Kafrelsheikh University
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The role of L. methionine, L. carnitine, choline and/or silymarin in hepatoprotection against intoxication and oxidative stress in broilers

A Thesis presented

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Summary

The aim of the present work was to study the role of L.methionine , L.carnitine, L.choline and/ or silymarine in hepatoprotection against intoxication and oxidative stress in broilers .

Through estimating growth performance of broilers (final body weights, weekly body gain, feed intake, feed conversion ratio and feed efficiency).

Also, evaluation of liver healthiness and broilers resistance to oxidative stress by quantitative analysis of serum samples for glutathione reductase, superoxide dismutase, malondialdehyde , liver enzymes(Alanine aminotransferase and Aspartate aminotransferase) , cholesterol and triglycerides levels.

Our study was performed on Eighty chicks grouped randomly in eight groups, each of 10 chicks and kept separately using wooden partitions. During the first two weeks , chicks were fed on a starter ration , followed by growing feed stuff till the end of the experimental period. The water was provided ad-Libitum.

All groups were kept under tha same conditions and received same management. Groups were illusterated as follows:

Group1: not supplemented (control)

Group2:supplemented with L.methionine in a dose of NRC system (0.50%) at first three days from each week till the end of experiment (orally mixed with ration)

Group3: supplemented with L.choline in a dose of NRC system (1300 mg/kg) at first three days from each week till the end of experiment (orally mixed with ration)

Group4: : supplemented with L.carnitine (500mg/kg /diet) at first three days from each week till the end of experiment (orally mixed with ration)

Group5: supplemented with silymarin in a dose of (1000mg/ kg) at first three days from each week till the end of experiment (orally mixed with water)

Group6: supplemented with mixture of previous four supplementers together (L.Methionine, Choline, L.Carnitine and Silymarine) by previous doses at first three days from each week till the end of experiment

Group7: got their hepatic intoxication by paracetamol (650mg/kg for7 days) at fifth week of age (orally mixed with ration).

Group8: supplemented with paracetamol with mixture of four supplementers.

Weight of birds and amount of feed they consumed were recorded weekly during the experimental period of 33 days

Blood and serum samples were collected in the end of experimental period for quantitative tests

It was recorded that paracetamol supplemented group showed a significant decrease in feed intake, final body weight , body weight gain, feed conversion ratio, feed efficiency, glutathione reductase and superoxide dismutase . Meanwhile, a significant increase in malondialdehyde, liver enzymes(AST and ALT) , cholesterol and triglycerides was recorded as compared to the control group .

It was found that L.methionine supplemented group showed significant increase in feed intake , weekly body gain , final body weight and glutathione reductase . Meanwhile, a significant decrease in feed conversion ratio compared to the control group.

While , L.methionine supplementation recorded a significant decrease in malondialdehyde, liver enzymes(ALT and AST), cholesterol and triglycerides levels compared to paracetamol treated group. There was no significance change effect on superoxide dismutase.

Our study recorded that L.choline supplemented group showed significant increase in final body weight , glutathione

reductase and superoxide dismutase compared to the control group.

While , L.choline supplementation recorded a significant decrease in AST, cholesterol and triglycerides levels compared to paracetamol treated group.

It was found that L.carnitine supplemented group showed significant increase in feed intake , final body weight and glutathione reductase as compared to the control group.

While , L.carnitine supplementation recorded a significant decrease in cholesterol and triglycerides levels compared to paracetamol treated group.

Silymarin supplemented group showed significant increase in weekly body weight gain , glutathione reductase and superoxide dismutase as compared to the control group.

While , silymarin recorded a significant decrease in liver enzymes (ALT and AST) levels compared to paracetamol treated group.

The combined group supplemented with (L.methionine, L.carnitine, L.choline and silymarine) showed a significant increase in feed intake, final body weight , body weight gain, feed conversion ratio, feed efficiency, glutathione reductase and

superoxide dismutase compared to the control group and showed a significant decrease in malondialdehyde, liver enzymes (AST and ALT) , cholesterol and triglycerides as compared to paracetamol treated group.

The mixed group treated by paracetamol and supplemented with (L.methionine, L.carnitine, L.choline and silymarine) showed no significance change in feed intake, final body weight , body weight gain, feed conversion ratio, feed efficiency, glutathione reductase , superoxide dismutase ,malondialdehyde, liver enzymes(AST and ALT) , cholesterol and triglycerides compared to the control group and showed a significant decrease in malondialdehyde, liver enzymes (AST and ALT) , cholesterol and triglycerides compared to paracetamol treated group. Also, showed a significant increase in feed intake, final body weight , body weight gain, feed conversion ratio, feed efficiency, glutathione reductase , superoxide dismutase compared to paracetamol treated group.