SUMMARY

This experiment was carried out at the Poultry Research Farm , belonging to Animal Production Department , Faculty of Agriculture , Zagazig University , Benha branch .

The present study was aimed to evaluate the effect of Bio – Tonic (as herbal extraction) , Fermacto (as a natural feed supplement based upon a primary fermentation , Aspergillus) , Kemzyme (as enzyme preparation containing alfa – amylase , protease , beta – glucanase , lipase and cellulase) and Zinc bacitracin (as a poly peptide compound complex with stable Zinc) as feed additives , on productive performance and metabolic responces of broiler .

A total number of 576 one – day old Hubbard broiler chicks were randomly distributed into 4 – main groups each of 144 chicks . Birds of each group were subdivided into four subgroups each of 36 chicks (in three replicates of 12 chicks each .

The main groups are received basal diets with 0.0 , 0.5 , 1.0 and 1.5 kg/ton ration of either Bio – Tonic , Fermacto , Kemzyme or Zinc bacitracin , respectively .

The experimental chicks were raised under similar conditions of management , vaccination , heating and lightening .

Chicks were individually weighed to the nearest (g) at the first week and at weekly intervals thereafter throughout the experimental

period (lasting 7 weeks) . Weight gain between two successive weeks were individually calculated .

Feed consumed by all chicks of each treatment was daily recorded , averaged and expressed in gram per chick during the periods from (0 – 4 , 4 – 7 and 0 – 7) weeks of chicks age . Feed conversion then calculated as a ratio between feed consumption and body weight gain . Keel and Shank lengths were individually measured after the end of the 1 st , 4 th and 7 th weeks of chicks age . Economic efficiency and Performance index was also calculated . Slaughter and carcass quality were measured at 51 day of chicks age .

Serum total protein , albumin , globulin , A/G ratio , total lipids , cholesterol , GOT , GPT , alkaline phosphatase , uric acid and creatinine were determined at 28 and 51 days of age . In addition tissues uric acid and creatinine were recorded at 51 day of age .

The results obtained could be summarized as follows :

1 – Body weight :

a – Chicks fed diets containing Kemzyme increased body weight over those fed either Bio – Tonic , Fermacto or Zinc bacitracin by (23.2 , 47.0 and 5.9 g) , respectively at the end of the experimental period . Significant variation due to dietary levels applied was found on average body weight at 4 th and 7 th weeks of chicks age .

b – Chicks fed 0.5 kg Bio –Tonic /ton ration had the highest average of body weight (1041.6 g) at the 4 th week . On the other hand , chicks fed 0.5 kg Zinc bacitracin /ton ration had the highest average of body weight

(2106.8 g) at the end of the experimental period when compared with other treatments applied .

2 – Body weight gain :

a – Chicks fed Bio – Tonic showed the highest average of body weight gain at the period from (0 – 4) week of age . While those fed Kemzyme had the highest average at the periods from (4 – 7 and 0 – 7) weeks of chicks age .

b – Supplemented diets with either 0.5 kg Zinc bacitracin or 1.5 kg /ton Kemzyme showed the highest body weight gain averages at the period from (0 – 7) Wk of chicks age , respectively .

c – Highly significant effect due to supplemented levels was found on the average body weight gain during the periods from (0 – 4) and (0 – 7) wks only .

3 – Keel and Shank lengths :

a – Dietary levels had highly significant variations on keel length at 7 th week only and shank length at 4 and 7 weeks of chicks age .

b – Chicks received Bio – Tonic increased Keel length at 1 st and 7 th weeks . While those fed Zinc bacitracin increased Keel length at 4 th week only .

c – Supplementing chicks with Kemzyme had the highest average of Shank length at all periods of estimation .

d – Chicks fed 0.5 kg Bio – Tonic / ton ration showed the highest average of keel length at 7 th week of chicks age .

4 – Feed consumption and Feed conversion :

a – Chicks fed ration containing Zinc bacitracin showed the lowest average of feed consumption at all periods of estimation .

b – Feeding chicks diet containing Zinc bacitracin had better value of feed conversion at all experimental periods , followed by those fed either Kemzyme or Bio – Tonic .

c – Chicks fed 0.5 kg Zinc bacitracin / ton ration had the better average of feed conversion followed by those fed 0.5 kg Bio – Tonic / ton ration .

d – Highly significant variations were found in feed conversion due to dietary levels applied .

