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Absorption of the mycotoxin patulin from the rat stomach.

Abstract:
The mycotoxin patulin (PAT), which frequently occurs in apple juices, has previously been shown to be toxic and teratogenic. However, there is almost no data about its absorption and metabolism. Therefore, the enrichment of PAT in the tissue of perfused rat stomachs after luminal application and its vascular appearance was quantified by stable isotope dilution assays. After application of juices enriched with PAT at concentrations of 350 and 3.5 mg/l, respectively, the mycotoxin appeared almost instantly in the perfusate. Twenty-six to twenty-nine percent of PAT were removed from the gastric lumen over 55 min. From this quantity, 17% and 2% were transferred into vascular circulation and 3% and 0.06% were detectable in gastric tissue for the high and the low PAT dose, respectively. The disappearance of 8400 microg and 700 microg PAT, respectively, could be attributed in part to its reaction with intracellular glutathione (GSH). Regarding the GSH content in the tissue, a decrease of 87% compared to that of control stomachs was observed for the high PAT dose, whereas in the case of the low PAT dose no significant GSH degradation occurred. Thus our results show that even low concentrations of patulin penetrate the gastric wall. Toxic effects, however, are unlikely as most of the patulin is disintegrated.

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