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## Impact of mycotoxins on the intestine: are mucus and microbiota new targets?

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### Abstract

There is an increasing awareness of the deleterious effects attributed to mycotoxins during their fate within the gut, particularly for deoxynivalenol (DON), zearalenone (ZEN), ochratoxin A (OTA), fumonisin B1 (FB1), aflatoxin B1 (AFB1), and patulin (PAT). Evidence indicates that disruption of the epithelial barrier is well established. However, intestinal barrier function on its luminal side involves two other partners, mucus and microbiota, which have rarely been considered in the context of mycotoxin exposure. The current review aimed at providing a summary of DON, ZEN, OTA, FB1, AFB1, and PAT effects on intestinal barrier function, with special focus on mucus and microbiota. DON, ZEN, OTA, FB1, AFB1, and PAT are known to markedly affect epithelial cell integrity and functions. Regarding mucus, DON is the most documented mycotoxin. In vivo, toxicological impact of DON generally has only been assessed through goblet cell number. Evaluation of the mycotoxins/mucus interplay considering other indicators such as composition, thickness, and penetrability of mucus, mucin O-glycosylation thus warrants further attention. With respect to microbiota, few short-term studies to date have been reported indicating deleterious effects. However, long-term exposure to mycotoxins may also produce significant changes in microbiota composition and metabolic activity, which requires further experimentation. In conclusion, mucus and microbiota are key targets for dietary mycotoxins although assessment of induced effects is preliminary. A significant research effort is now underway to determine the adverse consequences of mycotoxins on mucus and microbiota considered as individual but also as tightly connected gut players.

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