N.a.	N.a.	N.a.	yes			
apple juice		88		70	21	6	2	0	N.a.	N.a.	N.a.	N.a.	yes			
apple concentrate	2000	240		32	21	20	18	8	N.a	N.a	N.a	N.a	yes			
apple juice of concentrate		132		34	40	18	7	0	N.a.	N.a.	N.a.	N.a.	yes			
apple juice		81		71	25	2	1	0	N.a.	N.a.	N.a.	N.a.	yes			
apple concentrate	2001	206		39	21	19	11	9	N.a.	N.a.	N.a.	N.a.	yes			
apple juice of concentrate		103		37	44	13	4	1	N.a.	N.a.	N.a.	N.a.	yes			
apple juice		181		68	27	3	1	0	N.a.	N.a.	N.a.	N.a.	yes			

N.a..No answer

Italy

Food or group	Ref and year	No samples	LOD/ LOQ	No samples <LOD/ LOQ	No samples containing patulin in the range LOD/LOQ –9,.9, 10-24,9, 25-50, >50				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic method	Sampling strategy
					<10	10-24.9	25-50	>50								
apple unaffected with peel	A 1999	21	0.2/0,75	4	11	1	-	5	1166	123,07	152,00	1,68	yes	Random	HPLC-UV	Commercial products
apple unaffected without peel	A 1999	21	0.2/0,75	14	6	-	-	1	93	5,5	16,31	0,10	yes	Random	HPLC-UV	Commercial products
rotten area	A 1999	21	0,20/0,75	-	2	4	-	15	113343	12463	12463	2900	yes	Random	HPLC-UV	Commercial products
apple juice	A 97-00	21	0,20/0,75	3	12	2	1	3	1150	119,27	139,14	3,14	yes	Random	HPLC-UV	Commercial products
apple puree	A 98-99	4	0,20/0,75	2	2	-	-	-	3,16	0,85	1,60	0,1	yes	Random	HPLC-UV	Commercial products
apple baby food (homogenised)	A 97-98	14	0,20/0,75	1	13	-	-	-	6,39	2,79	2,99	2,31	yes	Random	HPLC-UV	Commercial products
pear	B 98-01	9	0,5-5,0/ 1,0-10,0	4	1	-	-	4	720,00	230,25	414,25	1,23	yes	Random	HPLC-UV	Experimental products
peach	B 98-01	7	0,5-5,0/ 1,0-10,0	6	-	-	1	-	23,29	4,83	23,29	2,50	yes	Random	HPLC-UV	Experimental products
apple juice	B 1999	3	5	-	-	--	-	3	92,70	86,20	86,20	86,20	yes	Target	HPLC-UV	Commercial products
apple	C 1997	3	3,1/10	3	-	-	-	-	0,16	0,16	-	0,16	yes	Random	HPLC-UV	Commercial products
pear	C 1997	3	3,1/10	3	-	-	-	-	0,16	0,16	-	0,16	no	Random	HPLC-UV	Commercial products
apple juice	C 1997	15	0,03/10	8	7	-	-	-	1,05	0,17	0,36	0,02	no	Random	HPLC-UV	Commercial products
pear juice	C 1997	3	0,03/10	3	-	-	-	-	0,02	0,02	-	0,02	no	Random	HPLC-UV	Commercial products
apple nectar	C 1997	3	0,03/10	3	-	-	-	-	0,02	0,02	-	0,02	no	Random	HPLC-UV	Commercial products
apple baby food (homogenised)	C 1997	12	0,31/1,0	9	3	-	-	-	3,19	0,72	2,42	0,16	no	Random	HPLC-UV	Commercial products
apple-banana baby food (homogenised)	C 1997	24	0,31/1,0	13	11	-	-	-	5,50	1,30	2,64	0,16	no	Random	HPLC-UV	Commercial products
apple-cheese baby food (homogenised)	C 1997	6	0,31/1,0	6	-	-	-	-	0,16	0,16	-	0,16	no	Random	HPLC-UV	Commercial products

Food or group	Ref and year	No samples	LOD/ LOQ	No samples <LOD/ LOQ	No samples containing patulin in the range LOD/LOQ –9,9, 10-24,9 , 25-50, >50				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic method	Sampling strategy
					<10	10-24.9	25-50	>50								
Apple-biscuit baby food (homogenised)	C 1997	6	0,31/1,0	2	4	-	-	-	3,63	1,61	2,34	1,38	no	Random	HPLC-UV	Commercial products
Mixed-fruit Baby food (homogenised)	C 1997	12	0,31/1,0	12	-	-	-	-	0,16	0,16	-	0,16	no	Random	HPLC-UV	Commercial products
apple dry*	D 99-01	7	50	4	-	-	-	3	320,00	90,0	176,67	25,00	no	Target	HPLC-UV	Commercial products
apple puree	D 99-01	7	10-20	7	-	-	-	-	10	7,14	-	5,00	no	Target	HPLC-UV	Commercial products
apple nectar*	D 99-01	2	25	2	-	-	-	-	12,5	12,5	-	12,50	no	Target	HPLC-UV	Commercial products
apple juice	D 99-01	22	2-20/ 4	2	4	7	3	6	143,00	37,99	41,69	19,00	no	Target	HPLC-UV	Commercial products
pear juice	D 99-01	8	2-20/ 4	3	3	-	1	-	20 (LOD/ 2)	5,21	7,74	2,55	no	Target	HPLC-UV	Commercial products
pear puree	D 99-01	5	10/20	5	-	-	-	-	10	6,00	-	5,00	no	Target	HPLC-UV	Commercial products
pear nectar*	D 99-01	2	25	2	-	-	-	-	12,5	12,5	-	12,5	no	Target	HPLC-UV	Commercial products
lemon juice*	D 99-01	1	50	1	-	-	-	-	25	25	-	25,00	no	Target	HPLC-UV	Commercial products
tangerine juice*	D 99-01	1	50	1	-	-	-	-	25	25	-	25,00	no	Target	HPLC-UV	Commercial products
apple baby food (homogenised)*	D 99-01	3	25	3	-	-	-	-	12,5	12,5	-	12,50	no	Target	HPLC-UV	Commercial products
pear baby food (homogenised)*	D 99-01	2	25	2	-	-	-	-	12,5	12,5	-	12,50	no	Target	HPLC-UV	Commercial products
plum (baby food) homogenised*	D 99-01	1	25	1	-	-	-	-	12,5	12,5	-	12,50	no	Target	HPLC-UV	Commercial products
apple baby food (milk flour)	C 1997	6	0,31/1,0	3	3	-	-	-	0,97	0,55	0,94	0,53	no	Random	HPLC-UV	Commercial products

* All marked commodities refer to the values that have not been taken into consideration for intake calculation because they were considered not to be representative for Italy

Norway Units: µg/l

Food or group	Ref and year	No samples	LOQ	No samples <LOD/LOQ	No samples containing patulin in the range LOD/LOQ –9.9, 10-24.9, 25-50, >50				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic method	Sampling strategy
					<10	10-24.9	25-50	>50								
concentrates to producers, Norwegian origin	*	13	5	12	0	1	0	0	12,0	3,2	-	2,5	yes	random	HPLC-UV	bulk/retails
concentrates to producers, foreign origin	*	21	5	10	0	3	5	3	65,6	18,6	-	10,0	yes	random	HPLC-UV	bulk/retails
concentrates for sale to consumers	*	11	5	8	0	3	0	0	21,5	7,0	-	2,5	yes	random	HPLC-UV	bulk/retails
syrup concentrates for sale to consumers	*	9	5	9	0	0	0	0	<5	2,5	-	2,5	yes	random	HPLC-UV	retails
apple juice, fresh, Norwegian origin**	*	11	5	10	1	0	0	0	6,0	2,5	-	2,5	yes	random	HPLC-UV	retails
apple juice, fresh, foreign origin**	*	12	5	7	3	2	0	0	20,4	6,0	-	2,8	yes	random	HPLC-UV	retails
apple juice**	*	34	5	19	8	7	0	0	23,9	6,6	-	2,5	yes	random	HPLC-UV	retails
fruit juice and -nectar with apple	*	19	5	16	2	0	1	0	32,4	4,5	-	2,5	yes	random	HPLC-UV	retails
apple nectar	*	67	5	57	7	3	0	0	12,1	3,2	-	2,5	yes	random	HPLC-UV	retails
apple cider	*	84	5	79	4	1	0	0	16,2	2,8	-	2,5	yes	random	HPLC-UV	retails

* SNT-report 2000, samples collected 1999 and 2000

** Summary of the columns with apple juice

apple juice	*	57	5	36	12	9	0	0	23,9	5,7	-	2,5	yes	random	HPLC-UV	retails

For the intake calculations the Norwegian participants summed up all the columns concerning apple juice which were marked with two stars.

Portugal

Food or group	Ref and year	No samples	LOQ/ LOD	N° samples <LOQ/LOD	No. samples containing patulin in the range LOD/LOQ - 9.9, 10.0 - 24.9, 25 - 50, > 50				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic. method	Sampling strategy
					<10	10-24.9	25-50	>50								
clear apple juice	1/2001	7	5/15	7<LOD	0	0	0	0	<LOD	0	0	0	yes	random	HPLC	bulk
cloudy apple juice	1/2001	8	5/15	2<LOD 5<LOQ	2	1	1	0	25,2	8,7	15,2	7,8	yes	random	HPLC	bulk
apple and other fruits cloudy juice	1/2001	5	5/15	4<LOD 1<LOQ	1	0	0	0	<LOQ	0	0	0	yes	random	HPLC	bulk
milk and apple juice	1/2001	6	5/15	6<LOD	0	0	0	0	<LOD	0	0	0	yes	random	HPLC	bulk
cloudy pear juice	1/2001	8	5/15	5<LOD	0	2	0	0	23,4	5,1	18,0	0	yes	random	HPLC	bulk
pear and other fruits cloudy juice	1/2001	2	5/15	2<LOQ	2	0	0	0	<LOQ	8,4	8,4	8,4	yes	random	HPLC	bulk
milk and pear juice	1/2001	2	5/15	2<LOD	0	0	0	0	<LOD	0	0	0	yes	random	HPLC	bulk
apple puree	1/2001	3	5/15	3<LOD	0	0	0	0	<LOD	0	0	0	yes	random	HPLC	bulk
pear puree	1/2001	2	5/15	2<LOD	0	0	0	0	<LOD	0	0	0	yes	random	HPLC	bulk

Spain

Food or group	Ref and year	No samples	LOD / LOQ	No samples <LOD/LOQ	No samples containing patulin in the range LOD/LOQ –9.9, 10-24.9, 25-50, >50				Max Value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic. method	Sampling strategy
					<10	10-24.9	25-50	>50								
apple juices	Ref 1 1999	20	2.5/5	17	2	1	0	0	13.6	2	9	0.83 (a)	yes	random	HPLC-UV	retails
apple juices	Ref 2 1997	14	/5	14	0	0	0	0	-	0.83 (a)	-	-	yes	Random	HPLC-DAD	retails
nectars	Ref 2 1997	2	/5	2	0	0	0	0	-	0.83 (a)	-	-	yes	Random	HPLC-DAD	retails
cider with gas	Ref 2 1997	9	/5	9	0	0	0	0	-	0.83 (a)	-	-	yes	Random	HPLC-DAD	retails
natural cider	Ref 2 1997	25	/5	25	0	0	0	0	-	0.83 (a)	-	-	yes	Random	HPLC-DAD	retails

(a) Results <LOQ ➪ LOQ/6 = 5/6 = 0.83 µg/kg

Ref.1: UNPUBLISHED DATA. Internal survey conducted by Centro Nacional de Alimentación (Ministry of Health and Consumption)

Ref.2: ARMENTIA, A., JALON, M., URIETA, I. and MACHO, M.L., 2000, Vigilancia de la presencia de patulina en zumos de manzana y sidras comercializados en la Comunidad Autónoma del País Vasco. Alimentaria, 310, 65-70.

Sweden

Food or groups	Ref and year	No. of samples	LOD / LOQ	No. of samples < LOD/LOQ	No. of samples containing patulin in the range LOD/LOQ-9.9, 10-24.9 25-50, >50				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic Method	Sampling strategy
					<10	10-24.9	25-50	>50								
blueberry soups or purees	1997	42	2	42	0	0	0	0	< 2	1			yes	random	HPLC-UV	retails
apple juice	1997	39	2	34	4	0	1	0	25	1,4	10,4		yes	random	HPLC-UV	retails
mixed juice	1997	19	2	19	0	0	0	0	<2	1			yes	random	HPLC-UV	retails

United Kingdom

Food or group	Ref and year	No samples	LOD / LOQ	No samples <LOD/LOQ	No samples containing patulin in the range LOD/LOQ –9.9, 10-24.9, 25-50, >50				Max value	Mean (1)	Mean (2)	Median	Evidence of QA	Random or target	Analytic. method	Sampling strategy
					<10	10-24.9	25-50	>50								
concentrate juice (clear)	1998	101	7/20	76	82	17	2	0	34.91	5.32	10.41	2.5	YES	Random	HPLC-UV	Retail
concentrate juice (clear)	2000	758	7/20	550	614	111	32	0	49.0	6.88	15.87	3.5	NO	Moni-toring	HPLC-UV	Bulk
freshly pressed juice (cloudy)	1998	199	7/20	97	116	50	23	10*	193.4*	14.33	14.30	7.1	YES	Random	HPLC-UV	Retail
freshly pressed juice (cloudy)	1999	124	7/20	12	19	74	31	0	38.75	18.35	19.01	18.75	NO	Moni-toring	HPLC-UV	Bulk
freshly pressed juice (cloudy)	2000	1252	7/20	139	218	504	530	0	49.0	22.79	25.21	22.0	NO	Moni-toring	HPLC-UV	Bulk
freshly pressed juice (cloudy)	2001	747	7/20	51	83	348	315	1	69.0	23.57	24.26	21.0	NO	Moni-toring	HPLC-UV	Bulk

* These results were not included to calculate the mean as patulin levels found to be over 50µg/kg would not be allowed for retail sale.

