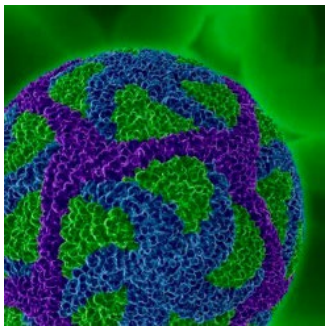
RÉPUBLIQUE FRANÇAISE
Liberté Égalité Fraternité

INRAE

Thesis
2024–2027



The role of metabolites produced by the microbiota in the development of the barrier function of the intestinal epithelium during the weaning period

Gut issues in livestock that are frequently observed after weaning lead to the use of treatments that contribute to the emergence of antibiotic-resistant bacteria.

The goal of this thesis project is to develop a new strategy for protecting the gut health of young animals without antibiotics.

The proposed solution is to reinforce the barrier function of the intestinal epithelium early in life by using metabolites produced by the gut microbiota when solid food is introduced. A rabbit model will be used with a combination of in vitro (intestinal organoids) and in vivo (suckling rabbits) approaches.

During the first stage, work will be focused on identifying metabolites produced by the microbiota when solid food is introduced that promote the development of the barrier function in vitro in a rabbit caecum organoid monolayer model.

The second stage will attempt to identify the cellular and molecular mechanisms by which the identified bacterial metabolites act on the epithelium's barrier function.

The final stage will consist in an in vivo evaluation of the effects of oral administration of bacterial metabolites on the microbiota and epithelial barrier development and on post-weaning gut health.

This thesis project will produce new knowledge on the holobiont assembly, and more specifically the role of metabolites produced by the gut microbiota in the development of the epithelial barrier during weaning.

These findings can support the development of nutritional products based on the bacterial metabolites identified to protect the gut health of young animals and thus reduce the use of antibiotics in livestock farming.

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Funding
50% INRAE
50% ED SEVAB

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