

Research title**Functional and innovative feed additives for antibiotics reduction in pig nutrition****Additivi funzionali nella alimentazione del suino come alternativa agli antibiotici****Tutor**

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State of the art and aims of the project

Postweaning diarrhoea (PWD) is commonly caused by the proliferation of enterotoxigenic *Escherichia coli* (ETEC) in weaned pig intestine. Antibiotics, banned as growth promoters from 2006 (Reg. CE 1831/2003), are widely used for therapeutic purposes to control *E.coli* infections. Antimicrobial resistance is recognised as a major concern at international level in terms of both human and animal health. Alternatives to antibiotics are urgently needed to allow farmers and veterinarians to control enteric diseases. Feeding is an essential part to strength intestinal health and controlling the environmental impact of intensive livestock. Recently, a great interest in functional ingredients with recognized antioxidant, antibacterial and prebiotic bioactivities has risen. In this contest plants, beside being a source of many essential nutrients, can be also considered as a versatile source of bioactive compounds and as bioreactors for the production medical or therapeutic nutraceuticals.

Recent publications of the tutor in the field

1. L. Rossi*, A. Di Giancamillo, S. Reggi, C.Domeneghini, A. Baldi, V. Sala, V. Dell'Orto, A. Coddens, E. Cox, C.Fogher. (2013) "Expression of porcine verocytotoxic *Escherichia coli* antigens in tobacco seeds and evaluation of gut immunity after oral administration in mouse model" *Journal of Veterinary Science*, Sep; 14(3):263-270.
2. L. Rossi*, L. Pinotti, A. Agazzi, V. Dell'Orto, A. Baldi. Plant bioreactors for the antigenic hook-associated flgK protein expression. *Italian Journal of animal science* . *Italian Journal of Animal Science*. (2014) 13 (1): 23-29.
3. L. Rossi*, V. Dell'Orto, S. Vagni, V. Sala, S. Reggi, A. Baldi. Protective effect of oral administration of transgenic tobacco seeds against verocytotoxic *Escherichia coli* strain in piglets. *Veterinary Research Communication*. *Veterinary Research Communications*. 2014 38 (1): 39-49.
4. E. Onelli, A. Moscatelli, Gagliardi, Assunta, M. Zaninelli, Bini, Luca, A. Baldi, M. Caccianiga, Reggi, Serena, L. Rossi (2017). Retarded germination of *Nicotiana tabacum* seeds following insertion of exogenous DNA mimics the seed persistent behavior. *PLOS ONE*, vol. 12, e0187929, ISSN: 1932-6203, doi: 10.1371/journal.pone.0187929
5. M. Hejna, D. Gottardo, A. Baldi, V. Dell'Orto, F. Cheli, M. Zaninelli, L. Rossi (2018). Review: Nutritional ecology of heavy metals. *ANIMAL*, ISSN: 1751-7311, doi: 10.1017/S175173111700355X