Table 1B1. Summary of patulin occurrence in juice from data reported in tables 1A

Units: µg/kg

Country	Food or group	No samples	Maximum value	Mean (1)	Mean(2)	Median
Austria						
	apple juice	242	50	7,03	14,93	1.6 (<LOQ)
	apple juice concentrate	266	1227	161,49	168,26	67,50
	(concentrate value / 7)		175,3	23,1	24,0	9,6
	grape juice	86	41	8,24	15,15	4,00
	grape must	164	750	23,97	44,94	5,00
Belgium						
	apple juice	117	59	4.5	16	< LOQ
	grape juice	10	36	4.6	36	< LOQ
	cider	5	< LOQ	< 3,75	< LOQ	< 3,75
France						
	apple juice DGCCCRF	67	130	8.37	14.3	3
	apple juice UNPJF	122	37	5,3	11,6	1,7
	cider	92	101	6.18	18.0	1
	drink based on cider	118	1604	152.8	193.5	28.5
Germany						
	apple juice	1248	415	7,9	22,1	4,2
	apple juice°	171	95	11,1	48	10
	apple concentrate°	5	-	10	-	10
	apple drink	64	23	3,1	10,4	1,5
	pear juice°	19	91	14,3	91	10
	pear juice	58	25,4	3,7	8,2	2,5
	pear nectar	2	-	2,5	-	2,5
	grape juice°	3	-	10	-	10
	grape juice	61	31,5	4,3	29,3	2,5
	quince juice°	4	-	10	-	10
	quince juice	3	-	3,8	-	5
	berry juice°	1	-	10	-	10
	berry juice	6	-	5	-	5
	stone fruit juice°	2	-	10	-	10
	stone fruit juice	8	-	3,8	-	3,8
	juice of a fruit mix°	20	-	10	-	10
	juice of a fruit mix	57	30	3,1	30	1,8
	juice with exotic fruits°	2	-	10	-	10
	juice with exotic fruits	7	-	5	-	5
	apple wine	3	-	2,5	-	2,5
	apple wine°	3	-	10	-	10
Sampled by the fruit juice industry						
	apple juice	631	54[1]	2,95[1]	N.a.	2,70[1]
	apple concentrate	4931	3533[2]	27,2[2]	N.a	

° detection with LOQ >10µg/kg

[1] exploration with a filter: 2s, 613 samples are evaluated, if the sample value <LOD the value equate with 0

[2] exploration with a filter: 2s, 4924 samples are evaluated, if the sample value <LOD the value equate with 0

N.a.: No answer

Country	Food or group	No samples	Maximum value	Mean (1)	Mean (2)	Median
Italy						
	apple juice A	21	1150,00	119,27	139,14	3,14
	apple juice B	3	92,70	86,20	86,20	86,20
	apple juice C	15	1,05	0,17	0,36	0,02
	apple juice D	22	143,00	37,99	41,69	19,00
	apple nectar C	3	0,02	0,02	-	0,02
	apple nectar D[3]	2	12,5	12,5	-	12,5
	pear juice C	3	0,02	0,02	-	0,02
	pear juice D[3]	8	20 (LOD/2)	5,21	7,74	2,55
	pear nectar D[3]	2	12,5	12,5	-	12,5
	citrus juice (tangerine, lemon)[3]	2	25,00	25,00	-	25,00
Norway Units: µg/l						
	concentrates to producers, Norwegian origin	13	12,0	3,2	-	2,5
	concentrates to producers, foreign origin	21	65,6	18,6	-	10,0
	concentrates for sale to consumers	11	21,5	7,0	-	2,5
	syrup concentrates for sale to consumers	9	<5	2,5	-	2,5
	apple juice	57	23,9	5,7	-	2,5
	Fruit juice and -nectar with apple	19	32,4	4,5	-	2,5
	apple nectar	67	12,1	3,2	-	2,5
	apple cider	84	16,2	2,8	-	2,5
Portugal						
	clear apple juice	7	<LOD	2,5	0	2,5
	cloudy apple juice	8	25,2	8,7	15,2	7,8
	apple and other fruits cloudy juice	5	<LOQ	2,5	0	2,5
	milk and apple juice	6	<LOD	2,5	0	2,5
	cloudy pear juice	8	23,4	5,1	18,0	0
	pear and other fruits cloudy juice	2	<LOQ	8,4	8,4	8,4
	milk and pear juice	2	<LOD	2,5	0	2,5

[3] All marked commodities refer to the values that have not been taken into consideration for intake calculation because they were considered to be not representative for Italy

Country	Food or group	No samples	Maximum value	Mean (1)	Mean (2)	Median
Spain						
	Ref 1 apple juices	20	13.6	2	9	0.83
	Ref 2 apple juices	14	-	0.83	-	-
	Ref 2 nectars	2	-	0.83	-	-
	Ref 2 cider with gas	9	-	0.83	-	-
	Ref 2 natural cider	25	-	0.83	-	-
Sweden						
	apple juice	39	25	1,4	10,4	1
	mixed juice	19	< LOD	1		
United Kingdom						
	concentrate juice (clear)	101	34.91	5.32	10.41	2.5
	concentrate juice (clear)	758	49.0	6.88	15.87	3.5
	freshly pressed juice (cloudy)	199	193.4[4]	14.33	14.30	7.1
	freshly pressed juice (cloudy)	124	38.75	18.35	19.01	18.75
	freshly pressed juice (cloudy)	1252	49.0	22.79	25.21	22.0
	freshly pressed juice (cloudy)	747	69.0	23.57	24.26	21.0

[4] These results were not included to calculate the mean as patulin levels found to be over 50µg/kg would not be allowed on retail sale.

Ref.1: UNPUBLISHED DATA. Internal survey conducted by Centro Nacional de Alimentación (Ministry of Health and Consumption)

Ref.2: ARMENTIA, A., JALON, M., URIETA, I. and MACHO, M.L., 2000, Vigilancia de la presencia de patulina en zumos de manzana y sidras comercializados en la Comunidad Autónoma del País Vasco. Alimentaria, 310, 65-70.

Table 1B2. Summary of patulin occurrence in puree from data reported in tables 1A

Units: µg/kg

Country	Food or group	No samples	Maximum value	Mean (1)	Mean (2)	Median
Belgium						
	apple compote	6	< LOQ	< 2,5	< LOQ	< LOQ
	apple compote	5	< LOQ	< 10	< LOQ	< LOQ
France						
	apple puree	17	86	6.28	20.5	0.35
Germany						
	apple puree°	16	-	10	-	10
	apple puree	33	-	1,6	-	1,5
	apple and mango/apple pulp°	2	-	10	-	10
	apple compote°	2	-	10	-	10
	apple compote	3	-	2,5	-	2,5
Italy						
	apple puree	7	10	7,14	-	5,0
	apple puree	4	3,16	0,85	1,60	0,1
	pear puree	5	10	6,0	-	5,0
Portugal						
	apple puree	3	<LOD	2,5	0	2,5
	pear puree	2	<LOD	2,5	0	2,5
Sweden						
	blueberry soup and purees	42	< LOD	1		

° detection with LOQ >10µg/kg

Table 1B3. Summary of patulin occurrence in baby food from data reported in table 1A

Units: µg/kg

Country	Food or group	No samples	Maximum value	Mean (1)	Mean(2)	Median
Austria						
	food for infants and young children	83	13	1,48	10,67	1,3 (<LOQ)
Belgium						
	babyfood	19	15	2	15	< LOQ
France						
	baby food	10	58	6.3	30.1	0.35
Germany	baby food°	34	68	11,7	68	10
	baby food	80	44	4,8	42,5	5
Italy						
	baby food (homogenised)	80	12,50	2,08	2,73	0,16
	baby food (milk flour)	6	0,97	0,55	0,94	0,53

° detection with LOQ >10µg/kg

Table 1B4. Summary of patulin occurrence for other commodities from data reported in table 1A

Units: µg/kg

Country	Food or group	No samples	Maximum value	Mean (1)	Mean (2)	Median
Belgium						
	canned pears	5	< LOQ	< 2,5	< LOQ	< 2,5
Germany						
	tomato juice	1	-	5	-	5
	tomato puree concentrated°	10	-	10	-	10
	tomato puree	13	3,5	1,7	3,5	1,5
	jam and jelly	13	-	5	-	5
	jam and jelly°	10	-	10	-	10
	fruit dry	1	-	5	-	5
	fruit vinegar	12	-	2,5	-	2,5
	cranberry	1	-	5	-	5
Italy						
	apple dry*	7	320,00	90,00	176,67	25,00

° detection with LOQ >10µg/kg

* All marked commodities refer to the values that have not been taken into consideration for intake calculation because considered not to be representative for the Italy

Table 1B5. Summary of patulin occurrence for fresh fruit from data reported in tables 1A

Units: µg/kg

Country	Food or group	No samples	Maximum value	Mean (1)	Mean (2)	Median
Italy	apples (with peel)	24	1166	107,70	152,00	1,28
	apples (without peel)	21	93	5,5	16,31	0,10
	pears	12	720.00	172,72	414,25	0,25
	peaches	7	23,29	4,83	23,29	2,50

Table 1C. Total Number of samples from each country

Country	**Number of samples**
Austria	841
Belgium	167
France	426
Germany	1978 (8286)**
Italy	190 (+85)*
Norway	281
Portugal	43
Spain	70
Sweden	100
UK	3181
Total	**7277**

* samples of apples, pears and peaches have not been taken into account for the total number of samples

** not evaluated because the calculation criteria (mean 1, 2 and median) were not in compliance

Tables 2A. Summary of estimate of food consumption for an average person belonging to specific groups

Austria

Adults n = 3059, all population

Food or group	Ref Year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	ASNS*1994/1996	24-h-recall	consumption data	Age = 25 n=693	continuous	national	63,3	0,0	312,5		urban/rural	representative
grape juice	ASNS*1994/1996	24-h-recall	consumption data	Age = 25 n=693	continuous	national	5,9	0,0	29,3		urban/rural	representative
apple juice	ASNS*1994/1996	24-h-recall	consumption data	Age 26 - 35 n=1013	continuous	national	38,8	0,0	259,0		urban/rural	representative
grape juice	ASNS*1994/1996	24-h-recall	consumption data	Age 26 - 35 n=1013	continuous	national	3,6	0,0	24,3		urban/rural	representative
apple juice	ASNS*1994/1996	24-h-recall	consumption data	Age 36 – 45 n=704	continuous	national	25,8	0,0	168,0		urban/rural	representative
grape juice	ASNS*1994/1996	24-h-recall	consumption data	Age 36 – 45 n=704	continuous	national	2,4	0,0	15,7		urban/rural	representative
apple juice	ASNS*1994/1996	24-h-recall	consumption data	Age 46 - 55 n=474	continuous	national	25,8	0,0	168,0		urban/rural	representative
grape juice	ASNS*1994/1996	24-h-recall	consumption data	Age 46 - 55 n=474	continuous	national	2,4	0,0	15,7		urban/rural	representative
apple juice	ASNS*1994/1996	24-h-recall	consumption data	Age >56 n=175	continuous	national	20,6	0,0	156,3		urban/rural	representative
grape juice	ASNS*1994/1996	24-h-recall	consumption data	Age >56 n=175	continuous	national	1,9	0,0	14,7		urban/rural	representative

*Austrian Study of Nutritional Status (Inst. of Nutritional Sciences, Vienna, Univ.Prof.Dr.I.Elmadfa)

Adults n (total)= 3059, consumers only

Food or group	Ref Year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	ASNS*1994/1996	24-h-recall	consumption data	Age = 25 n=172	continuous	national	301	250	800		urban/rural	representative
grape juice	ASNS*1994/1996	24-h-recall	consumption data	Age = 25 n=12	continuous	national	362	300	-		urban/rural	representative
apple juice	ASNS*1994/1996	24-h-recall	consumption data	Age 26 - 35 n=224	continuous	national	351	300	650		urban/rural	representative
grape juice	ASNS*1994/1996	24-h-recall	consumption data	Age 26 - 35 n=17	continuous	national	263	250	-		urban/rural	representative
apple juice	ASNS*1994/1996	24-h-recall	consumption data	Age 36 – 45 n=149	continuous	national	245	200	499		urban/rural	representative
grape juice	ASNS*1994/1996	24-h-recall	consumption data	Age 36 – 45 n=11	continuous	national	307	250	-		urban/rural	representative
apple juice	ASNS*1994/1996	24-h-recall	consumption data	Age 46 - 55 n=68	continuous	national	361	250	760		urban/rural	representative
grape juice	ASNS*1994/1996	24-h-recall	consumption data	Age 46 - 55 n=14	continuous	national	415	300	-		urban/rural	representative
apple juice	ASNS*1994/1996	24-h-recall	consumption data	Age >56 n=24	continuous	national	300	250	-		urban/rural	representative
grape juice	ASNS*1994/1996	24-h-recall	consumption data	Age >56 n=3	continuous	national	215	200	-		urban/rural	representative

*Austrian Study of Nutritional Status (Inst. of Nutritional Sciences, Vienna, Univ.Prof.Dr.I.Elmadfa)

637 20,10% consumer apple juice
57 1,90% consumer grape juice

Children up to 19 n = 2295, all population

Food or group	Ref Year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	2001**	3-day-weighing protocol	consumption data	Age 3-6 n = 122	spot	national	61,85	50,60	204,87		urban/rural	representative
grape juice	2001**	3-day-weighing protocol	consumption data	Age 3-6 n = 122	spot	national	4,20	0,00	29,60		urban/rural	representative
apple juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	Age 7-9 n=379	continuous	national	92,1	81,3	249,0		urban/rural	representative
grape juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	Age 7-9 n=379	continuous	national	8,6	7,6	23,3		urban/rural	representative
apple juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	Age 10-12 n=640	continuous	national	99,9	78,1	314,5		urban/rural	representative
grape juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	Age 10-12 n=640	continuous	national	9,4	7,3	29,5		urban/rural	representative
apple juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	Age 13-14 n=626	continuous	national	98,5	92,2	280,7		urban/rural	representative
grape juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	Age 13-14 n=626	continuous	national	10,8	8,6	26,3		urban/rural	representative
apple juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	age 15-19 n=528	continuous	national	129,1	91,3	378,0		urban/rural	representative
grape juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	age 15-19 n=528	continuous	national	12,1	8,6	32,2		urban/rural	representative

*Austrian Study of Nutritional Status (Inst. of Nutritional Sciences, Vienna, Univ.Prof.Dr.I.Elmadfa)

** Study Inst. of Nutritional Sciences, Vienna, Univ.Prof.Dr.I.Elmadfa

Children up to 19, 3-6 year n(total) = 152, , 7-19 year n(total) = 2173, consumers only

Food or group	Ref Year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	2001**	3-day-weighing protocol	consumption data	Age 3-6 n = 89	spot	national	231	225	500		urban/rural	representative
grape juice	2001**	3-day-weighing protocol	consumption data	Age 3-6 n = 3	spot	national	85	100	-		urban/rural	representative
apple juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	Age 7-9 n=109	continuous	national	271	250	675		urban/rural	representative
grape juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	Age 7-9 n=20	continuous	national	173	225	-		urban/rural	representative
apple juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	Age 10-12 n=180	continuous	national	312	250	743		urban/rural	representative
grape juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	Age 10-12 n=37	continuous	national	163	200	-		urban/rural	representative
apple juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	Age 13-14 n=225	continuous	national	299	250	650		urban/rural	representative
grape juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	Age 13-14 n=25	continuous	national	270	200	-		urban/rural	representative
apple juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	age 15-19 n=175	continuous	national	398	300	766		urban/rural	representative
grape juice	ASNS* 1991/94	7-day-weighing protocol	consumption data	age 15-19 n=32	continuous	national	207	225	-		urban/rural	representative

