Innspill til EFSA GMO Extranet søknad EFSA/GMO/DE/2011/95 - genmodifisert mais 5307

D.07.08
Toxicology

Comments from the GMO Panel of the Norwegian Scientific Committee for Food Safety:

The Technical Dossier includes two acute toxicity studies (OECD guidelines 420) with GM-maize 5307. In the PMI study the applicant has measured organ weights, several parameters in blood, and performed clinical pathology. In the eCry3.1Ab study, macroscopic and microscopic analyses have been performed, but organ weights are not measured.

Several changes in clinical- and chemical parameters have been shown in the PMI study and histo-pathological changes in the eCry3.1Ab study. The acute study is only based on one single exposure and the animals are observed for 2 weeks. The data gives only a hint that there might be some problems with such a high dose of the substances. A NOEL is determined based on the acute studies. These studies are designed for determination of LD_{50}. According to OECD guidelines it is not recommended to determine NOEL based on acute oral toxicity studies since they are limited to 14 days observation period and a single exposure. NOAEL should be determined based on the 90 days sub-chronic study (OECD 408). A study according to the OECD 408 guideline would have answered whether there are toxic effects of these proteins.

Further on, the applicant has used data from the acute study (OECD 420 guideline) to calculate a NOEL of 2000 mg/kg bw/day for both eCry3.1Ab and PMI (page 47 in the Tech Dossier). The applicant has estimated a MOE (Margin of exposure) based on an average daily intake of maize of 148.4 g/person/day and on the NOELs. Estimating MOE on acute toxicity studies does not give a reliable MOE. The Margin of exposure should be estimated based on a NOAEL calculated from a 90 days sub-chronic study.

In the broiler study increased bw were detected in males exposed to GM-maize compared to isogenic control. Reduced thigh/drum weights were detected both in males and females when fed GM-maize compared to the isogenic control. The applicant has explained these differences to be within the variation of historical controls, although these differences were significantly different compared to the isogenic control. If a 90-day oral toxicity study had been performed, a possible toxic effect of the transgenic maize 5307 compared to the isogenic control could have been excluded.