World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Probiotics as an Alternative to Antibiotic Use in Pig Production

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Abstract : The indiscriminate usage of antibiotics in swine production have consequential outcomes; such as development of bacterial resistance to prophylactic antibiotics and possibility of antibiotic residues in animal products. The use of probiotics appears to be the most effective procedure with positive metabolic nutritional implications. The aim of this study was to investigate the efficacy of probiotic bacteria (Lactobacillus reuteri ZJ625, Lactobacillus reuteri VB4, Lactobacillus salivarius ZJ614 and Streptococcus salivarius NBRC13956) administered as direct-fed microorganisms in weaned piglets. 45 weaned piglets blocked by weight were dived into 5 treatments groups: diet with antibiotic, diet with no-antibiotic and no probiotic, and diet with probiotic and diet with combination of probiotics. Piglets performance was monitored during the trials. Faecal and Ileum samples were collected for microbial count analysis. Blood samples were collected from pigs at the end of the trial, for analysis of haematological, biochemical and IgG stimulation. The data was analysed by Split-Plot ANOVA using SAS statistically software (SAS 9.3) (2003). The difference was observed between treatments for daily weight and feed conversion ratio. No difference was observed in analysis of faecal samples in regards with bacterial counts, difference was observed in ileums samples with enteric bacteria colony forming unit being lower in P2 treatment group as compared with lactic acid and total bacteria. With exception of globulin and albumin, biochemistry blood parameters were not affected, likewise for haematology, only basophils and segmented neutrophils were differed by having higher concentration in NC treatment group as compared with other treatment groups. Moreover, in IgG stimulation analysis, difference was also observed, with P2 treatment group having high concentration of IgG in P2 treatment group as compared to other groups. The results of this study suggest that probiotics have a beneficial effect on growth performances, blood parameters and IgG stimulation of pigs, most effective when they are administered in synergy form. This means that it is most likely that these probiotics will offer a significant benefit in pig farming by reducing risk of morbidity and mortality and produce quality meat that is more affordable to poorer communities, and thereby enhance South African pig industry's economy. In addition, these results indicate that there is still more research need to be done on probiotics in regards with, i.e. dosage, shelf life and mechanism of action.

Keywords : antibiotics, biochemistry, haematology, IgG-stimulation, microbial count, probiotics
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020