*Austrian Study of Nutritional Status (Inst. of Nutritional Sciences, Vienna, Univ.Prof.Dr.I.Elmadfa)
** Study Inst. of Nutritional Sciences, Vienna, Univ.Prof.Dr.I.Elmadfa

Age 3-6

89	58,60%	consumer apple juice
3	2,00%	consumer grape juice

Age 7-19

689	31,70%	consumer apple juice
114	5,20%	consumer grape juice

Elderly persons n=78, regional, urban/Vienna, all population

Food or group	Ref Year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	ASNS* 1995/1997	7-day-weighing protocol	consumption data	age = 74	spot	regional	26,7	0,0	156,3		urban/Vienna	represantative
grape juice	ASNS* 1995/1997	7-day-weighing protocol	consumption data	age = 74	spot	regional	2,5	0,0	14,7		urban/Vienna	represantative
apple juice	ASNS* 1995/1997	7-day-weighing protocol	consumption data	age 75-84	spot	regional	20,8	0,0	133,9		urban/Vienna	represantative
grape juice	ASNS* 1995/1997	7-day-weighing protocol	consumption data	age 75-84	spot	regional	2,0	0,0	12,6		urban/Vienna	represantative

*Austrian Study of Nutritional Status (Inst. of Nutritional Sciences, Vienna, Univ.Prof.Dr.I.Elmadfa)

Elderly persons n(total)=78, regional, urban/Vienna, consumers only

Food or group	Ref Year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	ASNS* 1995/1997	7-day-weighing protocol	consumption data	age = 74 n=4	spot	regional	230	250	-		urban/Vienna	represantative
grape juice	ASNS* 1995/1997	7-day-weighing protocol	consumption data	age = 74 n=2	spot	regional	160	135	-		urban/Vienna	represantative
apple juice	ASNS* 1995/1997	7-day-weighing protocol	consumption data	age 75-84 n=2	spot	regional	241	250	-		urban/Vienna	represantative
grape juice	ASNS* 1995/1997	7-day-weighing protocol	consumption data	age 75-84 n=1	spot	regional	88	88	-		urban/Vienna	represantative

*Austrian Study of Nutritional Status (Inst. of Nutritional Sciences, Vienna, Univ.Prof.Dr.I.Elmadfa)

Pregnant women, lactating women, all population

Food or group	Ref Year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	ASNS* 1996/97	7-day-weighing protocol	consumption data	pregnant women n=302	continuous	regional	126,0	99,4	310,4		urban/Vienna	representative
grape juice	ASNS* 1996/97	7-day-weighing protocol	consumption data	pregnant women n=302	continuous	regional	11,8	9,3	29,1		urban/Vienna	representative
apple juice	ASNS* 1996/97	3-day-weighing protocol	consumption data	lactating women n=107	continuous	regional	110,0	62,5	378,9		urban/Vienna	representative
grape juice	ASNS* 1996/97	3-day-weighing protocol	consumption data	lactating women n=107	continuous	regional	10,3	5,9	35,5		urban/Vienna	representative

*Austrian Study of Nutritional Status (Inst. of Nutritional Sciences, Vienna, Univ.Prof.Dr.I.Elmadfa)

Pregnant womenn (total)=302, lactating women n(total)=107, consumers only

Food or group	Ref Year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	ASNS* 1996/97	7-day-weighing protocol	consumption data	pregnant women n=159	continuous	regional	257	236	282		urban/Vienna	representative
grape juice	ASNS* 1996/97	7-day-weighing protocol	consumption data	pregnant women n=4	continuous	regional	203	188	-		urban/Vienna	representative
apple juice	ASNS* 1996/97	3-day-weighing protocol	consumption data	lactating women n=19	continuous	regional	419	300	600		urban/Vienna	representative
grape juice	ASNS* 1996/97	3-day-weighing protocol	consumption data	lactating women n=2	continuous	regional	504	350	-		urban/Vienna	representative

*Austrian Study of Nutritional Status (Inst. of Nutritional Sciences, Vienna, Univ.Prof.Dr.I.Elmadfa)

pregnant women

159	52,60%	consumer apple juice
4	1,30%	consumer grape juice

lactating women

19	17,80%	consumer apple juice
2	1,90%	consumer grape juice

Belgium

Teenagers from Ghent: population

Food or group	Ref Year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	Survey in 1997	7-day estimated food record	All food and beverages consumed, incl home grown, eaten outside	341	Spot	Urban +surroundings	16.5	0	114	Dietary survey	Urban Ghent	No
grape juice	1997	idem	idem	idem	idem	idem	1.2	0	0	idem	Urban Ghent	No
apple compote	1997	idem	idem	idem	idem	idem	11	0	50	idem	Urban Ghent	No

Teenagers from Ghent: consumers only

Food or group	Ref Year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	idem	idem	idem	idem	idem	idem	108	64	374	idem	idem	No
grape juice	idem	idem	idem	idem	idem	idem	41	29	-	idem	idem	No
apple compote	idem	idem	idem	idem	idem	idem	30	23	70	idem	idem	No

France

ADULTS – all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	INCA 1999	7 day dietary records	All foods and beverage consumed	1474 adults 15 years and over	During one year August 98-june 99	National	2.25	0	0	Dietary survey	national	Yes
apple puree	INCA 1999	7 day dietary records	All foods and beverage consumed	1474 adults 15 years and over	During one year August 98-june 99	National	6.08	0	42.9	Dietary survey	national	Yes
cider	INCA 1999	7 day dietary records	All foods and beverage consumed	1474 adults 15 years and over	During one year August 98-june 99	National	3.54	0	17.1	Dietary survey	national	Yes

ADULTS – consumers only

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	INCA 1999	7 day dietary records	All foods and beverage consumed	51 adults 15 years and over	During one year August 98-june 99	National	65.0	34.3	188.6	Dietary survey	national	Yes
apple puree	INCA 1999	7 day dietary records	All foods and beverage consumed	269 adults 15 years and over	During one year August 98-june 99	National	33.3	24.6	85.7	Dietary survey	national	Yes
cider	INCA 1999	7 day dietary records	All foods and beverage consumed	84 adults 15 years and over	During one year August 98-june 99	National	62.2	31.4	205.7	Dietary survey	national	Yes

ADULT MALES – all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	INCA 1999	7 day dietary records	All foods and beverage consumed	672 adult males 15 years and over	During one year August 98-june 99	National	2.64	0	0	Dietary survey	national	Yes
apple puree	INCA 1999	7 day dietary records	All foods and beverage consumed	672 adult males 15 years and over	During one year August 98-june 99	National	4.59	0	28.6	Dietary survey	national	Yes
cider	INCA 1999	7 day dietary records	All foods and beverage consumed	672 adult males 15 years and over	During one year August 98-june 99	National	5.03	0	17.1	Dietary survey	national	Yes

ADULT FEMALES – all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geograph ical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	INCA 1999	7 day dietary records	All foods and beverage consumed	802 adult females 15 years and over	During one year August 98-june 99	National	1.92	0	0	Dietary survey	national	Yes
apple puree	INCA 1999	7 day dietary records	All foods and beverage consumed	802 adult females 15 years and over	During one year August 98-june 99	National	7.33	0	42.9	Dietary survey	national	Yes
cider	INCA 1999	7 day dietary records	All foods and beverage consumed	802 adult females 15 years and over	During one year August 98-june 99	National	2.3	0	17.1	Dietary survey	national	Yes

CHILDREN – all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	INCA 1999	7 day dietary records	All foods and beverage consumed	1018 children under 15 years	During one year August 98-june 99	National	9	0	57.1	Dietary survey	national	Yes
apple puree	INCA 1999	7 day dietary records	All foods and beverage consumed	1018 children under 15 years	During one year August 98-june 99	National	6.6	0	42.9	Dietary survey	national	Yes
cider	INCA 1999	7 day dietary records	All foods and beverage consumed	1018 children under 15 years	During one year August 98-june 99	National	0.5	0	0	Dietary survey	national	Yes

CHILDREN – consumers only

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	INCA 1999	7 day dietary records	All foods and beverage consumed	166 children under 15 years	During one year August 98-june 99	National	55.3	35.7	171.4	Dietary survey	national	Yes
apple puree	INCA 1999	7 day dietary records	All foods and beverage consumed	262 children under 15 years	During one year August 98-june 99	National	25.7	14.3	57.1	Dietary survey	national	Yes
cider	INCA 1999	7 day dietary records	All foods and beverage consumed	20 children under 15 years	During one year August 98-june 99	National	23.8	21.4	44.6	Dietary survey	national	Yes

CHILDREN 3-5 years – all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	INCA 1999	7 day dietary records	All foods and beverage consumed	243 children 3-5 years	During one year August 98-june 99	National	9.81	0	57.1	Dietary survey	national	Yes
apple puree	INCA 1999	7 day dietary records	All foods and beverage consumed	243 children 3-5 years	During one year August 98-june 99	National	8.28	0	42.8	Dietary survey	national	Yes
cider	INCA 1999	7 day dietary records	All foods and beverage consumed	243 children 3-5 years	During one year August 98-june 99	National	0.4	0	0	Dietary survey	national	Yes

CHILDREN 6-8 years – all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geographical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	INCA 1999	7 day dietary records	All foods and beverage consumed	269 children 6-8 years	During one year August 98-june 99	National	12.69	0	71.4	Dietary survey	national	Yes
apple puree	INCA 1999	7 day dietary records	All foods and beverage consumed	269 children 6-8 years	During one year August 98-june 99	National	8.42	0	42.8	Dietary survey	national	Yes
cider	INCA 1999	7 day dietary records	All foods and beverage consumed	269 children 6-8 years	During one year August 98-june 99	National	0.5	0	0	Dietary survey	national	Yes

CHILDREN 9-11 years – all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	INCA 1999	7 day dietary records	All foods and beverage consumed	238 children 9-11 years	During one year August 98-june 99	National	6.64	0	35.7	Dietary survey	national	Yes
apple puree	INCA 1999	7 day dietary records	All foods and beverage consumed	238 children 9-11 years	During one year August 98-june 99	National	5.45	0	28.6	Dietary survey	national	Yes
cider	INCA 1999	7 day dietary records	All foods and beverage consumed	238 children 9-11 years	During one year August 98-june 99	National	0.4	0	0	Dietary survey	national	Yes

CHILDREN 12-14 years – all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	INCA 1999	7 day dietary records	All foods and beverage consumed	268 children 12-14 years	During one year August 98-june 99	National	6.72	0	51.4	Dietary survey	national	Yes
apple puree	INCA 1999	7 day dietary records	All foods and beverage consumed	268 children 12-14 years	During one year August 98-june 99	National	4.32	0	28.6	Dietary survey	national	Yes
cider	INCA 1999	7 day dietary records	All foods and beverage consumed	268 children 12-14 years	During one year August 98-june 99	National	0.5	0	0	Dietary survey	national	Yes

Germany

4-6 years old girls –consumers only

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	435	continuous	national without new Länder	114,8	78,6	341	Dietary survey	national	yes
pear juice	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	24	continuous	national without new Länder	33,7	23,3	92	Dietary survey	national	yes
grape juice red and white	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	26	continuous	national without new Länder	47,9	32,2	144,8	Dietary survey	national	yes
apple purre and compote	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	4	continuous	national without new Länder	19,6	21,4		Dietary survey	national	yes
tomato canned	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	103	continuous	national without new Länder	6,2	2,3	19,7	Dietary survey	national	yes

4-6 years old girls – all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	469	continuous	national without new Länder	106		316	Dietary survey	national	yes
pear juice	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	469	continuous	national without new Länder	1,7	0	4,7	Dietary survey	national	yes
grape juice red and white	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	469	continuous	national without new Länder	2,7	0	8,0	Dietary survey	national	yes
apple purre and compote	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	469	continuous	national without new Länder	0,2	0		Dietary survey	national	yes
tomato canned	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	469	continuous	national without new Länder	1,4	0	4,3	Dietary survey	national	yes

6-14 years old children–consumers only

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	747	continuous	national without new Länder	133,5	85,7	400	Dietary survey	national	yes
pear juice	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	25	continuous	national without new Länder	51,6	28,6	155,7	Dietary survey	national	yes
grape juice red and white	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	50	continuous	national without new Länder	63,3	40	211,4	Dietary survey	national	yes
apple puree and compote	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	10	continuous	national without new Länder	26,6	25,7	50	Dietary survey	national	yes
tomato canned	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	246	continuous	national without new Länder	7,7	2,6	25,7	Dietary survey	national	yes

6-14 years old children – all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	2367	continuous	national without new Länder	42	0	126	Dietary survey	national	yes
pear juice	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	2367	continuous	national without new Länder	0,5	0	1,6	Dietary survey	national	yes
grape juice red and white	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	2367	continuous	national without new Länder	1,3	0	4,5	Dietary survey	national	yes
apple puree and compote	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	2367	continuous	national without new Länder	0,1	0	0,2	Dietary survey	national	yes
tomato canned	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	2367	continuous	national without new Länder	0,8	0	2,7	Dietary survey	national	yes

>14 years old adults–consumers only

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	3265	continuous	national without new Länder	102,2	66,7	314,3	Dietary survey	national	yes
pear juice	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	171	continuous	national without new Länder	43,9	28,6	114,3	Dietary survey	national	yes
grape juice red and white	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	367	continuous	national without new Länder	55,2	42,9	142,9	Dietary survey	national	yes
apple puree and compote	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	80	continuous	national without new Länder	27,5	18,5	85,3	Dietary survey	national	yes
tomato canned	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	1815	continuous	national without new Länder	9,5	2,6	40,5	Dietary survey	national	yes

>14 years old adults – all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple juice	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	20125	continuous	national without new Länder	16,6	0	51	Dietary survey	national	yes
pear juice	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	20125	continuous	national without new Länder	0,4	0	1,0	Dietary survey	national	yes
grape juice red and white	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	20125	continuous	national without new Länder	1,0	0	2,6	Dietary survey	national	yes
apple puree and compote	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	20125	continuous	national without new Länder	0,1	0	0,3	Dietary survey	national	yes
tomato canned	nationale Verzehrsstudie 1985-88	7 day dietary records	All foods and beverage consumed	20125	continuous	national without new Länder	0,9	0	3,7	Dietary survey	national	yes

girls – all population**

Age	Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	90% percentile g/d	Method	Region	Representative for the member state
1 year	fruit juice, canned and processed fruit	DONALD-Studie, 1985-1996	3 day dietary records	All foods and beverage consumed	21	continuous	Dortmund, regional	50	65	83	Dietary survey	regional	yes
1,5 year	fruit juice, canned and processed fruit	DONALD-Studie, 1985-1996	3 day dietary records	All foods and beverage consumed	40	continuous	Dortmund, regional	86	51	231	Dietary survey	regional	yes
2 year	fruit juice, canned and processed fruit	DONALD-Studie, 1985-1996	3 day dietary records	All foods and beverage consumed	13	continuous	Dortmund, regional	72	69	175	Dietary survey	regional	yes
3 year	fruit juice, canned and processed fruit	DONALD-Studie, 1985-1996	3 day dietary records	All foods and beverage consumed	12	continuous	Dortmund, regional	121	93	288	Dietary survey	regional	yes

boys – all population**

Age	Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	90% percentile g/d	Method	Region	Representative for the member state
1 year	fruit juice, canned and processed fruit	DONALD-Studie, 1985-1996	3 day dietary records	All foods and beverage consumed	14	continuous	Dortmund, regional	47	27	57	Dietary survey	regional	yes
1,5 year	fruit juice, canned and processed fruit	DONALD-Studie, 1985-1996	3 day dietary records	All foods and beverage consumed	34	continuous	Dortmund, regional	120	106	287	Dietary survey	regional	yes
2 year	fruit juice, canned and processed fruit	DONALD-Studie, 1985-1996	3 day dietary records	All foods and beverage consumed	13	continuous	Dortmund, regional	73	80	140	Dietary survey	regional	yes
3 year	fruit juice, canned and processed fruit	DONALD-Studie, 1985-1996	3 day dietary records	All foods and beverage consumed	6	continuous	Dortmund, regional	157	59	547	Dietary survey	regional	yes

**the DONALD-study specify the food consumption of all fruit products, the fruit juice and the fresh fruit. For the evaluation the data are calculated: (all fruit products -fresh fruit) = fruit juice and canned and processed fruit. Here the supposition is that the fruits are 100% apple and therefore it is calculated the worst case of daily intake.

