MODULATING THE EFFICACY OF ANTIBIOTICS AND SECONDARY PLANT COMPOUNDS BY COMBINED USE

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Orally administered veterinary antibiotics can mix with feed additives along the gastrointestinal tract. Despite accumulating data about the influence of secondary plant compound (SPC) based additives on the antimicrobial efficacy of veterinary antibiotics *in vitro*, the picture is far from being complete. It becomes more evident now, that not only the proportional composition of these so called phytogenics determines the properties of such products, but also their combination with a given antibiotic can influence the overall antimicrobial efficacy.

For selected reference strains and field isolates of *E. coli*, *Salmonella spp.* and *Clostridium perfringens* we determined the concentration dependent antimicrobial efficacy of antibiotics and phytogenics, when used in combination. For the *in vitro* study, 17 veterinary antibiotics, representative of the most prescribed antibiotic compound classes in Germany, and 3 different SPC combinations with a defined content of active ingredients were utilized in checkerboard experiments. Our *in vitro* studies demonstrate that a proportion of the tested veterinary antibiotics are influenced in their antimicrobial efficacy, when used in combination with such compositions. Depending on the bacterial species investigated, we identified a number of combinations with additive to synergistic efficacy but no antagonistic effects. To conclude, our study adds evidence for yet non-detected antibiotic/SPC combinations with a potential beneficial use in animals, when applied together. The data may help in consideration of combinations that are not attenuating the efficacy of either product applied. To approve, how well these *in vitro* findings translate into practice, these results require further confirmation under *in vivo* conditions.