Research title
Nutritional additives to improve health and performance in farm animals and application of non-invasive biomarkers as new metabolic and efficiency indexes.

Additivi nutrizionali per il miglioramento dello stato di salute e delle performance negli animali da reddito e applicazione di marker non invasivi come indici metabolici e di efficienza

Tutor
Prof. Alessandro Agazzi

Contact details
Università degli Studi di Milano
Dipartimento di Scienze veterinarie per la salute, la produzione animale e la sicurezza alimentare "Carlo Cantoni" (VESPA)
Email: alessandro.agazzi@unimi.it
Website: www.vespa.unimi.it

State of the art and aims of the project

Livestock can undergo physiological imbalance in specific rearing periods such as weaning for piglets or calving for cows. Different feed additives showed to play a positive role in maintaining health status and immune response, but still information on their mechanisms of action need to be elucidated. Moreover, animal welfare has become of great interest requiring identifying novel non-invasive biomarkers (NIBs) that can allow tocollect samples in the least invasive way as possible from alternative matrices. The aim of the project is to evaluate the efficacy of nutritional additives, such as pre/probiotics, plant extracts, polyunsaturated fatty acids and antioxidant compounds, in the diet of ruminants and monogastrics to improve immune response, oxidative status, metabolism, performance and production efficiency during critical rearing phases through non-invasive biomarkers (NIBs). For this purpose, the most promising non-invasive biomarkers will be selected and subsequently validated with respect to the results obtained by invasive biomarkers.

Recent publications of the tutor in the field

Ahasan A. S. M. L., Invernizzi G., Farina G., Pilotto A., Barbé F., Bontempo V., Rossi R., Bellagamba, F., Lecchi C., Savoini G., Agazzi A. 2018. The effects of superoxide dismutase-rich melon pulp concentrate on inflammation, antioxidant status and growth performance of challenged post-weaning piglets. Animal. 3(1):136-143.

Invernizzi G., Modina S., Corbani D., Bronzo V., Pisani L.F., Caputo J.M., Agazzi A., Dell'Orto V., Savoini G. 2016. Hepatic and subcutaneous adipose tissue variations in transition dairy goats fed saturated or unsaturated fat supplemented diets. Small Ruminant Research. 144: 211-219.

Jiang X.R, Agazzi A., Awati A., Vitari F., Bento H., Ferrari A., Alborali G.L., Crestani M., Domeneghini C., Bontempo V. 2015. Influence of a blend of essential oils and an enzyme combination on growth performance, microbial counts, ileum microscopic anatomy and the expression prooinflammatory mediators in weaned piglets following an Escherichia coli infection. Animal Feed Science and Technology 209: 219-229.

Zaninelli M., Agazzi A., Costa A., Tangorra F.M., Rossi L., Savoini G. 2015. Evaluation of the Fourier Frequency Spectrum Peaks of Milk Electrical Conductivity Signals as Indexes to Monitor the Dairy Goats' Health Status by On-Line Sensors. Sensors. 15: 20698-20716.

Jiang X.R., Awati A., Agazzi A., Vitari F., Ferrari A., Bento H. , Crestani M. , Domeneghini C., Bontempo V. 2015. Effects of a blend of essential oils and an enzyme combination on nutrient digestibility, ileum histology and expression of inflammatory mediators in weaned piglets. Animal. 9(3): 417-426.