Italy

Population (total sample)

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple	5/94-96	Diary self-compiled	All food consumed	1978	Continuos (three time)	National	52,88	25,00	203,81	Household-individual data	National	yes
pear	5/94-96	Diary self-compiled	All food consumed	1978	Continuos (three time)	National	16,87	0,00	91,43	Household-individual data	National	yes
peach	5/94-96	Diary self-compiled	All food consumed	1978	Continuos (three time)	National	23,30	0,00	142,86	Household-individual data	National	yes
fruit juice	5/94-96	Diary self-compiled	All food consumed	1978	Continuos (three time)	National	14,06	0,00	100,00	Household-individual data	National	yes
citrus fruit juice	5/94-96	Diary self-compiled	All food consumed	1978	Continuos (three time)	National	5,46	0,00	30,71	Household-individual data	National	yes
fruit dry	5/94-96	Diary self-compiled	All food consumed	1978	Continuos (three time)	National	0,71	0,00	0,00	Household-individual data	National	yes
homogenised	5/94-96	Diary self-compiled	All food consumed	1978	Continuos (three time)	National	0,07	0,00	0,00	Household-individual data	National	yes
fruit preserved (nectar, puree)	5/94-96	Diary self-compiled	All food consumed	1978	Continuos (three time)	National	0,78	0,00	28,57	Household-individual data	National	yes
milk flour	5/94-96	Diary self-compiled	All food consumed	1978	Continuos (three time)	National	0,29	0,0		Household-individual data	National	yes

Consumers (total sample)

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
apple	5/94-96	Diary self-compiled	All food consumed	1200	Continuos (three time)	National	87,17	64,29	245,40	Household-individual data	National	yes
pear	5/94-96	Diary self-compiled	All food consumed	607	Continuos (three time)	National	54,98	45,00	135,63	Household-individual data	National	yes
peach	5/94-96	Diary self-compiled	All food consumed	532	Continuos (three time)	National	86,62	62,84	232,50	Household-individual data	National	yes
fruit juice	5/94-96	Diary self-compiled	All food consumed	364	Continuos (three time)	National	76,39	53,57	212,80	Household-individual data	National	yes
citrus fruit juice	5/94-96	Diary self-compiled	All food consumed	253	Continuos (three time)	National	42,67	17,86	171,43	Household-individual data	National	yes
fruit dry	5/94-96	Diary self-compiled	All food consumed	61	Continuos (three time)	National	23,03	12,86	72,57	Household-individual data	National	yes
homogenised	5/94-96	Diary self-compiled	All food consumed	24	Continuos (three time)	National	5,83	4,90	16,52	Household-individual data	National	yes
fruit preserved (nectar, puree)	5/94-96	Diary self-compiled	All food consumed	57	Continuos (three time)	National	26,99	23,34	81,43	Household-individual data	National	yes
milk flour	5/94-96	Diary self-compiled	All food consumed	6	Continuos (three time)	National	94,43	78,15		Household-individual data	National	yes

Norway

Adults 19 – 79 years old (consumers only)

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
Juice and nectar	Johannson, 1997	Dietary record	Food intake	4980	spot	National	74	21	300	Dietary survey	national	Yes, but not for Patulin intake

The data we have on consumption is from from 1997, and it includes all kinds of juices and nectars. Orange juice make 60 g/d, i.e other juices and nectars make 14 g/d. The biggest contributor to these 14 g/d are apple juice and –nectar.

Average person (all population)

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean ml/d or g/d	Median	95% percentile	Method	Region	Representative for the member state
apple juice	1998-99	Retail statistics	Total consume	-	During one year	national	2,5	-	-	-	national	YES
apple nectar	1998-99	Retail statistics	Total consume	-	During one year	national	13,1	-	-	-	national	YES
apple cider	1998-99	Retail statistics	Total consume	-	During one year	national	5,7	-	-	-	national	YES

The consumption data for all population are based on sales statistics of apple juice, - nectar and - cider for retail distribution.

Portugal

Average person (all population)

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean ml/person.day or mg/person.day	Median	95% percentile	Method	Region	Representative for the member state
clear apple juice	1/2001					N	0,86			Food balance sheets	N	YES
cloudy apple juice	1/2001					N	0,86			"	N	YES
apple and other fruits cloudy juice	1/2001					N	0,86			"	N	YES
milk and apple juice	1/2001					N	0,86			"	N	YES
cloudy pear juice	1/2001					N	0,86			"	N	YES
pear and other fruits cloudy juice	1/2001					N	0,86			"	N	YES
milk and pear juice	1/2001					N	0,86			"	N	YES
apple puree	1/2001					N	*			"	N	YES
pear puree	1/2001					N	*			"	N	YES

* There isn't direct consumption of apple and pear purees, because they are only used by industry.

The data we have on consumption is dated from 1997, and it includes all kinds of juices, without distinction. But we asked the industry on production of each category of juice, and they told us that there was a production of about 5 % of each, and we assumed that the all production is consumed.

Spain

all population

Food or group	Ref Year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/p/day	Median	95% percentile	Method	Region	Representative for the member state
Fruit juices (1)	Ref 1 1997	Purchase records	Purchase records	*5,400 households, 700 establishments*, 200 institutions	Continuous (every 3 years)	National	6.03	(2)	(2)	Household budget survey	All regions	Yes
fruit juices (all fruit juices)	Ref 2 1989	Dietary records 24-hours recall on three different days and a food frequency questionnaire	All foods and beverages	N= 2348 (Adults, 25-65 years)	Spot	Regional	27.9	(2)	(2)	Dietary survey	Basque Country	Yes for Basque Country

(1) fruit juices except grape, orange, peach and pineapple juices. It is not possible to get data of apple juices.

(2) Not available

Ref.1 The Food consumption data come from the publication "La alimentación en España" published in 1998 by the Ministry of Agriculture, Fishery and Food. The data are refered to purchases of foods (kg or litre).

Ref.2 Departamento de Sanidad, Gobierno Vasco, 1994, Encuesta de Nutrición de la Comunidad Autónoma del País Vasco. Servicio Central de Publicaciones de Gobierno Vasco, Vitoria-Gasteiz.

Sweden

Adult people between 19 - 74 years old, both sexes

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
soups and purees	1997 1)	dietary records	all foods	1200	2)	national	1,4 *		5 *	4)	3)	yes
							49 **					
apple juices	1997 1)	dietary records	all foods	1200	2)	national	0,2 *			4)	3)	yes
							60 **					
mixed juices	1997 1)	dietary records	all foods	1200	2)	national	88 *			4)	3)	yes
							182 **					

* this is the mean value among all **adult** people between 19 - 74 years old, both sexes.

** this is the mean value among only consumers of the certain food categorie

1) Ref: Riksmaten
2) spread out , by chance, among the swedish population. Each participating person made notes during one week
3) all over the country
4) dietary surveys

All adult people between 15 - 74 years old, both sexes, all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
soups and purees	1994 1)	dietary records	all foods	1650	2)	national	62		170	4)	3)	yes
all different juices	1994 1)	dietary records	all foods	1650	2)	national	130		340	4)	3)	yes

1) Ref: HULKEN
2) spread out , by chance, among the swedish population. Each participating person made notes during one week
3) all over the country
4) dietary surveys

Children between 7 -14 years old, both sexes, all population

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geogra-phical level	Mean g/d	Median g/d	95% percentile g/d	Method	Region	Representative for the member state
soups and purees	1994 1)	dietary records	all foods	200	2)	national	74		180	4)	3)	yes
all different juices ***	1994 1)	dietary records	all foods	200	2)	national	150		400	4)	3)	yes

*** It is calculated that the proportion of orange juice of all juices imported to Sweden is about 50 %. But it is only in table 3 I have taken this into account in my calculations
1) Ref: HULKEN
2) spread out , by chance, among the swedish population. Each participating person made notes during one week
3) all over the country
4) dietary surveys

United Kingdom

ADULTS (ages 16-64), consumers only

Group	Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geographical level	Mean	Median	95% percentile	Method	Region	Representative for the member state
Male and Female	Apple juice	1986/87	NDNS, dietary weighted record.	All beverages consumed	185/2197	Continuous – 7days	National	44.2	-	121.3	Dietary surveys	National	Yes
Male	Apple juice	1986/87	NDNS, dietary weighted record.	All beverages consumed	66/1087	Continuous – 7days	National	47.4	-	147.4	Dietary surveys	National	Yes
Female	Apple juice	1986/87	NDNS, dietary weighted record.	All beverages consumed	119/1110	Continuous – 7days	National	42.4	-	109.7	Dietary surveys	National	Yes

TODDLERS (ages 1.5 - 4.5), consumers only

Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geographical level	Mean	Median	95% percentile	Method	Region	Representative for the member state
apple juice	1992/93	NDNS interview questionnaires and weighted dietary records	All food consumed	205/1675	Continuous – 4days	National	92	-	273.7	Dietary survey	National	Yes

YOUNG PEOPLE (AGES 4-18), consumers only

Group	Food or group	Ref year	Survey methods	Typology of Data	Sample size	Data Collection	Geographical level	Mean	Median	95% percentile	Method	Region	Representative for the member state
4-18 years	apple juice	1997	NDNS interview questionnaires and weighted dietary records	All food consumed	303/1701	Continuous – 7days	National	76.3	-	224.3	Dietary survey	National	Yes
4-6 years	apple juice	1997	NDNS interview questionnaires and weighted dietary records	All food consumed	70/355	Continuous – 7days	National	67.7	-	241.2	Dietary survey	National	Yes
7-10 years	apple juice	1997	NDNS interview questionnaires and weighted dietary records	All food consumed	99/482	Continuous – 7days	National	78.9	-	228	Dietary survey	National	Yes
11-14 years	apple juice	1997	NDNS interview questionnaires and weighted dietary records	All food consumed	92/475	Continuous – 7days	National	74.8	-	194.2	Dietary survey	National	Yes
15-18 years	apple juice	1997	NDNS interview questionnaires and weighted dietary records	All food consumed	42/389	Continuous – 7 days	National	85.6	-	223.5	Dietary survey	National	Yes

Table 2B: Essential of the best estimates of food consumption for each country

Austria

Adults, all population

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
Age = 25				
	apple juice	63,3	0,0	312,5
	grape juice	5,9	0,0	29,3
Age 26 - 35				
	apple juice	38,8	0,0	259,0
	grape juice	3,6	0,0	24,3
Age 36 - 45				
	apple juice	25,8	0,0	168,0
	grape juice	2,4	0,0	15,7
Age 46 - 55				
	apple juice	25,8	0,0	168,0
	grape juice	2,4	0,0	15,7
Age >56				
	apple juice	20,6	0,0	156,3
	grape juice	1,9	0,0	14,7

Adults, consumers only

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
Age = 25				
	apple juice	301	250	800
	grape juice	362	300	-
Age 26 - 35				
	apple juice	351	300	650
	grape juice	263	250	-
Age 36 - 45				
	apple juice	245	200	499
	grape juice	307	250	-
Age 46 - 55				
	apple juice	361	250	760
	grape juice	415	300	-
Age >56				
	apple juice	300	250	-
	grape juice	-	-	-

Children up to 19, all population

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
Age 3-6				
	apple juice	61,85	50,60	204,87
	grape juice	4,20	0,00	29,60
Age 7-9				
	apple juice	92,1	81,3	249,0
	grape juice	8,6	7,6	23,3
Age 10-12				
	apple juice	99,9	78,1	314,5
	grape juice	9,4	7,3	29,5
Age 13-14				
	apple juice	98,5	92,2	280,7
	grape juice	10,8	8,6	26,3
Age 15-19				
	apple juice	129,1	91,3	378,0
	grape juice	12,1	8,6	32,2

Children up to 19, consumers only

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
Age 3-6				
	apple juice	231	225	500
	grape juice	-	-	-
Age 7-9				
	apple juice	271	250	675
	grape juice	173	225	-
Age 10-12				
	apple juice	312	250	743
	grape juice	163	200	-
Age 13-14				
	apple juice	299	250	650
	grape juice	270	200	-
Age 15-19				
	apple juice	398	300	766
	grape juice	207	225	-

Elderly persons, all population

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
Age = 74				
	apple juice	26,7	0,0	156,3
	grape juice	2,5	0,0	14,7
Age 75-84				
	apple juice	20,8	0,0	133,9
	grape juice	2,0	0,0	12,6

Elderly persons, consumers only, not enough data

Pregnant Women, lactating women, all population

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
pregnant women				
	apple juice	126,0	99,4	310,4
	grape juice	11,8	9,3	29,1
lactating women				
	apple juice	110,0	62,5	378,9
	grape juice	10,3	5,9	35,5

Pregnant Women, lactating women, consumers only

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
pregnant women				
	apple juice	257	236	282
	grape juice	-	-	-
lactating women				
	apple juice	419	300	600
	grape juice	-	-	-

Belgium

Teenagers

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
Teenagers from Ghent: population				
	apple juice	16.5	0	114
	grape juice	1.2	0	0
	apple compote	11	0	50
Teenagers from Ghent: consumers only				
	apple juice	108	64	374
	grape juice	41	29	-
	apple compote	30	23	70

France

Adults

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
ADULTS – all population				
	apple juice	2.25	0	0
	apple puree	6.08	0	42.9
	cider	3.54	0	17.1
ADULTS – consumers only				
	apple juice	65.0	34.3	188.6
	apple puree	33.3	24.6	85.7
	cider	62.2	31.4	205.7
ADULT MALES– all population				
	apple juice	2.64	0	0
	apple puree	4.59	0	28.6
	cider	5.03	0	17.1
ADULT FEMALES – all population				
	apple juice	1.92	0	0
	apple puree	7.33	0	42.9
	cider	2.3	0	17.1