5 – Economical efficiency and Performance index :

a – Chicks received Bio – Tonic in their diet had the higher performance index at 4 th week of age , followed by those fed diets with Kemzyme. On the other hand , feeding chicks diet containing Zinc bacitracin had the highest performance index at the end of the experimental period , followed by those fed Kemzyme , respectively .

b – Chicks fed Zinc bacitracin had the highest average of economical efficiency allover the experimental periods followed by those fed Bio – Tonic .

c – Feeding chicks on diet supplemented with 0.5 kg / ton ration of either Zinc bacitracin or Bio – Tonic ,respectively increased economic efficiency when compared with other levels of different treatments applied .

6 – Carcass characteristics :

a – Chicks fed diet with Kemzyme had the highest absolute and proportional weights of eviscerated , giblets , total edible meat and decreased average of absolute and proportional weights of abdominal fat , followed by those fed diets containing Fermacto in absolute and proportional eviscerated weights and absolute weight of total edible meat .

b – Significant variation in abdominal fat percentage and absolute and proportional weights of giblets were found due to treatments applied . However , significantly variations in eviscerated weight , abdominal fat , giblets and total edible meat were found due to dietary supplemented levels .

c – Chicks fed 0.5 kg Zinc bacitracin or 1.0 Kg Kemzyme /ton ration, respectively increased significantly total edible meat when compared with other levels applied .

d – Feeding chicks on diets containing Fermacto had the highest average of total protein in meat , followed by those fed Zinc bacitracin . While those fed diets with Bio – Tonic or Kemzyme had the lowest total protein value .

e – Chicks fed Bio – Tonic decreased average of ether extract , moisture and ash of meat content .

f – Highly significant variation in protein , ether extract and ash of meat content were found due to treatments applied .

7 – Serum blood parameters :

a – Highly significant variations were found in serum total protein ,

albumin , globulin , A/G ratio , total lipids , cholesterol , alkaline phosphatase , GOT , GPT , uric acid and creatinine at 28 and 51 day of age due to treatments applied . Similar results were observed in tissues uric acid and creatinine .

b – Feeding chicks diets containing Bio – Tonic decreased average of serum creatinine , total lipids and cholesterol and increased serum alkaline phosphatase and GOT at 28 day of chicks age . While at 51 day of age , chicks fed Bio – Tonic had the lowest average of serum uric acid , creatinine , total lipids , cholesterol and tissues uric acid and creatinine .

c – Chicks fed Fermacto showed the lowest average of serum uric acid and highest average of serum total protein and globulin at 28 day of chicks age . While at 51 day of age , these chicks decreased average of total lipids and increased average of serum total protein and globulin .

d – Feeding chicks diets containing Kemzyme had the highest average of serum albumin , A/G ratio and GPT at 51 day of chicks age only .

e – Chicks received diets containing 1.5 kg Fermacto / ton ration showed the highest averages of serum total protein and albumin at 51 day of age .

f – Chicks fed 0.5 kg Kemzyme / ton ration had the highest average of serum alkaline phosphatase at 51 day of age . While , chicks fed 1.5 kg / ton Bio – Tonic and non – supplemented control diet had the highest averages of serum GOT and GPT at the same age .

g – Feeding chicks diet containing 1.5 kg Bio – Tonic / ton ration significantly decreased serum and tissues creatinine and tissues uric acid content when compared with other levels of different treatments applied .

8 – Digestible coefficient , TDN and Nitrogen balance :

a – Feeding chicks diets containing 0.5 Kg/ton Zinc bacitracin had the higher crude fiber digestibility . While the highest average of fat digestibility coefficient was found in chicks fed 1.0 kg/ton Fermacto .

b – Chicks fed 1.0 kg/ton Kemzyme had the highest average of crude protein digestibility . While those of control groups had the highest nitrogen free extract and organic matter digestibility .

c – Chicks of control groups had the highest average of total digestible nutrients (TDN) .

d – Feeding chicks with 1.5 kg/ton Zinc baciracin had the highest average of nitrogen balance , followed by those fed 0.5 kg/ton Kemzyme .

9 – Mortality rate :

a – Chicks fed diet containing Kemzyme or Zinc bacitracin decreased mortality rate . While those fed Fermacto had the highest average of mortality rate .

* Generally , it can be advised to supplement broiler diets with 0.5 kg / ton of either Zinc bacitracin or Bio – Tonic in order to get higher economical efficiency .