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The Urtica dioica Seeds' Extract (UDSE) has a Protective Effect on Chronic Aflatoxicosis in Broiler

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One of the biggest issues in the chicken industry is toxicity brought on by mycotoxins being contaminated in food. Aflatoxin B1 (AFB1), which is naturally produced in agricultural goods by numerous species of Aspergillus, is one of the most hazardous mycotoxins. Aflatoxicosis damages the liver, kidneys, and digestive system in poultry, suppresses the immune system, and as a result, makes the animal more susceptible to various illnesses. The liver is the organ most impacted by aflatoxicosis since it is responsible for biotransformation and detoxification of numerous xenobiotics such as steroids, eicosanoids, medicines, pesticides, pollutants, and carcinogens in the body. Due to these systemic effects of AFB, it also reduces feed consumption, growth rate, total body weight, and egg production.

In this study, we investigated the protective and antioxidant effects of Urtica dioica seed extract on chronic aflatoxicosis in broiler chickens over a 42-day trial period. We assessed liver degeneration histopathologically, oxidative stress and antioxidant parameters biochemically, Caspase-3 and Bcl-2 anti-apoptotic factors, and actin filaments in the liver tissue using immunohistochemistry.

The Statistical Package for Social Science (SPSS) version 21.0 for Windows was used for all statistical analyses (SPSS Inc., Chicago, IL, USA). The groups' descriptive statistics were presented as mean and standard deviation. The activities of SOD, GSH-Px, and CAT as well as the levels of TAS, TOS, BcL-2, and Caspase-3 in the liver homogenates and serum were determined to assess the preventive and antioxidant effects of Urtica dioica seeds' extract on chronic aflatoxicosis in broiler chickens.

In comparison to the control group, the AFB1 group's liver tissue had less BcL-2 (p 0.001). However, the group receiving UDSE dramatically (p 0.001) reversed the decline brought on by AFB1. The level of the apoptotic factor caspase-3 was considerably higher after aflatoxin administration in the AFB1 group compared to the control group ($p<0.001$). The extract from *Urtica dioica* seeds was shown to have antioxidant and hepatoprotective effects on chronic aflatoxicosis in broiler chickens in the current investigation. Aflatoxins have been linked to macroscopically seen liver withering, enlargement, and congestion. The livers of the broilers in the aflatoxin group in this study showed significant macro-morphological changes (enlargement and yellowish colour), whereas the livers of the broilers in the AFB1+UDSE group were relatively like the control group. Reactive oxygen species, which damage

protein, lipid, and DNA, are observed to be released more readily when a toxin is present. AFB1-related hepatotoxicity is characterized by elevated lipid peroxidation, which increases sensitivity and results in cell membrane damage.

The biochemical investigation of *Urtica dioica* seeds' extract revealed that it effectively restores the levels of TAS, TOS, BcL-2, and Caspase-3 as well as the activities of SOD, GSH-Px, and CAT. Histopathological and immunohistochemical findings further corroborate this finding. As a result, it might be suggested that UDSE be utilized in broiler breeding as a means of aflatoxicosis prevention.

JOURNAL REFERENCE

Erhan Ayna, Zübeyir Huyut, Omer Faruk KeleÕ, Zabit Yener and Ramazan Bal, 2021. Protective effect of *Urtica dioica* seeds' extract in experimental chronic aflatoxicosis in broiler chickens. Int. J. Poult. Sci., 20: 256-269.

KEYWORDS

Aflatoxicosis, antioxidant activity, anti-apoptotic activity, hepatoprotection, oxidative stress