

RAAK-PRO 2018:

Building A translational Test strategy to assess intestinal defense-promoting potency of natural Compounds (BATTERY)

SUMMARY

Abundant antibiotic use has resulted in antimicrobial resistance (AMR), which is considered a serious worldwide problem and a threatening health risk. Policies have already resulted in reduction of antibiotics usage, in particular in animal husbandry. However, measures are not sufficient to counteract the increasing antibiotic resistance and alternative strategies are urgently needed. This has sparked research and development into alternative natural compounds which do not evoke AMR. These compounds are based on nutrition- or plant-derived substances which often improve and sustain an optimal immunological defense, in particular of the oro-gastrointestinal tract (GIT). Yet, it remains a challenge to screen and optimize such substances with regard to quality, efficacy, and safety. For this, standardized cost- and time-effective chemical analytical and biological methods are urgently needed. Therefore, the proposed project aims to build and standardize a multimodulatory battery of methods to chemically analyse the composition, examine the intestinal fate and predict the *in vivo* biological activity of natural substances. In this project, we will focus on pigs because they are important production animals in view of AMR. Furthermore, methods to build a battery for the pig are already established within the research consortium. The test battery will include chemical and microbiological analytics, reporter bioassays, *C. elegans* methodology, artificial intestinal models, intestinal stem cell-organoid cultures and biomarker-methods for *in vivo* testing. The obtained knowledge and methodology will be shared with professional practice via meetings, specific courses and workshops.

Involved company partners are: Perstorp, Dopharma, Bioclin, PhytoGenix, Daavision, and SMEs of herbal extracts.

Involved consortium partners are: University of Applied Sciences (UAS) Utrecht (Hogeschool Utrecht), UAS Leiden (Hogeschool Leiden), UAS van Hall Larenstein, Utrecht University (Faculty of Veterinary Medicine), RIKILT, Academisch Centrum Tandheelkunde Amsterdam (ACTA), TNO, Maastricht University, and Vivaltes.