Children

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
CHILDREN – all population				
	apple juice	9	0	57.1
	apple puree	6.6	0	42.9
	cider	0.5	0	0
CHILDERN – consumer only				
	apple juice	55.3	35.7	171.4
	apple puree	25.7	14.3	57.1
	cider	23.8	21.4	44.6
CHILDREN 3-5 years– all population				
	apple juice	9.81	0	57.1
	apple puree	8.28	0	42.8
	cider	0.4	0	0
CHILDREN 6-8 years– all population				
	apple juice	12.69	0	71.4
	apple puree	8.42	0	42.8
	cider	0.5	0	0
CHILDREN 9-11 years– all population				
	apple juice	6.64	0	35.7
	apple puree	5.45	0	28.6
	cider	0.4	0	0
CHILDREN 12-14 years– all population				
	apple juice	6.72	0	51.4
	apple puree	4.32	0	28.6
	cider	0.5	0	0

Germany

Consumers only

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
4-6 years old girls				
	apple juice	114,8	78,6	341
	pear juice	33,7	23,3	92
	grape juice red and white	47,9	32,2	144,8
	apple puree and compote		21,4	
	tomato canned	6,2	2,3	19,7
6-14 years old children				
	apple juice	133,5	85,7	400
	pear juice	51,6	28,6	155,7
	grape juice red and white	63,3	40	211,4
	apple puree and compote	26,6	25,7	50
	tomato canned	7,7	2,6	25,7
>14 years old adults				
	apple juice	102,2	66,7	314,3
	pear juice	43,9	28,6	114,3
	grape juice red and white	55,2	42,9	142,9
	apple puree and compote	27,5	18,5	85,3
	tomato canned	9,5	2,6	40,5

All population

	Food or group	Mean (g/d)	Median (g/d)	90% percentile (g/d)
girls				
1 year	fruit juice, canned and processed fruit	50	65	83
1,5 year	fruit juice, canned and processed fruit	86	51	231
2 year	fruit juice, canned and processed fruit	72	69	175
3 year	fruit juice, canned and processed fruit	121	93	288
boys				
1 year	fruit juice, canned and processed fruit	47	27	57
1,5 year	fruit juice, canned and processed fruit	120	106	287
2 year	fruit juice, canned and processed fruit	73	80	140
3 year	fruit juice, canned and processed fruit	157	59	547
	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
4-6 years old girls				
	apple juice	106		316
	pear juice	1,7	0	4,7
	grape juice red and white	2,7	0	8,0
	apple puree and compote	0,2	0	
	tomato canned	1,4	0	4,3
6-14 years old children				
	apple juice	42	0	126
	pear juice	0,5	0	1,6
	grape juice red and white	1,3	0	4,5
	apple puree and compote	0,1	0	0,2
	tomato canned	0,8	0	2,7
>14 years old adults				
	apple juice	16,6	0	51
	pear juice	0,4	0	1,0
	grape juice red and white	1,0	0	2,6
	apple puree and compote	0,1	0	0,3
	tomato canned	0,9	0	3,7

Italy

Total sample

Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
apple	52,88	25,00	203,81
pear	16,87	0,00	91,43
peach	23,30	0,00	142,86
fruit juice	14,06	0,00	100,00
citrus fruit juice	5,46	0,00	30,71
fruit dry	0,71	0,00	0,00
homogenised	0,07	0,00	0,00
fruit preserved (nectar, puree)	0,78	0,00	28,57
milk flour	0,29	0,0	

Consumers (total sample)

Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
apple	87,17	64,29	245,40
pear	54,98	45,00	135,63
peach	86,62	62,84	232,50
fruit juice	76,39	53,57	212,80
citrus fruit juice	42,67	17,86	171,43
fruit dry	23,03	12,86	72,57
homogenised	5,83	4,90	16,52
fruit preserved (nectar, puree)	26,99	23,34	81,43
milk flour	94,43	78,15	

Norway
Consumers only

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
Adults 19 – 79 years old*	juice and nectar	74	21	300

All population

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
Average person**				
	apple juice	2,5		
	apple nectar	13,1		
	apple cider	5,7		

* consumption data for all kind of juices and nectars (ref. Johansson, L., Sovoll, 1997) Orange juice makes 60 g/d, that means other juices and nectars make 14 g/d. The biggest contributor to these 14 g/d are apple juice and –nectar.

** based on sale statistics for real distribution (ref. Nielsen Norge, 1998-1999)

Portugal
Average person (all population)

Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
clear apple juice	0,86		
cloudy apple juice	0,86		
apple and other fruits cloudy juice	0,86		
milk and apple juice	0,86		
cloudy pear juice	0,86		
pear and other fruits cloudy juice	0,86		
milk and pear juice	0,86		
apple puree	*		
pear puree	*		

* There isn't direct consumption of apple and pear purees, because they are only used by industry.

Spain

Adults, all population

Food or group	Mean g/p/day	Median	95% percentile
Ref 1 (1)	6.03		
Ref 2 all fruit juices	27.9		

(1) Fruit juices except grape, orange, peach and pineapple juices.

Ref.1 The Food consumption data included in table 2A1 and table 2 enclosed with this document come from the publication "La alimentación en España" published in 1998 by the Ministry of Agriculture, Fishery and Food. The data are refered to purchases of foods (kg or litre).

Ref.2 Departamento de Sanidad, Gobierno Vasco, 1994, Encuesta de Nutrición de la Comunidad Autónoma del País Vasco. Servicio Central de Publicaciones de Gobierno Vasco, Vitoria-Gasteiz.

Sweden

Adults, both sexes, between 15 - 74 years old, all population

Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
purees and soups	62		170
all different juices *	130		340

Ref: HULKEN

* about 50 % of all consumed juices is pure orange juice

Children, both sexes, between 7 - 14 years old, all population

Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
purees and soups	74		180
all different juices *	150		400

Ref: HULKEN

* about 50 % of all consumed juices are pure orange juice

Adults, both sexes, between 19 -74 years old

Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
purees and soups	1,4 *		5 *
	49 **		
apple juices	0,2 *		
	60 **		
mixed juices	88 *		
	182 **		

Ref: Riksmaten

* this is the mean value among all adult people between 19 - 74 years old, both sexes.

** this is the mean value among only consumers (adult, both sexes, 19 - 74 y) of the certain food category

United Kingdom

Consumers only

	Food or group	Mean (g/d)	Median (g/d)	95% percentile (g/d)
ADULTS (Ages 16-64)*)				
Male and Female	apple juice	44.2	-	121.3
Male	apple juice	47.4	-	147.4
Female	apple juice	42.4	-	109.7
TODDLERS (Ages 1.5 – 4.5)**				
	apple juice	92.0	-	273.7
YOUNG PERSONS (AGES 4 – 18)***				
4-18 years	apple juice	76.3	-	224.3
4-6 years	apple juice	67.7	-	241.2
7-10 years	apple juice	78.9	-	228.
11-14 years	apple juice	74.8	-	194.2
15-18 years	apple juice	85.6	-	223.5

*Sample size 2197. National study
**Sample size 1675, National study
***Sample size 1701, National study

Table 3A: Summary of best estimates of daily intake of patulin for special groups of population

AUSTRIA

Adults n=3059, national, urban/rural, all population

Population group	**Food or group**	**Food consumption g/person/day**		**Mean patulin level (µg/kg)**		**Intake of patulin ng/person/day**			**Intake of patulin ng/kg body weight/day**		
Adults		Mean	High level 95%percentile	Mean (1)	Mean (2)	Mean (1)	Mean (2)	High level 95%percentile	Mean (1)	Mean (2)	High level 95%percentile
Age = 25											
	apple juice	63,3	312,5	7	14,9	443,1	943,2	2187,5	6,61	14,08	32,65
	grape juice	5,9	29,3	8,2	15,2	48,4	89,7	240,3	0,72	1,34	3,59
Age 26 - 35											
	apple juice	38,8	259,0	7	14,9	271,6	578,1	1813,0	3,83	8,14	25,54
	grape juice	3,6	24,3	8,2	15,2	29,5	54,7	199,3	0,42	0,77	2,81
Age 36 - 45											
	apple juice	25,8	168,0	7	14,9	180,6	384,4	1176,0	2,51	5,34	16,33
	grape juice	2,4	15,7	8,2	15,2	19,7	36,5	128,7	0,27	0,51	1,79
Age 46 - 55											
	apple juice	25,8	168,0	7	14,9	180,3	383,8	1176,0	2,44	5,19	15,89
	grape juice	2,4	15,7	8,2	15,2	19,7	36,5	129,1	0,27	0,49	1,74
Age >56											
	apple juice	20,6	156,3	7	14,9	144,2	306,9	1094,1	1,95	4,15	14,79
	grape juice	1,9	14,7	8,2	15,2	15,6	28,9	120,5	0,21	0,39	1,63

Body weight in kg:
Age = 25 67
Age 26 – 35 71
Age 36 – 45 72
Age 46 – 55 74
Age >56 74

Adults n(total)=3059, n (apple juice)=637, n(grape juice)=57, national, urban/rural, consumers only

Population group	**Food or group**	**Food consumption g/person/day**		**Mean patulin level (µg/kg)**		**Intake of patulin ng/person/day**			**Intake of patulin ng/kg body weight/day**		
Adults		Mean	High level 95%percentile	Mean (1)	Mean (2)	Mean (1)	Mean (2)	High level 95%percentile	Mean (1)	Mean (2)	High level 95%percentile
Age = 25											
	apple juice	301	800	7	14,9	2107	4485	5600	31,45	66,94	83,58
	grape juice	362	-	8,2	15,2	2968	5502	-	44,30	82,13	-
Age 26 - 35											
	apple juice	351	650	7	14,9	2457	5230	4550	34,61	73,66	64,08
	grape juice	263	-	8,2	15,2	2157	3998	-	30,37	56,30	-
Age 36 - 45											
	apple juice	245	499	7	14,9	1715	3651	3493	23,82	50,70	48,51
	grape juice	307	-	8,2	15,2	2517	4666	-	34,96	64,81	-
Age 46 - 55											
	apple juice	361	760	7	14,9	2527	5379	5320	34,15	72,69	71,89
	grape juice	415	-	8,2	15,2	3403	6308	-	45,99	85,24	-
Age >56											
	apple juice	300	-	7	14,9	2100	4470	-	28,38	60,41	-
	grape juice	215	-	8,2	15,2	1763	3268	-	23,82	44,16	-

Body weight in kg:
Age = 25 67
Age 26 – 35 71
Age 36 – 45 72
Age 46 – 55 74
Age >56 74

Children up to 19 n=2295, national, urban/rural, all population

	Food or group	**Food consumption g/person/day**		**Mean patulin level (µg/kg)**		**Intake of patulin ng/person/day**			**Intake of patulin ng/kg body weight/day**		
Population group		Mean	High level 95%percentile	Mean (1)	Mean (2)	Mean (1)	Mean (2)	High level 95%percentile	Mean (1)	Mean (2)	High level 95%percentile
Age 3-6											
	apple juice	61,85	204,87	7	14,9	433,0	921,6	1434,1	21,65	46,08	71,70
	grape juice	4,2	29,6	8,2	15,2	34,4	63,8	242,7	1,72	3,19	12,14
Age 7-9											
	apple juice	92,1	249	7	14,9	644,7	1372,3	1743,0	20,80	44,27	56,23
	grape juice	8,6	23,3	8,2	15,2	70,5	130,7	191,1	2,27	4,22	6,16
Age 10-12											
	apple juice	99,9	314,5	7	14,9	699,3	1488,5	2201,5	17,06	36,31	53,70
	grape juice	9,4	29,5	8,2	15,2	77,1	142,9	241,9	1,88	3,48	5,90
Age 13-14											
	apple juice	98,5	280,7	7	14,9	689,5	1467,7	1964,9	13,52	28,78	38,53
	grape juice	10,8	26,3	8,2	15,2	88,6	164,2	215,7	1,74	3,22	4,23
Age 15-19											
	apple juice	129,1	378	7	14,9	903,7	1923,6	2646,0	14,81	31,53	43,38
	grape juice	12,1	32,2	8,2	15,2	99,2	183,9	264,0	1,63	3,02	4,33

Body weight in kg:
Age 3-6 20
Age 7-9 31
Age 10-12 41
Age 13-14 51
Age 15-19 61

Children up to 19 n(total) =2295, n(apple juice)=778, n(grape juice)=117, national, urban/rural, consumers only

	Food or group	**Food consumption g/person/day**		**Mean patulin level (µg/kg)**		**Intake of patulin ng/person/day**			**Intake of patulin ng/kg body weight/day**		
Population group		Mean	High level 95%percentile	Mean (1)	Mean (2)	Mean (1)	Mean (2)	High level 95%percentile	Mean (1)	Mean (2)	High level 95%percentile
Age 3-6											
	apple juice	231	500	7	14,9	1617	3442	3500	80,85	172,10	175,00
	grape juice	85	-	8,2	15,2	697	1292	-	-	-	-
Age 7-9											
	apple juice	271	675	7	14,9	1897	4038	4725	61,19	130,25	152,42
	grape juice	173	-	8,2	15,2	1419	2630	-	45,76	84,83	-
Age 10-12											
	apple juice	312	743	7	14,9	2184	4649	5201	53,27	113,39	126,85
	grape juice	163	-	8,2	15,2	1337	2478	-	32,60	60,43	-
Age 13-14											
	apple juice	299	650	7	14,9	2093	4455	4550	41,04	87,35	89,22
	grape juice	270	-	8,2	15,2	2214	4104	-	43,41	80,47	-
Age 15-19											
	apple juice	398	766	7	14,9	2786	5930	5362	45,67	97,22	87,90
	grape juice	207	-	8,2	15,2	1697	3146	-	27,83	51,58	-

Body weight in kg:
Age 3-6 20
Age 7-9 31
Age 10-12 41
Age 13-14 51
Age 15-19 61

Elderly persons n=78, regional, urban/Vienna, all population

	Food or group	**Food consumption g/person/day**		**Mean patulin level (µg/kg)**		**Intake of patulin ng/person/day**			**Intake of patulin ng/kg body weight/day**		
Population group		Mean	High level 95%percentile	Mean (1)	Mean (2)	Mean (1)	Mean (2)	High level 95%percentile	Mean (1)	Mean (2)	High level 95%percentile
Age = 74											
	apple juice	26,7	156,3	7	14,9	186,9	397,8	1094,1	2,67	5,68	15,63
	grape juice	2,5	14,7	8,2	15,2	20,5	38,0	120,5	0,29	0,54	1,72
Age 75-84											
	apple juice	110	378,9	7	14,9	770,0	1639,0	2652,3	11,00	23,41	37,89
	grape juice	10,3	35,5	8,2	15,2	84,5	156,6	291,1	1,21	2,24	4,16

