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Efficacy of tulsi and turmeric as antioxidants in combating heat stress in broilers

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A study was undertaken up to investigate the efficacy of herbals tulsi (*Ocimum sanctum*) and turmeric (*Curcuma longa*) in ameliorating the oxidative damage induced by heat stress with 216 day old vencobb broiler chicks in 2 batches in hot summer months. In each batch, 108 chicks were divided into 9 groups, consisting of 12 chicks in each group. Group (G-I) was given basal diet (BD) without any antioxidant. While G-II was given BD with vitamin E (200 mg/kg) supplement and for G-III selenium was supplemented @ 0.15 mg/kg along with vitamin E (200 mg/kg). Group IV, V, VI and VII were given tulsi (0.25%), tulsi (0.5%), turmeric (0.2%) and turmeric (0.4%), respectively as supplements to BD. Combination of both herbals were supplemented with BD in G VIII [(tulsi (0.25%) +turmeric (0.2%)] and G-IX [(tulsi(0.5%) +turmeric (0.4%)]. Additionally, a control group of 12 chicks was raised separately in stress free environment. Plasma samples were obtained at 4th and 6th wk of age and assessed for enzymatic (glutathione peroxidase (GSH_Px), superoxide dismutase (SOD) and catalase and non enzymatic (reduced glutathione (GSH) antioxidants status. The data generated from the 2 batches was averaged and analyzed. Heat stress significantly ($P \leq 0.01$) reduced the antioxidant status in heat stressed birds fed on BD without any antioxidant supplementation compared to control birds. Among all the antioxidant supplemented groups, Se along with vitamin E had shown higher ($P \leq 0.01$) antioxidant status, followed by vitamin E inclusion. Herbals tulsi and turmeric improved the antioxidant status. Higher inclusion levels of tulsi (0.5%) and turmeric (0.4%) were effective ($P \leq 0.01$) in improving the antioxidant status than when supplemented with lower doses (0.25% and 0.2% respectively). Combination of herbals (G-VIII and IX) had not shown any additional benefit than their independent inclusions. The present study indicated that herbals tulsi and turmeric supplemented at 0.5 and 0.4% levels, respectively in broiler diets could be used as safe alternatives to synthetic antioxidants to combat heat stress.

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