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Formatting

Tina Smith Graphics
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CD-ROM

David Brown
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Logo Design

Ruth Cronje, and Jan Swanson;
based on the original design by Dr. Robert Dunlop

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Activity of Sangrovit® against *Lawsonia intracellularis* in grower pigs and its impact on gut physiology and host immunity.

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Sanguinarine, a quaternary benzophenanthridine alkaloid plant extract of *Macleaya cordata*, has demonstrated to have anti-inflammatory, antimicrobial and immunomodulatory effect. It increases the availability of aromatic amino acids and decreases the levels of toxic biogenic amines. This study was aimed to evaluate the effect of Sangrovit® supplementation as compared to tylosin on growth performance, feed efficiency and the reduction of *Lawsonia intracellularis* shedding in pigs, and to determine the effect of Sangrovit® on the immune system. A total of twenty-four pigs, four weeks-old challenged with *Lawsonia intracellularis* culture per os were randomly allocated to a treatment group (control non-supplemented, 40 g Sangrovit®/mton, 75 g Sangrovit®/mton, and 22g /kg tylosin). All pigs received 2mg/kg of dexamethasone IM on days 0, 2 and 4 to suppress the immune system and facilitate colonization by the challenge strain. Pigs were weighed weekly throughout the thirteen weeks study and average daily gain (ADG), average daily feed intake (ADFI) and gain to feed ratio (G:F) were calculated. Fecal samples were collected weekly for isolation and quantification of *Lawsonia intracellularis* using qPCR as well as blood samples for determination of IgA and IgG levels using ELISA. Twenty-one days after the challenge (acute phase), three pigs randomly selected from each treatment group were euthanized and the remaining twelve pigs were euthanized ninety days after the challenge (chronic phase). During

the euthanasia ileal content/scraping, liver, kidney and muscle tissues, ileum tissue were collected for culture, residue analysis and histopathology respectively, as well as record of lesions for the acute and the chronic phase of the disease. Results showed that overall ADG was higher for pigs receiving tylosin as compared to the other groups (p=0.1565). Pigs receiving 75 gr. Sangrovit®/mton showed a higher G:F ratio as compared to the other groups (p=0.0863). None of the treatment groups showed significant differences in *Lawsonia* shedding level based on quantitative PCR. Only control group presented characteristic lesions of *Lawsonia* infection at the acute stage of the disease (twenty-one days). At the chronic stage, the highest ileum thickness score was observed in pigs receiving tylosin. Findings suggest that Sangrovit® supplementation appears to be effective for improving feed efficiency and reducing pathognomonic lesions of acute and chronic stages of *Lawsonia intracellularis* infection, however differences between groups are not significantly different. Further studies are needed to determine the effect of Sangrovit® on the immune system.

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