ACRYLAMIDE - EU Summary of Activities

STUDY AREA 6 - TOXICOLOGY/ CARCINOGENICITY

NEW/UPDATE since February 2005

Entry No.	STUDY TITLE	SOURCE	STATUS	COMPLETION DATE	SUMMARY OF AIMS OF STUDY	SUMMARY OF MAIN CONCLUSIONS	COMMENTS	REFERENCES/ INTERNET LINKS	CONTACTS
		(Member State/ Organisation)	**C (completed) O (ongoing) P (proposed)**	(anticipated date if not yet completed)	Max 50 words	Max 50 words			
6.1	*In vivo* DNA damaging effects of acrylamide in rats.	France / French Food Safety Agency (AFSSA)	C	December 2003	DNA damage of acrylamide in the main organs of rats will be studied using the *in vivo* comet assay.	DNA damage and DNA adducts were assessed in rat tissues, after single oral doses of acrylamide. Results from acrylamide-induced DNA adduct measurements indicated a relatively even distribution of the adducts (N7-GA-Gua and N3-GA-Ade) among organs. An increased extent of DNA migration (Comet) was mainly found in brain, testis and blood leukocytes		To be published in Mutation Research (special issue on acrylamide): I Maniere et al., in press	Jean-Michel POUL, AFSSA - LERMVD, jm.poul@fougeres.afssa.fr
6.2	Mutagenic, clastogenic and aneugenic effects of food-born acrylamide in *in vitro* test systems	France / French Food Safety Agency (AFSSA)	O	June 2005	The aims of the study were reconsidered: the relative part of clastogenicity and aneugenicity of glycidamide (genotoxic metabolite of acrylamide) is being studied in human lymphocytes				Jean-Michel POUL, AFSSA - LERMVD, jm.poul@fougeres.afssa.fr

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6.3	*In vivo* promoting effect of food-born acrylamide in a rat model of colon carcinogenesis	France / French Food Safety Agency (AFSSA)	O	December 2005	The aims of the study were reconsidered: a short term rat model of hepatocarcinogenesis is being used instead of the rat colon model (adducts and weak DNA damages were found in the liver) to study the initiating/promoting effects of oral doses of acrylamide. Food-born acrylamide will be tested in the model only after its oral bioavailability in rats is determined.				Jean-Michel POUL, AFSSA - LERMVD, jm.poul@fougeres.afssa.fr
6.4	Biochemical and genotoxic in vitro effects of acrylamide in gut cells	Germany / Federal Institute for Risk Assessment (Sponsor) // University Institute	C	October 2004	The cytotoxic effects of acrylamide is investigated in isolated gut mucosa cells (human, rat) with different endpoints (e.g. absorption, amounts of DNA adducts, incidence of micronuclei). Emphasis is given to the low dose range.	AA was found to possess weak strand breaking properties in V79 and Caco-2 cells in vitro. In primary rat hepatocytes no DNA damage was induced by AA despite substantial expression of CYP2E1. GA was found to be more potent but rather weak genotoxic agent. Under GSH depletion, treatment with AA resulted in a strong decrease in cell viability. AA was found to pass epithelial cells by diffusion.	The well accepted approach in risk assessment of non-threshold effects requires extrapolation of the dose-response relationship over several orders of magnitude. The results of the study helps to clarify some dose-response characteristics in the lower dose range	Federal Institute for Risk Assessment www.bfr.bund.de	marko@rhrk.uni-kl.de; schrenk@rhrk.uni-kl.de

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6.5	„Development of new technologies to avoid acrylamide in food“ (ZUTECH-Cooperation Project; AiF-FV 108 ZBG)	Germany / Bund für Lebensmittel-recht und Lebensmittel-kunde e.V. (BLL)	O	March 2005	Human-toxicological assessment of acrylamide expositions by food products, study of genotoxic, mutagenic and cancerogenic effects of acrylamide and glycide amide, dose response		See also study areas 1.18; 3.15; 4.4; 7.2; 9.16	http://www.bll-online.de	jgelbert@bll-online.de Eisenbra@rhrk.uni-kl.de
6.6	A Single Dose Pilot Study to Evaluate the Toxicokinetics of acrylamid and its metabolite glycidamide following ingestion of acrylamide containing food	Germany / Federal Institute for Risk Assessment (BfR)(Sponsor) // University Institute	O	December 2005	Characterization of toxicokinetics of acrylamide and glycidamide in man under standardized conditions after uptake of a single oral dose of acrylamide-rich potato crisps, determination of acrylamid and glycidamide and their metabolites in urine and blood			Federal Institute for Risk Assessment www.bfr.bund.de	Uwe.Fuhr@medizin.uni-koeln.de
6.7	In vitro Metabolism of Acrylamide	Germany / Federal Institute for Risk Assessment (BfR)	P	December 2005	Metabolism of Acrylamid in genetically modified V79 cells and species differences of acrylamid metabolism				Ulrike Bernauer, BfR, Thielallee 88-92, 14195 Berlin, u.bernauer@bfr.bund.de

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6.8	Using the flow cytometer-based micronucleus assay in mouse to measure the effect of acrylamide at very low doses	Sweden / Swedish National Food Admimistration	C	December 2002	To clarify if there is a difference in the dose-effect-relationship (micronucleus) at different low dose regions	The dose-response function was linear in the dose regions applied (1-30 and 2.5-100 mg/kg b.w.). A tendency towards a steeper slope at lower doses was seen. Low DNA content of micronuclei indicated absence of whole chromosomes, i.e.no aneugenic effect of acrylamide		L Abrahamsson-Zetterberg (2003) *Mutation Research* **535**, 215-222.	Ass. Prof. Lilianne Abramsson-Zetterberg, National Food Administration liab@slv.se
6.9	Acrylamide distribution in infected mice	Sweden / Swedish National Food Admimistration	O	Feb-04		Common viral infected mice seems to have a changed distribution of acrylamide. The concentration of acrylamide in some organs are higher in infected mice in comparison to non-infected.	To be published		Lilianne Abramsson-Zetterberg, SLV, box 622, SE-75126 Uppsala, Sweden. liab@slv.se
6.10	Carcinogenicity of Acrylamide	The Netherlands	P		A combined mutagenicity study and carcinogenicity study with triple transgenic mice might be started in 2003. Tumorigenicity will be studied within 9 months dietary exposure to various concentrations of acrylamide. Concurrently, these triple transgenic mice will be exposed via the diet for 12 weeks to the same concentration of acrylamide.				Dr. E. Konings. Dutch Food Authority, Inspectorate for Health Protection, Den Bosch, The Netherlands. E-mail: Erik.Konings@kvw.nl, Phone: +31402911500, Fax: +31402911600

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6.11	Evaluation of the existence of thresholds of genotoxic activity with respect to substances identified in food	United Kingdom / Food Standards Agency	O	Oct-05	The project is generating a database to collate information on genotoxic chemicals that may occur in food. This research project seeks to identify compounds, such as acrylamide, that might be considered to act via a threshold mechanism, with the aim of providing critical mechanistic and dose response data.			http://www.food.gov.uk/science/research/researchinfo/foodcomponentsresearch/riskassessment/t01programme/t01projlist/t01029/	Dr Caroline Tahourdin, Food Standards Agency. caroline.tahourdin@foodstandards.gsi.gov.uk
6.12	Hazard characterisaion	The HEATOX project	O	October 2006	To perform Hazard characterisation of acrylamide		STREP under FP6 supported by EC, DGResearch, Priority on Food Quality and Safety	www.heatox.org	www.heatox.org