Body weight in kg:
Age = 75 70
Age 75-84 70

Elderly persons n(total) =78, n(apple juice)=6, n(grape juice)=3, regional, urban/Vienna, consumers only
Too less data

	Food or group	**Food consumption g/person/day**		**Mean patulin level (µg/kg)**		**Intake of patulin ng/person/day**			**Intake of patulin ng/kg body weight/day**		
Population group		Mean	High level 95%percentile	Mean (1)	Mean (2)	Mean (1)	Mean (2)	High level 95%percentile	Mean (1)	Mean (2)	High level 95%percentile
Age = 74											
	apple juice	230	-	7	14,9	1610	3427	-	-	-	-
	grape juice	160	-	8,2	15,2	1312	2432	-	-	-	-
Age 75-84											
	apple juice	241	-	7	14,9	1687	3591	-	-	-	-
	grape juice	88	-	8,2	15,2	722	1338	-	-	-	-

Pregnant, lactating women n=409, regional, urban/Vienna, all population

	Food or group	**Food consumption g/person/day**		**Mean patulin level (µg/kg)**		**Intake of patulin ng/person/day**			**Intake of patulin ng/kg body weight/day**		
Population group		Mean	High level 95%percentile	Mean (1)	Mean (2)	Mean (1)	Mean (2)	High level 95%percentile	Mean (1)	Mean (2)	High level 95%percentile
pregnant women											
	apple juice	126	310,4	7	14,9	882,0	1877,4	2172,8	12,25	26,08	30,18
	grape juice	11,8	29,1	8,2	15,2	96,8	179,4	238,6	1,34	2,49	3,31
lactating women											
	apple juice	110	378,9	7	14,9	770,0	1639,0	2652,3	12,22	26,02	42,10
	grape juice	10,3	35,5	8,2	15,2	84,5	156,6	291,1	1,34	2,49	4,62

Body weight in kg:
pregnant women 72
lactating women 63

Pregnant, lactating women n(total)=409, n(apple juice)=178, n(grape juice)=6, regional, urban/Vienna, consumers only

	Food or group	**Food consumption g/person/day**		**Mean patulin level (µg/kg)**		**Intake of patulin ng/person/day**			**Intake of patulin ng/kg body weight/day**		
Population group		Mean	High level 95%percentile	Mean (1)	Mean (2)	Mean (1)	Mean (2)	High level 95%percentile	Mean (1)	Mean (2)	High level 95%percentile
pregnant women											
	apple juice	257	582	7	14,9	1799	3829	4074	24,99	53,18	56,58
	grape juice	203		8,2	15,2	1665	3086	-	-	-	-
lactating women											
	apple juice	419	600	7	14,9	2933	6243	4200	46,56	99,10	66,67
	grape juice	504		8,2	15,2	4133	7661	-	-	-	-

BELGIUM

Occurrence data 1997-2001
Data from teenagers from Ghent: population based.
Body weight: 60 kg

Food or group	Food Consumption g/person/day		Mean of patulin level in food (µg/kg)			Intake of patulin ng/person/day/			Intake of patulin ng/kg body weight/day		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	16.5	114	4.5			74		513	1.2		8.6
grape juice	1.2	0	4.6			5.5		-	0.1		-

Occurrence data 1997-2001
Data from teenagers from Ghent: consumers only

Food or group	Food Consumption g/person/day		Mean of patulin level in food (µg/kg)			Intake of patulin ng/person/day/			Intake of patulin ng/kg body weight/day		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	108	374	4.5			486		1683	8.1		28
grape juice	41	-	4.6			189		-	3.1		-

Occurrence data only 2001 for apple juice
Data from teenagers from Ghent: population based.
Body weight: 60 kg

Food or group	Food Consumption g/person/day		Mean of patulin level in food (µg/kg)			Intake of patulin ng/person/day/			Intake of patulin ng/kg body weight/day		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	16.5	114	2.2			36		251	0.6		4.2
grape juice	1.2	0	4.6			5.5		-	0.1		-

Data from teenagers from Ghent: consumers only

Food or group	Food Consumption g/person/day		Mean of patulin level in food (µg/kg)			Intake of patulin ng/person/day/			Intake of patulin ng/kg body weight/day		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	108	374	2.2			238		823	4.0		14
grape juice	41	-	4.6			189		-	3.1		-

(**) mean(1)

France

ADULTS – all population

Body weight (average adult person) = 66,4 kg

Food or group	Food Consumption (g/person/day)		Mean of patulin level in food (µg/kg)			Intake of patulin (ng/person/day)			Intake of patulin (ng/kg body weight/day)		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	2.25	0	8.37	14.34	[1-130]	18.8	32	0	0.3	0.5	0
apple puree	6.08	42.9	6.28	20.5	[0.35-86]	38.2	125	269	0.6	2	4.1
cider	3.54	17.1	6.18	18.04	[1-101]	21.9	64	106	0.3	0.9	1.6

(**) mean (1)

ADULTS – consumers only

Body weight (average adult person) = 66,4 kg

Food or group	Food Consumption (g/person/day)		Mean of patulin level in food (µg/kg)			Intake of patulin (ng/person/day)			Intake of patulin (ng/kg body weight/day)		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	65.0	188.6	8.37	14.34	[1-130]	544	930	1578	8.9	15	23.9
apple puree	33.3	85.7	6.28	20.5	[0.35-86]	209	683	538	3.3	11	8.4
cider	62.2	205.7	6.18	18.04	[1-101]	384	1122	1270	5.6	16	15.6

(**) mean (1)

ADULT MALES – all population

Average body weight (adult male) = 73,9 kg

Food or group	Food Consumption (g/person/day)		Mean of patulin level in food (µg/kg)			Intake of patulin (ng/person/day)			Intake of patulin (ng/kg body weight/day)		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	2.63	0	8.37	14.34	[1-130]	22.1	37.7	0	0.36	0.62	0
apple puree	4.59	28.6	6.28	20.5	[0.35-86]	28.8	94.1	179.4	0.4	1.3	2.6
cider	5.03	17.14	6.18	18.04	[1-101]	31.1	90.7	105.9	0.43	1.26	1.49

(**) mean (1)

ADULT FEMALES – all population

Average body weight (adult female) = 60,1 kg

Food or group	Food Consumption (g/person/day)		Mean of patulin level in food (µg/kg)			Intake of patulin (ng/person/day)			Intake of patulin (ng/kg body weight/day)		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	1.92	0	8.37	14.34	[1-130]	16.1	27.5	0	0.25	0.43	0
apple puree	7.33	42.86	6.28	20.5	[0.35-86]	46.0	150.3	269.1	0.78	2.56	4.92
cider	2.3	17.14	6.18	18.04	[1-101]	14.2	41.4	105.9	0.22	0.65	1.7

(**) mean (1)

CHILDREN – all population

Average body weight (children person) = 32 kg

Food or group	Food Consumption (g/person/day)		Mean of patulin level in food (µg/kg)			Intake of patulin (ng/person/day)			Intake of patulin (ng/kg body weight/day)		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	9.02	57.1	8.37	14.34	[1-130]	75	129	478	3	5.2	18.7
apple puree	6.6	42.9	6.28	20.5	[0.35-86]	41.5	136	269	1.7	5.7	9.1
cider	0.5	0	6.18	18.04	[1-101]	2.9	8.4	0	0.1	0.3	0

(**) mean (1)

CHILDREN – consumers only

Average body weight (children person) = 32 kg

Food or group	Food Consumption (g/person/day)		Mean of patulin level in food (µg/kg)			Intake of patulin (ng/person/day)			Intake of patulin (ng/kg body weight/day)		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	55.3	171.4	8.37	14.34	[1-130]	463	791	1435	18.8	32.2	60.9
apple puree	25.7	57.1	6.28	20.5	[0.35-86]	161	530	359	6.8	22	21.3
cider	23.8	44.6	6.18	18.04	[1-101]	147	429	276	5.4	15.9	16.5

(**) mean (1)

CHILDREN 3-5 years– all population

Average body weight (children 3-5 years) = 17.7 kg

Food or group	Food Consumption (g/person/day)		Mean of patulin level in food (µg/kg)			Intake of patulin (ng/person/day)			Intake of patulin (ng/kg body weight/day)		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	9.81	57.1	8.37	14.34	[1-130]	82	140	478	4.9	8.3	31.9
apple puree	8.28	42.8	6.28	20.5	[0.35-86]	52	170	269	3.1	10.2	18.4
cider	0.4	0	6.18	18.04	[1-101]	2.7	8	0	0.1	0.4	0

(**) mean (1)

CHILDREN 6-8 years– all population

Average body weight (children 6-8 years) = 26.3 kg

Food or group	Food Consumption (g/person/day)		Mean of patulin level in food (µg/kg)			Intake of patulin (ng/person/day)			Intake of patulin (ng/kg body weight/day)		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	12.69	71.4	8.37	14.34	[1-130]	106	181	598	4.5	7.7	26
apple puree	8.42	42.8	6.28	20.5	[0.35-86]	53	173	269	2.2	7.4	11.4
cider	0.5	0	6.18	18.04	[1-101]	3	9	0	0.1	0.4	0

(**) mean (1)

CHILDREN 9-11 years– all population

Average body weight (children 9-11 years) = 35.3 kg

Food or group	Food Consumption (g/person/day)		Mean of patulin level in food (µg/kg)			Intake of patulin (ng/person/day)			Intake of patulin (ng/kg body weight/day)		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	6.64	35.7	8.37	14.34	[1-130]	56	95	299	1.6	2.8	10.4
apple puree	5.45	28.6	6.28	20.5	[0.35-86]	34	112	179	1.0	3.3	5.6
cider	0.4	0	6.18	18.04	[1-101]	2.7	7.8	0	0.1	0.2	0

(**) mean (1)

CHILDREN 12-14 years– all population

Average body weight (children 12-14 years) = 47.9 kg

Food or group	Food Consumption (g/person/day)		Mean of patulin level in food (µg/kg)			Intake of patulin (ng/person/day)			Intake of patulin (ng/kg body weight/day)		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
apple juice	6.72	51.4	8.37	14.34	[1-130]	56	96	430	1.2	2	8.0
apple puree	4.32	28.6	6.28	20.5	[0.35-86]	27	88	179	0.6	2	4.5
cider	0.5	0	6.18	18.04	[1-101]	3	9	0	0.06	0.2	0

(**) mean (1)

Germany

Mean body weight in kg:

girls		boys	
1 year	9,4	1 year	10,4
1,5 year	11,4	1,5 year	11,8
2 year	13,0	2 year	14,0
3 year	14,3	3 year	19,9

4-6 years old girls	19,4
6-14 years old children	35,1
>14 years old adults	70,4

Consumers only

	Food or group	Food consumption g/person/day		Mean patulin level (µg/kg)			Intake of patulin ng/person/day			Intake of patulin ng/kg body weight/day		
Population group		Mean	High level 95%percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95%percentile	Mean (1)	Mean (2)	High level 95%percentile
4-6 years old girls												
	apple juice	114,8	341	7,9	22,1	1 - 415	907	2537	2694	47	131	139
	pear juice	33,7	92	3,7	8,2	1 - 25	125	276	340	6,4	14	18
	grape juice red and white	47,9	144,8	4,3	29,3	1,5 - 32	206	1403	623	11	72	32
	apple puree and compote	19,6		1,6		1,5 - 2,5	31			1,6		
	tomato canned	6,2	19,7	1,7	3,5	1,5 - 3,5	11	22	33	0,6	1,1	1,7
6-14 years old children												
	apple juice	133,5	400	7,9	22,1	1 - 415	1055	2950	3160	30	84	90
	pear juice	51,6	155,7	3,7	8,2	1 - 25	191	423	576	5,4	12	16
	grape juice red and white	63,3	211,4	4,3	29,3	1,5 - 32	272	1855	909	7,7	52	26
	apple puree and compote	26,6	50	1,6		1,5 - 2,5	43		80	1,2		2,3
	tomato canned	7,7	25,7	1,7	3,5	1,5 - 3,5	13	27	44	0,4	0,8	1,2
>14 years old adults												
	apple juice	102,2	314,3	7,9	22,1	1 - 415	807	2259	2483	11	32	35
	pear juice	43,9	114,3	3,7	8,2	1 - 25	162	360	423	2,3	5,1	6,0
	grape juice red and white	55,2	142,9	4,3	29,3	1,5 - 32	237	1617	614	3,4	23	8,7
	apple puree and compote	27,5	85,3	1,6		1,5 - 2,5	44		136	0,6		1,9
	tomato canned	9,5	40,5	1,7	3,5	1,5 - 3,5	16	33	69	0,2	0,4	1,0

All population

	Food or group	Food consumption g/person/day		Mean patulin level (µg/kg)			Intake of patulin ng/person/day			Intake of patulin ng/kg body weight/day		
Population group		Mean	High level 90%percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 90%percentile	Mean (1)	Mean (2)	High level 90%percentile
Girls*												
1 year	fruit juice, canned and processed fruit	50	83	4,8	42,5	1,5-68	240	2125	398	25	225	42
1,5 year	fruit juice, canned and processed fruit	86	231	4,8	42,5	1,5-68	413	3655	1109	36	320	97
2 year	fruit juice, canned and processed fruit	72	175	4,8	42,5	1,5-68	346	3060	840	27	236	65
3 year	fruit juice, canned and processed fruit	121	288	4,8	42,5	1,5-68	581	5143	1382	41	360	97
Boys*												
1 year	fruit juice, canned and processed fruit	47	57	4,8	42,5	1,5-68	226	1998	274	22	191	26
1,5 year	fruit juice, canned and processed fruit	120	287	4,8	42,5	1,5-68	576	5100	1378	49	433	117
2 year	fruit juice, canned and processed fruit	73	140	4,8	42,5	1,5-68	350	3103	672	25	222	48
3 year	fruit juice, canned and processed fruit	157	547	4,8	42,5	1,5-68	754	6673	2623	51	448	176

* for the worst case it is assumed that 100 % of the fruits are apples

All population

	Food or group	Food consumption g/person/day		Mean patulin level (µg/kg)			Intake of patulin ng/person/day			Intake of patulin ng/kg body weight/day		
Population group		Mean	High level 95%percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95%percentile	Mean (1)	Mean (2)	High level 95%percentile
4-6 years old girls												
	apple juice	106	316	7,9	22,1	1 - 415	837	2343	2496	43	121	129
	pear juice	1,7	4,7	3,7	8,2	1 - 25	6,3	14	17	0,3	0,7	0,9
	grape juice red and white	2,7	8,0	4,3	29,3	1,5 - 32	12	79	34	0,6	4,1	1,8
	apple puree and compote	0,2		1,6		1,5 - 2,5	0,3			0,02		
	tomato canned	1,4	4,3	1,7	3,5	1,5 - 3,5	2,4	4,9	7,3	0,1	0,3	0,4
6-14 years old children												
	apple juice	42	126	7,9	22,1	1 - 415	332	928	995	9,5	26	28
	pear juice	0,5	1,6	3,7	8,2	1 - 25	1,9	4,1	5,9	0,05	0,12	0,17
	grape juice red and white	1,3	4,5	4,3	29,3	1,5 - 32	5,6	38	19	0,16	1,1	0,54
	apple puree and compote	0,1	0,2	1,6		1,5 - 2,5	0,2		0,3	0,006		0,009
	tomato canned	0,8	2,7	1,7	3,5	1,5 - 3,5	1,4	2,8	4,6	0,04	0,08	0,13
>14 years old adults												
	apple juice	16,6	51	7,9	22,1	1 - 415	131	367	403	1,9	5,2	5,7
	pear juice	0,4	1,0	3,7	8,2	1 - 25	1,5	3,3	3,7	0,02	0,05	0,05
	grape juice red and white	1,0	2,6	4,3	29,3	1,5 - 32	4,3	29	11	0,06	0,41	0,16
	apple puree and compote	0,1	0,3	1,6		1,5 - 2,5	0,2		0,5	0,003		0,007
	tomato canned	0,9	3,7	1,7	3,5	1,5 - 3,5	1,5	3,2	6,3	0,02	0,05	0,09

