

DESCRIPTION FOR THE GENERAL PUBLIC

Project title: The role of *Coleus amboinicus* (Lour.) polyphenols in modulation of ruminal methanogenesis and biohydrogenation processes in lambs

Recent publications strongly indicate that the problem of ruminal methane production as well as the enrichment of beneficial fatty acids content in animal products are one of the hottest public topics. A 2017 World Economic Forum Global Risks Report clearly shows that climate change is deeply connected with multiple global risks (e.g. economic, geopolitical, societal, and technological) that are negatively affecting the current and potential future of the global economy. Several scientists are working on solutions to mitigate enteric methane production (i.e. methanogenesis) from anthropogenic sources, including ruminants, to not only decrease the negative impact of animal production, but also keep food production within environmental limits. Moreover, increase consumer demand for animal products with health promoting properties by natural processes of health promoting agent formations (i.e. biohydrogenation) are necessary to fulfil consumer requirements.

It has been proven that biologically active components in herbs served with diets, thanks to their antimicrobial properties, might modulate ruminal processes in ruminants and help keep animal production both environmentally friendly and sustainable. **The aim of this study is to investigate the long term effect and mode of action of biologically active components (BAC) of *Coleus amboinicus* Lour. on rumen biohydrogenation and methanogenesis processes in lambs.**

The overriding aim of the project is to mitigate enteric methane production and biohydrogenation of unsaturated fatty acids in the rumen environment. The concept is that rumen methane production decreases the energy density of the diet that could have been utilized by the animal; thus, comprises the source of environmental pollution. When stopped at the initial stages, the effect of biohydrogenation on unsaturated fatty acids form conjugated isomers of proven biological activity. Unsaturated fatty acids (including conjugated isomers) formed in the rumen, mammary gland, and tissues are ultimately present in milk and meat that offer potential human health benefits. *Coleus amboinicus* Lour. leaves are recognized as herbs rich in several BAC. Our preliminary short-term study concluded *Coleus amboinicus* Lour. as modifiers of ruminal microbial fermentation including methanogenesis and biohydrogenation of fatty acids (Yanza et al., 2018). Another scientific and marketable benefit of using BAC from *Coleus amboinicus* Lour in animal studies will be that its positive effects may not only satisfy the scientific community, but also, consumers that are health and environmentally conscious as well.