

DNA from transgenic plants found in milk and animal tissue

Traces of genetically engineered maize and soy in goats, fish and pigs

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Munich

A recent Testbiotech survey shows that DNA fragments from transgenic plants are increasingly found in animal tissue such as milk, inner organs and muscles. Most recently, in April 2010, scientists from Italy reported DNA sequences stemming from genetically engineered soy in milk from goats. These DNA fragments are presumably, entering the blood stream from the gut and then from there reaching the udder and the milk. Traces of specific DNA were also identified in kids fed with the goat's milk. These findings are not the first to be reported after DNA fragments have been found in the tissue of animals fed with transgenic plants. A few years ago, DNA from genetically engineered maize was found in samples from pigs. More recently, research found traces from transgenic plants in the organs of fish, namely rainbow trout and tilapia. In fish, the gene sequences were found in nearly all inner organs.

"Recent publications could lend support to those stakeholders in favour of labelling products such as meat, milk and eggs derived from animals fed with genetically engineered plants. If the methods for sampling DNA get even better, those traces will be found more often in future," says Christoph Then from Testbiotech. "So far detection is not possible in each and every case. Most frequently these traces seem to occur in fish."

In the past, several experts and also the European Food Safety Authority EFSA were of the opinion that specific DNA fragments related to transgenic material, could not be detected in animals. For years now it has been known that in general, DNA from plants is not completely degraded in the gut, and can be found in inner organs, the blood stream and even in the offspring of mice.

In Testbiotech's opinion, mandatory labelling of those products is important for consumers interested in more transparency about how genetically engineered plants are used. Millions of tons of genetically engineered soy are fed to animals such as pigs, poultry and cattle in Europe. Most experts think that products derived from those animals are not likely to pose a health risk. There is however, a need for further research since for unknown reasons some enzyme activity in kids fed with goat's milk containing specific DNA was found to be enhanced.

Some recent literature:

Goats

Tudisco R., Mastellone V., Cutrignelli M.I., Lombardi P., Bovera F., Mirabella N., Piccolo G., Calabro L., S., Avallone L., Infascelli F., 2010, Fate of transgenic DNA and evaluation of metabolic effects in goats fed genetically modified soybean and in their offsprings

Fish

Chainark, P. (2008) Availability of genetically modified feed ingredient II: investigations of ingested foreign DNA in rainbow trout *Oncorhynchus mykiss*. Fisheries Science, 74(2): 380-390(11)

Ran, T., Mei, L., Lei, W., Aihua, L., Ru, H., Jie, S (2009) Detection of transgenic DNA in tilapias (*Oreochromis niloticus*, GIFT strain) fed genetically modified soybeans (Roundup Ready). Aquaculture Research, Volume 40 (12): 1350-1357

Pigs

Mazza, R., Soave M., Morlacchini M., Piva, G., Marocco, A. (2005) Assessing the transfer of genetically modified DNA from feed to animal tissues, Transgenic Res. 14: 775-784

Sharma R., Damgaard D., Alexander T.W., Dugan M.E.R., Aalhus J.L., Stanford K., McAllister T.A. (2006) Detection of transgenic and endogenous plant DNA in tissues of sheep and pigs fed Roundup Ready canola meal. Journal of Agricultural Food Chemistry 54: 1699-1709.

Former research in mice (tracing plant DNA in mice and their offspring):

Schubbert R., Hohlweg U., Renz D., Doerfler W. (1998) On the fate of orally ingested foreign DNA in mice: chromosomal association and placental transmission to the fetus, *Molecular Genetics and Genomics* 259: 569-576.

EFSA's opinion:

EFSA (2007) Statement on the fate of recombinant DNA or proteins in the meat, milk or eggs of animals fed with GM feed, <http://www.efsa.europa.eu/en/scdocs/scdoc/744.htm> [1]

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