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Fusarium mycotoxins and *in vitro* species-specific approach with porcine intestinal and brain *in vitro* barriers: A review

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1 Review

2 *Fusarium* mycotoxins and *in vitro* species-specific approach with porcine intestinal and brain *in vitro* 3 barriers: a review.

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10 Abstract

11 *Fusarium* mycotoxins, such as fumonisins, trichothecenes, zearalenone and emerging fusariotoxins,
12 common contaminants of feed and food, have received increased interest, due to the possible impact on
13 animal and human health.

14 In this context, it is urgent to focus our attention on fusariotoxins adverse effects, considering and
15 analysing data in relation to their species-specificity.

16 The *in vitro* approach for fusariotoxins risk assessment evaluation, through porcine epithelial barriers
17 model, allowed to collect information on their absorption profile, bioavailability and toxicity.

18 The aim of this review is to give an overview on *Fusarium* mycotoxins and their interactions with porcine
19 intestinal and brain *in vitro* barriers, because they represent direct target organs of toxicity and as tools to
20 evaluate their permeability and transport.

21 **Keywords:** epithelial barriers, species-specificity, porcine, intestinal barrier, brain barrier, fusariotoxins

22 Highlights

- 23 • Effects of *Fusarium* mycotoxins on barrier and other functions of porcine intestinal epithelial cell
24 lines (IPEC) are reviewed;
- 25 • Effects of *Fusarium* mycotoxins on function of primary porcine brain capillary endothelial cells
26 (PBCEC) are reviewed;
- 27 • Specific effects of zearalenone, fumonisin B1, deoxynivalenol, T2 toxin, beauvericin, enniatins on
28 IPEC are compared;
- 29 • Specific effects of T2 toxins, enniatins, and moniliformin on PBCEC are compared ;
- 30 • Effects of the fusariotoxins, zearalenone, fumonisin B1, beauvericin, enniatins, and T2 toxin, on
31 IPEC and PBCEC are compared.
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