Oilseed rape Ms11

Organisation: European GMO-free Citizens [De Gentechvrije Burgers]
Country: The Netherlands
Type: Others...

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a. Assessment:
b. Food Safety Assessment:
Toxicology

Study by Hoechst (Dr Arno Schulz) on the substrates of phosphinothricin acetyltransferase (PAT).

Amsterdam, 7 November 1999.

Two experiments (studies) that arrive at opposite conclusions, by Charles J. Thompson, 1987. Characterisation of the herbicide-resistance gene bar from Streptomyces hygroscopicus: Dr. Arno Schulz, 1993: L-Phosphinothricine N-Acetyl-transferase – Biochemical Characterization – a report in Wehrmann 1996 (Schulz is co-author).

The subject is the characterisation of the enzyme phosphinothricin acetyltransferase (PAT), and in particular the specificity of the substrates.

The first study concerns the reaction of phosphinothricin with acetyl co-enzyme A under the influence of the enzyme PAT and compares this with a number of structural analogues of PPT phosphinothricin. One of the analogues was L-glutamate.

The products of the reaction were identified via a mass spectrogram, and the equilibrium constants (affinity) determined. In addition to PPT, a number of structural analogues were tested to determine whether there was an acetylation reaction. L-glutamic acid was one of the substances investigated.

Compared with PPT, the affinity of most of the substances was low; one substance did not react at all. In this test, where a numerically reportable reaction occurred to an identified product (the detection threshold is not an issue here) there does not appear to be any reason to doubt that glutamic acid is a substrate of PAT. The second study concerns the reaction of a large number of amino acids, including L-glutamic acid, which was also involved in the first study, in a reaction mix together

with a 100% excess of PPT in relation to the acetyl source acetyl co-enzyme A and PAT. Products of the reaction were identified using chromatography.

Even with a very large excess of L-amino acid, no products of reaction with the amino acids were found. Only acetyl phosphinothricin was found.

The authors concluded that PAT very specifically has only PPT as a substrate. The following criticisms can be made of this conclusion, which conflicts with that produced in the first study. (Incidentally, the first study is cited in the bibliography to the second study): No detection threshold was determined for acetylated L-glutamic acid.

The possibility of acetylated glutamic acid being a source of acetyl for the acetylation of PPT was ignored. This could have been tested in the study by adding acetylated glutamic acid to the reaction mix in a quantity above the detection threshold and examining whether this added quantity disappears during the reaction. Based on the results of the first study it could certainly be predicted to disappear!! The study was conducted using a reaction mix in which a large excess of a competing substrate, PPT, was present. Observations of the pure amino acids were not conducted.

There is no discussion whatsoever of the results of the first study, in particular as to why these were so different. Essentially, the authors of the second study accuse the authors of the first study of fabrication and fraud (the first study contains a wealth of numerical data; in the second there are no figures). In the second study this aspect is not fully explored.

The background to the conclusion that PAT has only one substrate – PTT – is as follows: in herbicide-resistant (i.e. PPT-resistant) crops, PAT is present. In order to obtain approval for products to be placed on the market, the toxicity of this gene-product must be examined.

Could this gene-product react with the content of our GUT, e.g. with the – important – amino acid L-glutamic acid? It would cost a fortune in research to demonstrate that the dangers were minimal. For HOECHST, it would seem that total denial is a better strategy!

We believe that the conclusion drawn in the second study is completely unfounded and that the so-called ‘study’ is unworthy of the name. It is an incompetent study, and those persons who cite it need to be told about its incompetence.

J. van der Meulen, L. Eijsten.

arno-schulz-betreffende-de-substraten-van-phosphinothricinacetyltransferasepat/
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Others

From Twitter: @GMWatch

· May 21 When the farmers take their harvested GM canola to the silo (if they can find one that will take it), they'll be paid less than for non-GM canola. That has been the experience interstate where both crops are grown. There is a clear price premium paid for non-GM canola. #gmo

Quotation: “Bigotry and hatred are not the most urgent problem. The most urgent, the most disgraceful, the most shameful and the most tragic problem is silence.”. Quotation ends, Rabbi Joachim Prinz

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4. Conclusions and recommendations

No poisonous oilseed rape on our plates or fed to our animals.

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6. Labelling proposal

Skull on the packaging.

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a. Assessment:
5. Others

Update to our previous responses. St. Ekopark, Lelystad, NL, associates itself with our previous complaints.