Italy

Population (total sample)
Mean body weight : 70 Kg
** the body weight considered is 10 Kg

Food or group	**Food Consumption g/person/day**		**Mean of patulin level in food (µg/kg)**			**Intake of patulin ng/person/day/**			**Intake of patulin ng/kg body weight/day**		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile	Mean (1)	Mean (2)	High level 95% percentile
fruit juice (apple, pear)	14,06	100,00	47,62	65,60	0,02-1150,0	669,54	922,34	4762	9,56	13,18	68,03
baby food ** (homogenised)	0,07	0,00	1,23	2,73	0,10-6,39	0,09	0,19	0,00	0,01	0,02	0,00
baby food ** (milk flour)	0,29		0,55	0,94	0,1-0,97	0,16	0,27		0,016	0,03	
fruit preserved (nectar, puree)	0,78	0,00	2,90	1,60*	0,02-5	2,26	1,25*	0,00	0,03	0,02	0,00
apple (with peel)	52,88	203,81	107,70	152,00	0,1-778,90	5695,18	8037,76	21950,34	81,36	114,82	313,58
pear	16,87	91,43	0,34	1,23	0,25-1,23	5,74	20,75	31,09	0,08	0,30	0,44
peach	23,30	142,86	4,83	23,29	0,25-23,29	112,53	542,66	690,02	1,61	7,75	9,56

* The smaller value of mean 2 than mean1 is produced by high differences between the LOD values

Consumers (total sample)
Mean body weight : 70 Kg
** the body weight considered is 10Kg

Food or group	**Food Consumption g/person/day**		**Mean of patulin level in food (µg/kg)**			**Intake of patulin ng/person/day/**			**Intake of patulin ng/kg body weight/day**		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
fruit juice (apple, pear)	76,39	212,80	47,62	65,60	0,02-1150,0	3637,69	5011,84	10133,54	51,97	71,59	144,76
baby food (homogenised)**	5,83	16,52	1,23	2,73	0,10-6,39	7,17	15,91	34,36	0,72	1,59	3,44
baby food (milk flour)**	94,43		0,55	0,94	0,1-0,97	51,94	88,76		5,19	8,88	
fruit preserved (nectar, puree)	26,99	81,43	2,90	1,60*	0,02-5	78,27	43,18*	472,29	1,12	0,62	6,75
apple (with peel)	87,17	245,40	107,70	152,00	0,1-778,90	9288,21	13249,84	26429,58	134,12	189,28	377,56
pear	54,98	135,63	10,34	1,23	0,25-1,23	18,69	67,62	46,11	0,27	0,97	0,66
peach	86,62	232,50	4,83	23,29	0,25-23,29	418,37	2017,38	1122,98	5,97	28,82	16,04

* The smaller value of mean 2 than mean1 is produced by high differences between the LOD values

Norway

Average person (all population)

Body weight 65 kg

Food or group	Food Consumption ml/person/day		Mean of patulin level in food (mg/kg)			Intake of patulin ng/person/day			Intake of patulin ng/day/kg body weight		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile	Mean (1)	Mean (2)	High level 95% percentile
apple juice	2,5		6,6	-	2,5-23,9	16,5	-	-	0,25	-	-
apple nectar	13,1		3,2	-	2,5-12,1	41,9	-	-	0,64	-	-
apple cider	5,7		2,8	-	2,5-16,2	16,0	-	-	0,25	-	-

Portugal

Average person (all population)

Body weight 65 kg

Food or group	Food Consumption ml/person.day		Mean of patulin level in food (mg/kg)			Intake of patulin ng/person.day			Intake of patulin ng/day/kg body weight		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile	Mean (1)	Mean (2)	High level 95% percentile(**)
clear apple juice	0,86		0	0	0	0	0		0	0	
cloudy apple juice	0,86		8,7	15,2	4,0 - 25,2	7,482	13,072		0,115	0,201	
apple and other fruits cloudy juice	0,86		0	0	0	0	0		0	0	
milk and apple juice	0,86		0	0	0	0	0		0	0	
cloudy pear juice	0,86		5,1	18,0	0 - 23,4	4,386	15,480		0,068	0,238	
pear and other fruits cloudy juice	0,86		8,4	8,4	7,2 - 9,6	7,224	7,244		0,111	0,111	
milk and pear juice	0,86		0	0	0	0	0		0	0	

We surely needed more information on consumption of this kind of juices, because their expression on total juices consumed is very low. But assuming that all the production is consumed, we can use the values of total apple and pear juices production, to estimate daily intake.

Spain

All population

Food or group	Food Consumption g/person/day		Mean of patulin Level in food (µg/kg)			Intake of patulin ng/person/day/			Intake of patulin ng/kg body weight/day (**)		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile(**)	Mean (1)	Mean (2)	High level 95% percentile(**)
Ref 1 (*)	6.03		2	9	<5-13,6	12.06	54.27		0.18	0.8	
Ref 2 Fruit juices	27.9		0.83	-	<5	23.16	-		0.34	-	
Ref 2 (*)	6.03		0.83	-	<5	5.01	-		0.07	-	

(*) fruit juices except grape, orange, peach and pineapple juices. It is not possible to get data of apple juices.
(**) body weight: 68 kg

Ref.1: UNPUBLISHED DATA. Internal survey conducted by Centro Nacional de Alimentación (Ministry of Health and Consumption)
Ref.2: ARMENTIA, A., JALON, M., URIETA, I. and MACHO, M.L., 2000, Vigilancia de la presencia de Patulina en zumos de manzana y sidras comercializados en la Comunidad Autónoma del País Vasco. Alimentaria, 310, 65-70.

Sweden

Adult, both sexes, between 15 - 74 years old, all population

Food or group	Food Consumption ml/person.day		Mean of patulin level in food (mg/kg)			Intake of patulin ng/person.day			Intake of patulin ng/day/kg body weight		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile	Mean (1)	Mean (2)	High level 95% percentile(**)
purees and soups	62	170	1			62		170	0,9		2,4
all different juices *	130	340	1,4	10,4	0 -25	170	1350	480	2,4	19	7

Ref.: HULKEN
Mean weight = 70 kg
* about 50 % of all consumed juices are pure orange juice

Children, both sexes, between 7 - 14 years old, all population

Food or group	Food Consumption ml/person.day		Mean of patulin level in food (mg/kg)			Intake of patulin ng/person.day			Intake of patulin ng/day/kg body weight		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile	Mean (1)	Mean (2)	High level 95% percentile(**)
purees and soups	74	180	1			74		180	2		5
all different juices *	150	400	1,4	10,4	0 -25	210	1560	560	5	40	14

Ref.: HULKEN
Mean weight = 38 kg
* about 50 % of all consumed juices are pure orange juice

Adult, both sexes, between 19- 74 years old, all population

Food or group	Food Consumption ml/person.day		Mean of patulin level in food (mg/kg)			Intake of patulin ng/person.day			Intake of patulin ng/day/kg body weight		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile	Mean (1)	Mean (2)	High level 95% percentile(**)
purees and soups	1,4		1			1		5	0,01		0,05
apple juice	0,2		1,4	10,4	0 - 25	0,3	2		0	0,03	
mixed juices	88		1			88			1,2		

Ref.: Riksmaten
Mean weight = 75 kg

Adult, both sexes, between 19- 74 years old, consumer only

Food or group	Food Consumption ml/person.day		Mean of patulin level in food (mg/kg)			Intake of patulin ng/person.day			Intake of patulin ng/day/kg body weight		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Mean (1)	Mean (2)	High level 95% percentile	Mean (1)	Mean (2)	High level 95% percentile(**)
purees and soups	49		1			49			0,6		
apple juice	60		1,4	10,4	0 - 25	84	624		1,1	8,4	
mixed juices	182		1			182			2,5		

Ref.: Riksmaten
Mean weight = 75 kg

United Kingdom

ADULTS (AGES 16-64), consumers only

	Food or group	Food Consumption g/person/day		Mean of patulin level in food (µg/kg)			Intake of patulin mg/person/day/			Intake of patulin ng/kg body weight/day		
		Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Average consumer		High level 95% percentile	Average consumer		High level 95% percentile
							Mean (1)	Mean (2)	Mean (1)	Mean (1)	Mean (2)	Mean (1)
Male and Female	Apple juice	44.2	121.3	17.68	22.94	<7– 50	0.8	1.0	2.1	12	15	33
Male	Apple juice	47.4	147.4	17.68	22.94	<7– 50	0.8	1.1	2.6	11	15	32
Female	Apple juice	42.4	109.7	17.68	22.94	<7– 50	0.7	1.0	1.9	11	15	32

Average body weight for an adult is quoted as 70.1kg.

TODDLERS (Ages 1.5 –4.5) , consumers only

Food or group	Food Consumption g/person/day		Mean of patulin level in food (µg/kg)			Intake of patulin mg/person/day/			Intake of patulin ng/kg body weight/day		
	Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Average consumer		High level 95% percentile	Average consumer		High level 95% percentile
						Mean (1)	Mean (2)	Mean (1)	Mean (1)	Mean (2)	Mean (1)
apple juice	92	273.7	17.68	22.94	<7 – 50.0	1.6	2.1	4.8	120	149	360

Average body weight for a toddler is quoted as 14.4kg.

YOUNG PEOPLE (Ages 4-18) , consumers only

	Food or group	Food Consumption g/person/day		Mean of patulin level in food (µg/kg)			Intake of patulin mg/person/day/			Intake of patulin ng/kg body weight/day		
		Mean	High level 95% percentile	Mean (1)	Mean (2)	Range	Average consumer		High level 95% percentile	Average consumer		High level 95% percentile
							Mean (1)	Mean (2)	Mean (1)	Mean (1)	Mean (2)	Mean (1)
4-18 years	apple juice	76.3	224.3	17.68	22.94	<7 – 50	1.3	1.8	4.0	40	52	128
4-6 years	apple juice	67.7	241.2	17.68	22.94	<7 – 50	1.2	1.6	4.3	57	74	213
7-10 years	apple juice	78.9	228	17.68	22.94	<7– 50	1.4	1.8	4.0	44	57	142
11-14 years	apple juice	74.8	194.2	17.68	22.94	<7– 50	1.3	1.7	3.4	30	39	91
15-18 years	apple juice	85.6	223.5	17.68	22.94	<7– 50	1.5	2.0	4.0	25	33	60

Average body weight for a young person is quoted as 37 kg

Table 3B: Summary of daily intake of patulin by body weight (ng/kg body weight/day)

Country	Population group			Mean (1)	High level
Austria					
	All population	children	Age 3-6	23,37	83,84
	All population	children	Age 7-9	23,07	62,39
	All population	children	Age 10-12	18,94	59,60
	All population	children	Age 13-14	15,26	42,76
	All population	children	Age 15-19	16,44	47,71
	All population	adults	Age = 25	7,34	36,24
	All population	adults	Age 26 - 35	4,24	28,34
	All population	adults	Age 36 - 45	2,78	18,12
	All population	adults	Age 46 - 55	2,70	17,64
	All population	adults	Age >56	2,16	16,41
	All population	elderly	Age = 74	2,96	17,35
	All population	elderly	Age 75-84	12,21	42,05
	All population	pregnant women		13,59	33,49
	All population	lactating women		13,56	46,72
	Consumers only	children	Age 3-6	80,85	175,00
	Consumers only	children	Age 7-9	106,95	152,42
	Consumers only	children	Age 10-12	85,87	126,85
	Consumers only	children	Age 13-14	84,45	89,22
	Consumers only	children	Age 15-19	73,50	87,90
	Consumers only	adults	Age = 25	75,75	83,58
	Consumers only	adults	Age 26 - 35	64,98	64,08
	Consumers only	adults	Age 36 - 45	58,78	48,51
	Consumers only	adults	Age 46 - 55	80,14	71,89
	Consumers only	adults	Age >56	28,38	-
	Consumers only	elderly	Age = 74	-	-
	Consumers only	elderly	Age 75-84	-	-
	Consumers only	pregnant women		24,99	56,58
	Consumers only	lactating women		46,56	66,67

Country		Population group		Mean (1)	High level
Belgium					
	All population	teenagers population Ghent occurrence data 1997-2001	Age 14-18	1.3	8.6
	Consumers only	teenagers occurrence data 1997-2001	Age 14-18	11.2	28
	All population	teenagers population Ghent occurrence data 2001	Age 14-18	0.7	4.2
	Consumers only	teenagers occurrence data 2001	Age 14-18	7.1	14
France[1]					
	All population	all adults		1.23	6.4
	All population	adult males		1.19	5.77
	All population	adult females		1.26	6.62
	Consumers only	adult		4.9	13.6
	All population	all children		4.9	23.4
	All population	children	3-5 years	8.1	40.7
	All population	children	6-8 years	6.9	35.6
	All population	children	9-11 years	2.7	14.0
	All population	children	12-14 years	1.8	10.6
	Consumers only	children		12.9	49
Germany					
	Consumers only	girls	4-6 years	67	191
	Consumers only	children	6-14 years	45	136
	Consumers only	adults	>14 years	18	53
	All population	girls	4-6 years	44	132
	All population	children	6-14 years	9.8	29
	All population	adults	>14 years	2.0	6.0
	All population	girls	1 year	25	42
	All population	girls	1.5 year	36	97
	All population	girls	2 year	27	65
	All population	girls	3 year	41	97
	All population	boys	1 year	22	26
	All population	boys	1.5 year	49	117
	All population	boys	2 year	25	48
	All population	boys	3 year	51	176

[1] Instead of summing up the daily intakes of each commodity the French representative proposeded to do the calculation of the daily intake of patulin with the real disaggregated data on individuals from all the commodities.

