



### Effect of different levels of organic selenium on male broiler chickens

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**Objectives:** Selenium is an essential trace element that up-regulates a major component of the antioxidant defense mechanism by controlling the body's glutathione (GSH) pool and its major Se containing antioxidant enzyme, glutathione peroxidase (GPX). Evidence has emerged suggesting that organic selenium, natural seleno-amino acids found in plants, grains and selenized yeast, maintains the antioxidant defense system more efficiently than inorganic selenium. The objective of this study was to compare the effect of 2 levels of organic yeast-derived Se (Sel-Plex®, SP) supplementations on performance and GPX activity in both blood and liver.

**Materials & Methods:** Three groups with five replicates of broiler chickens were given a basal diet either unsupplemented (control) or supplemented with 0.2 mg Se kg<sup>-1</sup> selenium yeast (trial 1) or 0.3 mg Se kg<sup>-1</sup> as selenium yeast (trial 2) for 42 days. A total of one hundred fifty day-old Ross×Ross male broilers were randomly assigned to three dietary treatments consisted of five replicates of 10 birds each. By the end of weeks 4, 5 and 6, 10 birds from each treatment were bled. The blood samples were then stored at -40 °C until assayed for glutathione peroxidase.

**Results & Conclusion:** There was significant difference ( $P < 0.05$ ) in feed intake of trials 1 and 2 compared with the control. Broiler fed 0.3 mg se kg<sup>-1</sup> had higher feed intake than control group. However, there were no significant differences ( $P > 0.05$ ) in body weight gain and FCR between trials 1, 2 and 3. Glutathione peroxidase (GSH-Px) activities in broiler chickens plasma and liver of all selenium treatment groups (trials 1 and 2) were significantly different ( $P < 0.05$ ) from that of the control. The GSH-Px activity in liver was similar ( $P < 0.05$ ) in trial 2 and 3 compared with the control. Trial 3 had higher ( $P < 0.05$ ) GSH-Px activity in plasma. However, there was no difference ( $P > 0.05$ ) in plasma glutathione peroxidase between trials 1 and 2 although the average value of GSH-Px activity in trial 2 presented the trend of increase. Our results clearly show that broiler performance and oxidative stress can be partially ameliorated by feeding organic selenium. We attribute this observation to an enhanced GPX antioxidant system in 0.3 mg Se kg<sup>-1</sup> organic selenium-fed chickens.

**Keywords:** Broilers, Selenium, Glutathione Peroxidase, Performance