PHYTOCEE®

Antioxidant Activity Improvement Potential of Active Constituent of *Emblica officinalis*

OBJECTIVE

To investigate the effect of polyphenolic compound: ellagic acid on various antioxidant activities in Gallus gallus laying hens.

MATERIALS AND METHODS

A total of 120-birds + 12-cocks of local yellow-brown laying hens of 28-weeks old were equally divided into 4-groups. The experimental diet was offered from 28 to 44 weeks of age as follows; Group A was control diet without ellagic acid while Groups B, C, and D had 50, 100, and 200 mg/kg of ellagic acid respectively. At the end of the experiment, blood was collected from 2 birds per replicate and serum was separated. The quantity of total antioxidant capacity (T-AOC), total superoxide dismutase (T-SOD), glutathione peroxidase (GSH-Px), and malondialdehyde (MDA) in serum and liver were measured using standardized kit-based assay protocols.

RESULTS

Effects of different levels of ellagic acid on serum (I) and liver (II) antioxidant indices of laying hens during the whole experimental period

I

Groups	T-SOD U/ml	T-AOC, U/ml	GSH-Px, U/ml	MDA, nmol/ml
A	417.2 ± 11.47^{a}	4.22 ± 0.14^{a}	1330.50 ± 0.41^{a}	9.85 ± 0.18^{a}
B	429.6 ± 10.06^{a}	4.26 ± 0.32^{a}	1376.10 ± 0.44^{a}	9.12 ± 0.46^{a}
C	480.6 ± 14.65^{b}	5.18 ± 0.02^{b}	1590.24 ± 0.89^{b}	7.64 ± 0.38^{b}
D	510.0 ± 8.56^{ab}	5.57 ± 0.38^{ab}	1620.57 ± 0.32^{ab}	7.36 ± 0.16^{a}

II

Groups	T-AOC, U/ml	T-SOD (U/mg pro)	GSH-Px (U/ml)	MDA (nmol/mg pro)
A	1.75 ± 0.06^{a}	98.36 ± 2.68^{a}	33.46 ± 1.43^{a}	0.76 ± 0.02^{a}
B	1.82 ± 0.03^{a}	97.52 ± 2.47^{a}	33.48 ± 1.56^{a}	0.68 ± 0.04^{a}
C	2.10 ± 0.001^{b}	102.52 ± 3.0^{b}	35.96 ± 1.74^{b}	0.54 ± 0.04^{b}
D	2.20 ± 0.02^{ab}	102.93 ± 3.0^{ab}	35.46 ± 1.74^{ab}	0.50 ± 0.03^{c}

^{abc}Means values within the same column with different superscript differ significantly ($p < 0.05$)

CONCLUSIONS

Ellagic acid at 100 mg/kg significantly decreased malondialdehyde concentration and increased total antioxidant capacity, glutathione peroxidase, and total superoxide dismutase in serum and liver samples of laying hens ($p<0.05$).

Reference:
Gul H, Geng Z, Habib G, et al. Effect of ellagic acid and mesocarp extract of Punica granatum on productive and reproductive performances of laying hens. Trop. Anim. Health Prod. 2022;54(4):228.