Country		Population group		Mean (1)	High level
Italy					
	All population[2]	fresh fruit		83.05	323.88
	Consumers only[2]	fresh fruit		140.36	394.27
	All population[3]	derived products		9.60	68.03
	Consumers only[3]	derived products		53.08	148.14
	All population	baby food		0.03	0.00
	Consumers	baby food		5.91	2.03
Norway					
	All population	average person		1,14	-
Portugal					
	All population			0.294	-
Spain					
	All population	Ref 1 [6]		0.18	
	All population	Ref 2 All Fruit juices	25-65 years	0.34	
	All population	Ref 2 [6]		0.07	
Sweden					
	All population	adults [4]	19 -74 years	1.21	1.24
	Consumers only	adults [4]	19 -74 years	4.20	11.5
	All population	adults[5]	15 - 74 years	2.1	5.9
	All population	children[5]	7-14 years	4.5	12
United Kingdom					
	Consumers only	toddlers	Ages 1.5–4.5	120	360
	Consumers only	children	4-18 years	40	128
	Consumers only	children	4-6 years	57	213
	Consumers only	children	7-10 years	44	142
	Consumers only	children	11-14 years	30	91
	Consumers only	children	15-18 years	25	60
	Consumers only	male	16-64 years	11	32
	Consumers only	female	16-64 years	11	32

[2] For the summary of daily intake only the occurrence data of apple without peel are not considered.
[3] For the summary of daily intake only the occurrence data of the fruit juices and the fruit preserved are considered.
[4] this values are based on the consumption investigation reported in " Riksmaten (1997)"
[5] this values are based on the consumption investigation reported in "HULKEN (1994)". Taken into account that about 50 % of all juice consumption is orange juice.
[6] fruit juices except grape. orange, peach and pineapple juices. It is not possible to get data of apple juices.
Sweden: Except the food products analysed and described here it might be possible to find Patulin in different types of jam. Earlier calculation show that a possible intake from these products is 0.5 – 4.3 ng /kg day.
Ref.1: UNPUBLISHED DATA. Internal survey conducted by Centro Nacional de Alimentación (Ministry of Health and Consumption)
Ref.2: ARMENTIA. A., JALON. M., URIETA. I. and MACHO. M.L., 2000. Vigilancia de la presencia de patulina en zumos de manzana y sidras comercializados en la Comunidad Autónoma del País Vasco. Alimentaria. 310. 65-70.

Table 3C. Ranking for dietary intakes of patulin for adults

ng / kg body weight / day

Country	Mean 1	High level	Population group
Italy	9,6*	68*	**P**
Austria	2,8	18	Adults 36-45 years old, **P**
Germany	2,0	6,0	Adults >14 years old, **P**
Belgium	1,3	8,6	Teenagers population Ghent, 14-18 years old, **P**
France	1,2**	6,4	Adults **P**
Sweden	1,2	1,2	Adults 19-74 years old, **P**
Norway	1,1		**P**
Portugal	0,3		**P**
Spain	0,2		**P**
Weighed intake for all population	***3,0 / 1,3******	***22 / 6,6******	

Country	Mean 1	High level	Population group
Italy	53*	148*	**C**
Austria	59		Adults 36-45 years old, **C**
Germany	18	53	Adults >14 years old, **C**
Belgium	11	28	Teenagers population Ghent, 14-18 years old, **C**
United Kingdom	11	32	Adults 16-64 years old, **C**
France	4,9**	13,6	Adults, **C**
Sweden	4,2	11,5	Adults 19-74 years old, **C**
Weighed intake for consumer	***21 /13******	***57 / 33******	

**** It is calculated without apple, pear and peach***

** Normally the main contributor for patulin intake is apple juice, only in France apple puree seems to be the main contributor for all population

*** Calculated without Italy

P Population

C Consumer

For the calculation of the weighed mean and high level the authors make use of the population data in millions shown under the internet address http://europa.eu.int/abc/eu_members/index_de.htm.

Austria	8,1	Portugal	10,8
Belgium	10,2	Spain	39,4
France	60,4	Sweden	9,8
Germany	82	UK	58,6
Italy	57,6		
Norway	4,4		

Europe 372,6

Table 3D. Ranking for dietary intakes of patulin for 3-6 years old children

ng / kg body weight / day

Country	Mean 1	High level	Population group
Germany	44	132	Girls 4-6 years old, **P**
Austria	23	84	Children 3-6 years old, **P**
France	8,1	40,7	Children 3-5 years old, **P**
Weighed intake for all population	***28***	***93***	

Country	Mean 1	High level	Population group
Austria	81	175	Children 3-6 years old, **C**
Germany	67	191	Girls 4-6 years old, **C**
United Kingdom	57	213	Children 4-6 years old, **C**
Weighed intake for consumer	***64***	***199***	

P Population
C Consumer

For the calculation of the weighed mean and high level the authors make use of the population data in millions shown under the internet address http://europa.eu.int/abc/eu_members/index_de.htm.

Austria	8,1
France	60,4
Germany	82
UK	58,6
Europe	372,6

Table 4 Summary of contamination levels of patulin

Food product	No samples	No samples 25-50 µg/kg	Percentage of samples > 25 µg/kg	No samples >50µg/kg	Percentage of samples > 50 µg/kg
apple concentrate	316	5		258**	
apple concentrate juice, clear	859	34		0	
reconstituted apple juice from these (dilution factor 7)	**1175**	**57**	**8,5**	**43**	**3,7**
apple juice freshly pressed, cloudy or clear and from concentrates	**4495**	**991**	**23**	**50**	**1,1**
apple drink	64	0		0	
apple nectar	74	0		0	
sum apple drinks and nectars	**138**	**0**	**0**	**0**	**0**
pear juice and nectar	100	2	3,0	1	1,0
cider and drink based on cider	339	18	20	51	15
grape juice	160	14	8,8	0	0
grape must*	164	14	23	24	15
mixed juices and other juices than apple, pear, grape	166	2	1,2	0	
apple or pear with milk	8	0		0	
sum of other juices, including must and cider	**937**	**50**	**13**	**76**	**8,1**
apple puree and compote	96	0		1	
blueberry soup and puree	42	0		0	
apple and mango/apple pulp	2	0		0	
pear puree	7	0		0	
sum of purees	**147**	**0**	**0**	**1**	**0,7**
baby food	**312**	**2**	**1,3**	**2**	**0,6**
cranberry	1	0		0	
fruit dry	8	0		3	
fruit vinegar	12	0		0	
jam and jelly	23	0		0	
peach	7	1		0	
pears canned	5	0		0	
tomato concentrate and puree	23	0		0	
tomato juice	1	0		0	
sum of other commodities	**73**	**1**	**5,5**	**3**	**4,1**
Total	***7277***	***1101****	***17,5***	***175****	***2,4***
apple, pear, peach (unaffected with /without peel and rotten area)***	85	1	31	25	28
apple juice, nectar and concentrate (not reconstituted) (Federation German fruit juice industry)	8286	1459	26	672	8,1

* the fresh grape must is only available during a very short period of the year (vintage season)
** the values from the contamination class LOQ-69.9 µg/kg are enclosed
*** not considered in the total number of samples
**** calculation with the number of positive samples of apple concentrates after division with 7

Table 5. Dietary intakes of patulin in each Member State by commodity

(ng / kg bw / day)

	apple juice	pear juice	grape juice	fruit juice	cider	puree	baby food	others	fresh fruit	total dietary intake
Austria (Children: 3-6 y, P)	21,65		1,72							**23,37**
Austria (Children: 7-9 y, P)	20,80		2,27							**23,07**
Austria (Children: 10-12 y, P)	17,06		1,88							**18,94**
Austria (Children: 13-14 y, P)	13,52		1,74							**15,26**
Austria (Children: 15-19 y, P)	14,81		1,63							**16,44**
Austria (Adults: = 25 y , P)	6,61		0,72							**7,34**
Austria (Adults: 26 - 35y, P)	3,83		0,42							**4,24**
Austria (Adults: 36 - 45y, P)	2,51		0,27							**2,78**
Austria (Adults: 46 - 55y, P)	2,44		0,27							**2,70**
Austria (>56y, P)	1,95		0,21							**2,16**
Austria (elderly persons: = 75 y, P)	2,67		0,29							**2,96**
Austria (elderly persons: 75-84 y, P)	11,00		1,21							**12,21**
Austria (pregnant women, P)	12,25		1,34							**13,59**
Austria (lactating women, P)	12,22		1,34							**13,56**
Austria (Children: 3-6 y, C)	80,85									**80,85**
Austria (Children: 7-9 y, C)	61,19		45,76							**106,95**
Austria (Children: 10-12 y, C)	53,27		32,60							**85,87**
Austria (Children: 13-14 y, C)	41,04		43,41							**84,45**
Austria (Children: 15-19 y, C)	45,67		27,83							**73,50**
Austria (Adults: = 25 y , C)	31,45		44,30							**75,75**
Austria (Adults: 26 - 35y, C)	34,61		30,37							**64,98**
Austria (Adults: 36 - 45y, C)	23,82		34,96							**58,78**
Austria (Adults: 46 - 55y, C)	34,15		45,99							**80,14**
Austria (>56y, C)	28,38		23,82							**56,20**
Austria (pregnant women, C)	24,99									**24,99**
Austria (lactating women, C)	46,56									**46,56**
Belgium (Teenager, 14-18 y, Gent, P)[11]	1,20		0,10							**1,30**
Belgium (Teenager, 14-18 y, Gent, C)[11]	8,10		3,10							**11,20**

	apple juice	pear juice	grape juice	fruit juice	cider	puree	baby food	others	fresh fruit	total dietary intake
France (Children: P)[7]	3,00				0,10	1,70				**4,90**
France (Children: C)[7]	18,80				5,40	6,80				**12,90**
France (Children: 3-5 y, P)[7]	4,90				0,10	3,10				**8,10**
France (Children: 6-8 y, P)[7]	4,50				0,10	2,20				**6,90**
France (Children: 9-11 y, P)[7]	1,60				0,10	1,00				**2,70**
France (Children: 12-14 y, P)[7]	1,20				0,06	0,60				**1,80**
France (Adults: P)[7]	0,30				0,30	0,60				**1,23**
France (Adults: C)[7]	8,90				5,60	3,30				**4,90**
France (Adults: males, P)[7]	0,36				0,43	0,40				**1,19**
France (Adults: females, P)[7]	0,25				0,22	0,78				**1,26**
Germany (Children, girls, 1 y, P)							25,00			**25,00**
Germany (Children, girls, 1,5 y, P)							36,00			**36,00**
Germany (Children, girls, 2 y, P)							27,00			**27,00**
Germany (Children, girls, 3 y, P)							41,00			**41,00**
Germany (Children, boys, 1 y, P)							22,00			**22,00**
Germany (Children, boys, 1,5 y, P)							49,00			**49,00**
Germany (Children, boys, 2 y, P)							25,00			**25,00**
Germany (Children, boys, 3 y, P)							51,00			**51,00**
Germany (Children, girls, 4-6 y, C)	47,00	6,40	11,00			1,60		0,60		**66,60**
Germany (Children, girls, 4-6 y, P)	43,00	0,30	0,60			0,02		0,10		**44,02**
Germany (Children, 6-14 y, C)	30,00	5,40	7,70			1,20		0,40		**44,70**
Germany (Children, 6-14 y, P)	9,50	0,05	0,16			0,01		0,04		**9,76**
Germany (Adults, >14 y, C)	11,00	2,30	3,40			0,60		0,20		**17,50**
Germany (Adults, >14 y, P)	1,90	0,02	0,06			0,01		0,02		**2,01**
Italy (only juice and puree, P)[5]				9,56		0,03				**9,59**
Italy (only juice and puree, C)[5]				51,97		1,12				**53,09**
Italy (only fresh fruit, P)[6]									83,05	**83,05**
Italy (only fresh fruit, C)[6]									140,36	**140,36**
Italy (fresh fruit, juice and puree, P)										***92,64***
Italy (fresh fruit, juice and puree, C)										***193,45***
Italy (Toddlers, P)							0,02			**0,02**

Italy (Toddlers, C)							5,91			**5,91**

	apple juice	pear juice	grape juice	fruit juice	cider	puree	baby food	others	fresh fruit	total dietary intake
Norway (P)	0,89[8]				0,25					*1,14*
Portugal (P)	0,115	0,068		0,111						**0,29**
Spain (P)[3]				0,18[10]						**0,18**
Spain (P)[4]				0,07[10]						**0,07**
Spain (Adults, 25-65 y, P)[4]				0,34[9]						**0,34**
Sweden (Adults, 15-74 y, P)[1]				1,20[12]		0,90				**2,10**
Sweden (Adults, 19-74 y, P)[2]	0,00			1,20		0,01				**1,21**
Sweden (Adults, 19-74 y, C)[2]	1,10			2,50		0,60				**4,20**
Sweden (Children , 7-14 y, P)[1]				2,50[12]		2,00				**4,50**
UK (Toddlers: 1,5-4,5 y, C)	120,00									**120,00**
UK (Children 4-18 y, C)	40,00									**40,00**
UK (Children 4-6 y, C)	57,00									**57,00**
UK (Children 7-10 y, C)	44,00									**44,00**
UK (Children 11-14 y, C)	30,00									**30,00**
UK (Children 15-18 y, C)	25,00									**25,00**
UK (Adults, 16-64 y, C)	12,00									**12,00**

P All population
C Consumers
1 Ref. Hulken
2 Ref. Riksmaten
3 UNPUBLISHED DATA. Internal survey conducted by Centro Nacional de Alimentación (Ministry of Health and Consumption)
4 ARMENTIA, A., JALON, M., URIETA, I. and MACHO, M.L.
5 For the summary of daily intake the occurrence data of apple (with and without peel, peach and pear) are not considered.
6 For the summary of daily intake the occurrence data of apple without peel are not considered.
7 Instead of summing up the daily intakes of each commodity the French representative proposed to do the calculation of the daily intake of patulin with the real disaggregated data on individuals from all the commodities
8 It is the sum of apple juice and –nectar
9 All fruit juices
10 Fruit juice except grape, orange, peach and pineapple juice
11 With occurrence data from 1997-2001
12 About 50% of all consumed juices are pure orange juice, it was calculated wit 50% of the consumption of fruit juice

Table 6. Summary of LOD and LOQ for patulin of each country

Country	commodity	LOD in µg/kg	LOQ in µg/kg
Austria	apple juice		4-16
	grape juice		4-8
	baby food		5-10
	grape must		4-8
	apple concentrate		5-20
Belgium	apple juice		5-10
	apple compote		5-21
	baby food		5-17
	grape juice		6-7
	cider		7
	canned pears		5
France	apple juice	2	5
	apple puree	0,7	2
	baby food	0,7	2
	cider and drink based on cider	2	5
Germany		2-10	5-20
Italy	A	0,2-0,4	0,75-0,90
	B	0,5-5	1,0-10
	C-juice	0,03-3,1	10
	C-baby food	0,03	1,0
	D-dry fruit		50
	D-apple puree		10-20
	D-baby food		25
	D- juice and nectar		2-50
Norway			5
Portugal		5	15
Spain		2,5	5
Sweden		2	
United Kingdom		5-7	15-20