

## **Open Meeting: Animal Feed**

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### **The fate of GM feed DNA fragments in animals**

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As reported recently, foreign DNA fragments can be transmitted via gastro-intestinal tract directly into the animal. The aim of our research project is to detect fragmentation of feed DNA and its probable transfer into several animal species to enable a risk assessment of GM forage plants concerning horizontal gene flow.

Previously we could show by PCR methods that high abundant plant genes, e.g. short chloroplast DNA fragments, are always present in cattle leucocytes. But further investigations demonstrated that such plant DNA was never found in other cattle organs (muscle, liver, spleen, kidney), except for faint, unreliable signals in milk. Furthermore, Bt-gene fragments possibly recording the uptake of recombinant maize were never detected in any sample of cattle. However, in all chicken tissues (muscle, liver, spleen, kidney) the short maize chloroplast gene fragment (200 bp) was amplified. In contrast to that, in eggs no foreign plant DNA fragments were detectable. Transgene specific constructs originating from recombinant Bt-maize were as well never isolated from poultry samples. Such results were supported by a field study examining supermarket poultry samples.

In the pig short chloroplast DNA fragments could be successfully amplified from the intestinal juices up to 12 hours after the last feeding. In contrast, chloroplast specific DNA was not reliably found in any pig organ investigated so far.

Furthermore, by use of real-time PCR an absolute quantification of selected forage plant gene fragments was made possible within different sections of the bovine digestion tract: a significant, continuous reduction of chloroplast gene fragments between the gastric sections rumen, abomasum, jejunum and colon (from 25 to 1.3 ag/90 ng total DNA) was measured. The consistently inability of detecting even high copy plant genes in faeces may indicate for low risks of spreading functional GM genes into the environment.

In summary, depending on the animal species and probably its digestive tract a distinct transfer of foreign high abundant plant DNA has been discovered.

Concluding our findings we cannot find any scientific evidence that GM plant genes are specifically transferred or integrated into the animals body. Considering recent studies consumption of such GM plant fed animal products will be without obvious nutritional consequence. While actual risks for the consumers of such "secondary" GMO food are not obvious, such research will definitely increase the transparency of the production process of a desired product coming on to the food market.

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