

Transfer of THC and THC-congeners from feed to food: Preliminary results of studies in dairy cows

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The use of hemp and hemp products as feed for food producing animals has a long history. By-products of fiber production are valuable sustainable feed resources. Anecdotal evidence from farmers points to certain benefits from hemp-based feed regarding milk quality, animal health and reproductive success. In recent years, concerns have arisen that tetrahydrocannabinol (THC) and its psychoactive congeners could be transferred into food of animal origin when hemp or hemp products are part of the feed rations. Studies focusing on the transfer of THC and THC-congeners from feed to food of animal origin are rare and attempts at risk assessment of hemp-based feeds, except for hemp seeds, have failed due to lack of data. One salient deficiency in such studies is the lack of differentiation between THC and its non-psychoactive precursor tetrahydrocannabinolic acid (THCA).

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Within the framework of a pilot study, one dairy cow was fed with feed containing industrial hemp silage. The cannabinoid content of the feed and milk was analyzed. Analyses were performed by an HPLC-MS/MS method, developed by the Chemical and Veterinary Investigation Office Münsterland-Emscher-Lippe (CVUA-MEL). The CVUA-MEL processed the samples and analyzed the content of THC, THCA, 11-OH-THC, 11-nor-9-carboxy- Δ^9 -THC, Cannabidiol (CBD), Cannabinol (CBN) and Cannabidivarin (CBDV). The results of the pilot study on the transfer of THC and its congeners will be presented. The corresponding main study is planned for the summer of 2017. Its goal will be obtaining sufficient statistically validated data to confirm and expand on the findings of the pilot study.