INHIBITION OF INTESTINAL PATHOGEN ADHERENCE BY
Pichia guilliermondii  IN AN IN-VITRO MODEL

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The search for viable alternatives to antibiotics is still on-going. Yeast products have been proven as promising candidates for supporting the animals’ immune system and preventing intestinal adhesion of foodborne pathogens. Mannan-Oligosaccharides (MOS) and beta-glucans as components of the yeast cell wall exert specific functions. With this study the pathogen binding effect of Pichia guilliermondii in intestinal mucous of broiler chicken and piglets was assessed in comparison with pure mannose.

Material & Methods

- Mucous recovered from 2-wk old broiler chicks and piglets 2-wks after weaning
- Adherence test in mucous coated microtitre wells
- Pathogens: E. coli F4+ (K88) Salmonella enterica Serovar Enteritidis
- Test substances: Mannose Pichia guilliermondii (Pg) Pichia guilliermondii gastric treated
- Dose level 0.5 – 2.5 %

Conclusions

- E. coli F4+ adhered equally well on intestinal mucus from broiler chicken and piglets, whereas Salmonella enterica adhered more efficiently on intestinal mucus from broiler chicken.
- Reduction of mucosal adherence of pathogens is a direct measurement of their binding to the intestinal wall. The results reflect the ability of Pichia g. cells to attract and bind pathogens, reducing / preventing adherence to the host’s mucosa.
- Pichia guilliermondii inhibited the adhesion of both tested pathogens compared to pure mannose (except S. enterica in piglet mucous at lower dose levels) in a dose dependent manner.
- Pre-treatment of Pichia guilliermondii with gastric juices (pepsin/pancreatin = simulating in-vivo conditions) further reduced mucosal adherence of pathogens in both species for both tested pathogens.

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