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SUMMARY AND CONCLUSION

The trail was carried out at Sakha Poultry Research Station and the Laboratories belonging to the Animal and Poultry Research Institute, Agricultural Research Center, Ministry of Agricultural during the period from September to December 2011.

The main objectives of this work were to investigate:

1. The response of a local Egyptian chicken strain (Inshas) to ochratoxicosis.
2. The effectiveness of using four feed-additives agents.

The four feed additives investigated included (Humate – Mannanoligosaccharide (Bio-Mos) – Vitamin E – Selenium).

To achieve these goals a total number of 360 hens and 72 cock 30 week-old were used. The birds were weighed, legbanded and randomly divided into 12 experimental groups of 30 birds (three replicates each group). Each group (10 hens + 1 cock).

The remaining 36 cooks were also divided into 12 groups of 3 cock each, housed separately for semen evaluation and fed the same experimental treatments.

The birds were vaccinated as young layer chicks with live attenuated vaccines for New Castle disease, infections bronchitis infections bursall disease and a polyvalent bacterin for fowl cholera at different ages from 4 to 95 days. The birds were daily throughout laying period (natural and artificial). Food and Water were always available ad libtum.

The experimental design consisted of 12 experimental groups:

1. Basal diet (without any additives and served as control).
2. Basal diet + 0.2% humate substance.
3. Basal diet + 0.1% Bio-Mos.
4. Basal diet + 150 mg Vit. E/kg diet.
5. Basal diet + 0.3 mg Se-yeast/kg diet
6. Basal diet (0.2% humate substance + 0.1% Bio-Mos + 150 mg Vit. E/kg diet + 0.3 mg Se-yeast/kg diet)_.
7. Basal diet + 1000 ppb OTA/kg diet (ochratoxic-diet).
8. Ochratoxic diet + 0.2% humate.
9. Ochratoxic diet + 0.1% Bio-Mos
10. Ochratoxic-diet + 150 mg Vit. E/kg diet.
11. Ochratoxic diet + 0.3 mg Se/kg diet.
12. Ochratoxic diet + (0.2% humate + 0.1% Bio-Mos + 150 mg Vit. E/kg diet + 0.3 mg Se/kg diet).

Characteristics investigated included:

Change in live body weight, egg production traits (egg number, average egg weight, egg mass, feed intake and feed conversion); relative weight of internal organs (kidney, liver, spleen, gizzard, ovary, testes). Serum biochemical estimates (serum total protein, albumin, globulin, AST, ALT, Uric acid, creatinine, calcium, phosphorus and MDA).

Immune response against NDV, residual OTA in the kidney, liver, meat and eggs, histopathological investigation of the kidney, liver, spleen, ovary, testes and intestine.

Results obtained are summarized in the following:

A) Final bodyweight and body weight change %:

At the end of the treatment period averages of final body weight and body weight change % of the groups fed feed additives without ochratoxin were significantly higher especially (T6) compared to the control group (T1).

The lowest ($P < 0.05$) final body weight and body weight change % were obtained with the group fed 1000 ppb ochratoxin A (T7) however administration of four anti-OTA agents studied ameliorate the negative effect of ochratoxin in Inshas hens.

B) Egg production, feed intake (g) and feed conversion (g feed/g eggs):

1. At the end of the experimental period control groups with or without four-anti-OTA agents were significantly ($P < 0.05$) higher total egg number, average egg weight and total egg mass compared to the ochratoxin treated birds with or without four-anti-OTA agents supplementation. Egg production was reduced significantly ($P < 0.05$) without ochratoxic-diet (T7), however, supplementation with feed additives caused a slight improvement in total egg number, average egg weight and total egg mass.

2. Feed intake, feed conversion ratio and mortality rates:

Feed intake was decreased while feed conversion ratio and mortality rates were increased in hens groups received ochratoxin compared to

the control groups, however, dietary supplementation of feed additives caused a slight improvement in feed intake, feed conversion ratio and decreased the mortality rate.

C) Relative egg components:

At the end of experimental period relative egg components were significantly ($P<0.05$) decreased for egg shell weight, egg shape index, yolk index and egg shell thickness of Inshas fed on ochratoxin contaminated diets, however, dietary supplementation of feed additives caused a slight improvement in egg quality.

D) Reproductive traits:

At the end of experimental period the birds fed feed additives were significantly ($P<0.05$) higher of fertility (%), hatchability (%), chick weight at hatch (g) and lowest of abnormality rate (%) compared to groups fed on ochratoxicated diets, however, administration of feed additives eliminate the negative effects of ochratoxin in Inshas hens.

E) Semen evaluation:

Semen volume, sperm concentration and mass motility of Inshas hens were decreased, however, sperm abnormality (%) and diet values were significantly ($P<0.05$) increased in the ochratoxic-diets compared to control group, however, administration of feed additives improved the negative effects of ochratoxin.

F) Blood chemistry:

A gradual increased for AST, ALT, total proteins, albumin, globulin, alkaline phosphates (ALP) and creatinine enzymes for groups fed on ochratoxicated diets, however, administration of feed additives improved the negative effects of ochratoxin.

G) Liver, kidney, spleen, proventriculus , and ovary weights to live weight were increased in groups fed ochratoxic-diets, however, supplementation with feed additives caused a slight improvement in relative weight of this organs.

H) Ochratoxin-A residue in tissues:

Regarding the organs contents of ochratoxin residues, kidney contained the highest levels of ochratoxin residues compared to the liver, breast muscle which are arranged in descending order during treatment period. Adding feed additives to ochratoxin contaminated diet decreased the ochratoxin residue in tissue.

I) Histopathological finding:

Kidney, liver, spleen, and ovary of birds fed on ochratoxic-diets showing change in histological structure, however, feed additives showing the normal histological structure of organs for birds fed ochratoxic-diets.

The overall conclusion of this study indicated that feed additives (humate-Bio-Mos-Vit. E-Se) treatment alone or combined can be recommended as anti-toxic for detoxification of ochratoxin-A in diets of laying hens.