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Use of omics analytical methods in the study of genetically modified maize varieties tested in 90 days feeding trials

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ABSTRACT:

Genetically modified (GM) maize and their non-modified counterparts were compared using MON810 varieties, the only GMO event cultivated in Europe. The differences in grain samples were analysed by omics profiles, including transcriptomics, proteomics and metabolomics. Other cultivated maize varieties were analysed as a reference for the variability that will exist between cultivated varieties. The observed differences between modified and non-modified maize varieties do not exceed typical differences between non-modified varieties. The use of these advanced analytical approaches to analyse novel plant materials as compared to the results from animal feeding trials with whole foods is assessed. No indications were observed for changes in the GM varieties that warrant further investigations. Furthermore, it was shown that such indications will be obtained if maize samples of inferior quality are analysed similarly. Omics data provide detailed analytical information of the plant material, which facilitates a risk assessment procedure of new (GM) plant varieties.