The effect of iron glycine chelate on tissue mineral levels,*fecal* mineral concentration, and liver antioxidant enzyme activity in weanling pigs

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Abstract: Twenty-four weaning pigs were used to evaluate the effects of iron glycine chelate (Fe-Gly) on tissue mineral levels, fecal mineral concentration and liver antioxidant enzyme activities of weanling pigs.Pigs were allotted to six treatments based on live weight and litter origin. Treatments consisted of: (1) control (no Fe supplementation);(2) 30mg Fe/kg diet from Fe-Gly; (3) 60mg Fe/kg diet from Fe-Gly; (4) 90mg Fe/kg diet fromFe-Gly; (5) 120mg Fe/kg diet from Fe-Gly; (6) positive control, 120mg Fe/kg diet from ferrous sulphate ($FeSO_4$). Feeding the diets containing Fe-Gly for 40 days resulted in an increased Fe concentration in heart ($P<0.05$), liver ($P<0.05$), kidney ($P<0.05$), spleen ($P<0.05$) and feces ($P<0.01$). There were linear responses to the addition of Fe-Gly from 0 to 120mg Fe/kg Fe on concentration in the liver and kidney. $FeSO_4$ also enhanced heart, liver, spleen and fecal Fe concentration ($P<0.05$ or $P<0.01$)compared with the control. Spleen Fe concentration was enhanced ($P=0.01$) and fecal Fe concentration was little reduced ($P=0.09$) when pigs were fed with 120mg Fe as Fe-Gly/kg compared with 120mg Fe as $FeSO_4$/kg. Linear responses to the addition of Fe-Gly were observed on catalase and succinate dehydrogenase (SDH) activities. 90mg Fe as Fe-Gly/kg increased SOD ($P=0.02$) and SDH ($P=0.03$) activity compared with the negative control. However, there were no significant differences in pancreas mineral concentration, fecal Cu, Zn and Mn concentration and liver xanthine oxidase activities among the treatments ($P>0.05$).

Keywords: Fe-Gly,Tissue,Feces,Antioxidant enzyme,Weanling pigs