

## Study on the possibility of aflatoxin M1 milk contamination from ingestion of contaminated feed by dairy cattle

Ana Gonçalves<sup>1</sup>; Armando Venâncio<sup>1</sup>

### ABSTRACT

Aflatoxin contamination is a major issue in food and feed safety fields. In fact, the presence of aflatoxin B<sub>1</sub> (AFB<sub>1</sub>) has a wider impact since its presence in feed can lead to contaminated milk, because the toxin is metabolised in aflatoxin M<sub>1</sub> (AFM<sub>1</sub>) by dairy cattle which feed contains the mycotoxin. In the EU, the maximum legal level for AFM<sub>1</sub> in milk is 0.05 µg/kg, while for AFB<sub>1</sub> it is 5 and 20 µg/kg, for compound feed for dairy cattle and feed raw materials, respectively. Based on relevant data, calculations on the expected level of AFM<sub>1</sub> in milk were made, as well as on the AFB<sub>1</sub> content in feeds that assures compliance of milk with current legislation. A feed consumption of 18.5 to 26 kg and toxin carry-overs of 1, 2 and 6.2 % were considered. Regarding the predicted AFM<sub>1</sub> levels in milk, the highest value was 0.28 µg/kg, for the worst tested case - highest carry-over and all feed at the highest allowed level for AFB<sub>1</sub>. This value is over 5 times higher than the EU limit for AFM<sub>1</sub> in milk. Considering the assessment of the necessary level of AFB<sub>1</sub> in feed to ensure a compliant milk, findings suggested that the mean concentration in dairy cattle feeds should be, in some scenarios, lower than the regulated limits (range: 1.55 to 6.76 µg/kg). The results show the possibility of compliant feed originating milk contaminations above the legal limit. Even so, because it is not expected that dairy cattle's entire consumption of feed has the maximum concentration level of AFB<sub>1</sub>, AFM<sub>1</sub> levels in milk would be lower than the obtained. In fact, it is known that the incidence of milk samples with AFM<sub>1</sub> above 0.05 µg/kg is around 0.06 % (EFSA, 2004). The relevance of this subject is even higher since according to an EFSA report (2012) the expected climate changes - higher temperatures and drought - will lead to an increase on mycotoxin production and have a negative impact on this matter.

**Acknowledgments:** Ana Gonçalves received support through grant agreement number GA/EFSA/AFSCO/2016/01-02, from EFSA.