The effect of biological polyphenols on reproductive performance and immune function of multiparous sows

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Abstract: biological polyphenols was an excellent antioxidant, it reacted with the excess of free radicals produced in the process of redox reaction to produce phenoxy radicals and to protect organism from the free radicals' damage. (Aim) Through adding VE and biological polyphenols in feed, this research comparatively studied on the effects on reproductive performance and immune function of multiparous sows. (Method) Test selected 32 healthy pregnant sows whose gestational age was 4 to 5 fetus. Litter size was similar with each other and the previous litter size was 9 to 13, the expected date of confinement was distributed within the week. The shape of sows was uniform. They were randomly divided into 4 groups, each group was 8 replicates, each replicate was 1 pig, and each pig was fed in one pen individually. Control group was fed with basal diet. 200mg/kg VE, 200mg/kg biological polyphenols and 300mg/kg biological polyphenols were added in experiment groups respectively on the basis of basal diet. The test period began at the 80th day of the pregnancy, trial did not terminate until sows stop lactating. (Results) Results show that: 1) Compared with the group supplemented 200mg/kg VE, the groups supplemented 200mg/kg and 300mg/kg biological polyphenols could not significantly improve healthy litter size, initial weight, the 21-day-old weaning average weight, and could not significantly shorten pregnancy time ($P>0.05$),However, the group supplemented 300mg/kg biological polyphenols had not weak piglets, stillbirths and mummies, the group supplemented 200mg/kg biological polyphenols had not stillbirths and mummies, results showed that the effects of biological polyphenols on preventing weak piglets, stillbirth and mummies were better than 200mg/kg VE. 2) Compared with the group supplemented 200mg/kg VE and the control group, the groups supplemented 200mg/kg and 300ng/kg biological polyphenols could extremely significant improve the SOD activity ($P<0.01$), with the increase of addition amount of biological polyphenols, SOD activity was increased; compared with the control group, the GSH-PX activity of test groups had the extremely significant differences ($P<0.01$), but the differences within test groups were not significant ($P>0.05$); add biological polyphenols and VE could decrease MDA content, and improve TAOC ability, the effects of biological polyphenols were better than VE, but the differences within all the groups were not significant ($P>0.05$); on the aspect of the PROG and E_2 contents, the group for 300mg/kg biological polyphenols was the highest, the group for biological polyphenols was higher than the group for VE.3) adding 200mg/kg VE and biological polyphenols could improve immune globulin IgM, IgA, IgG content in colostrum, on the aspect of IgM and IgG content, the groups supplemented biological polyphenols were higher than the group supplemented VE. (Conclusion) Results showed that add VE and biological polyphenols in feed could improve reproductive performance and immune function of multiparous sows, and biological polyphenols could effectively decrease or prevent weak piglets, stillbirths and mummies happened. Considering add 200mg/kg biological polyphenols in feed could improve reproductive performance of multiparous sows, and the effects of add 200mg/kg biological polyphenols were better than VE synthesized by chemical synthesis.

Key words: biological polyphenols, VE, multiparous sows, reproductive performance, immune function