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Masked mycotoxins: an emerging issue that makes renegotiable what is ordinary

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Abstract

The masked mycotoxins issue is of increasing relevance in the field of food safety. Although under discussion, regulations are still to be set due to the lack of proper toxicological data.

In this communication, we discuss the unmet needs to support regulatory bodies in the decision making on this class of compounds.

Keywords: masked mycotoxins - regulation - deconjugation – bioactivation

The presence of toxicants in food undoubtedly poses concern for human health and wellbeing. Among them, the naturally occurring compounds called mycotoxins can accumulate in several foodstuff and food products and they actually represent a prominent health issue. Many countries have enforced regulations to limit the exposure in order to protect consumers from health risks. In this context, regulations and recommendations for masked mycotoxins^a are completely missing (Berthiller, Crews, Dall'Asta, Saeger, Haesaert, Karlovsky et al., 2013; Rychlik, Humpf, Marko, Dänicke, Mally, Berthiller et al., 2014). This scenario is mostly attributable to the shortage of toxicological data since it is worldwide accepted that regulations must rely on reliable scientific findings, the lack of which hinders the regulatory actions in facts. Indeed, even if in the recent period the toxicity of masked forms (especially that of deoxynivalenol and zearalenone) has been specifically object of investigation, (e.g. (Broekaert, Devreese, van Bergen, Schauvliege, De Boevre, De Saeger et al., 2016; Dellafiora, Perotti, Galaverna, Buschini, & Dall'Asta, 2016; Pierron, Mimoun, Murate, Loiseau, Lippi, Bracarense et al., 2015)), there are no sufficient toxicokinetic, toxicodynamic and exposure data available to state ultimately the hazard for human and animal health (Stoev, 2015). Also, data collected so far led to different conclusions in terms of the toxicity held by the various masked forms. As example, glycosylation seems to be an effective detoxifying route for deoxynivalenol (Pierron et al., 2015) but not for zearalenone (Dellafiora, Perotti,

^a The term “masked mycotoxins” refers to the plant phase-II conjugated metabolites of mycotoxins. They pose serious safety concerns as they can accumulate in the edible parts of contaminated crops. The toxicological data are contrasting and toxicity knowledge is actually in its infancy, but they are of great concern as they can be a relevant part of the total mycotoxins load.

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