The vegetable feed ingredients used in the poultry feed preparation contain nearly two thirds of phosphorus as phytates. Around 70-80 per cent of the phosphorus in the cereal grains and oil seeds exists in the form of phytic acid. Phytic acid is the main storage form of phosphorous in plants. Phytate (phytic acid), myoinositol hexakis dihydrogen phosphate, is a normal component of all seeds. Among the feedstuffs it is highest in cereal byproducts (73-84 per cent) followed by oil seed meals (51-82 per cent), cereals and millets (60-73 per cent). In general phytate phosphorus is mostly unavailable to birds. Bioavailability of phytate phosphorus in maize and soybean meal for poultry range from 10 to 30 per cent. Phytic acid being a reactive cation can form salts with nutritionally important minerals like Zn$^{2+}$, Ni$^{2+}$, Co$^{2+}$, Mn$^{2+}$, Ca$^{2+}$, and Fe$^{2+}$ with decreasing order of stability and these complexes appear to be resistant to the digestive process. The phosphorus excretion by pigs and poultry can be reduced by 30 per cent by including phytase in their diets. A study was conducted to study the phosphorus excretion in poultry for a period of 42 days ($T_1$ - As control (without phytase) and $T_2$ - (300 IU/kg) and $T_3$ - 600 IU/kg). After 42 days bone ash content was analyzed for phosphorus content. A significant difference in phytate phosphorus degradation was observed in $T_3$ group. Further significant increase in phosphorus balance was noticed in the both the treatment groups when compared with control.

**MATERIAL AND METHODS**

Ninety days old Vencobb broiler chicks (straight run) belonging to a single hatch were used for this experiment. The birds were weighed individually and distributed randomly to the three experimental groups with three replicates of ten chicks each. The birds were housed in deep litter pens and standard feeding (ad lib) and managerial practices were followed throughout the experimental period. The phytase enzyme was included in the rations of treatment groups as follows. $T_1$ - Control (without enzyme), and $T_2$ -control + (300 IU/kg) and $T_3$ - control + 600 IU/kg). The ingredient and nutrient compositions of basal diets are given in the Table-1. At the end of six week of age, six birds from each treatment were slaughtered and the left tibial bone from all slaughtered birds were removed, dried over night in a hot air oven at 70$^\circ$C and defatted with petroleum ether and analyzed for their total ash, calcium and phosphorus content. The data were statistically analyzed as per standard statistical procedure.

**RESULTS AND DISCUSSION**

The influence of enzymes addition on bone mineral metabolism in terms of bone weight (g/kg live weight), tibial bone ash, calcium and phosphorus content are presented in Table-2. The mean values of tibial bone ash (per cent) were 50.38, 52.67 and 53.83 in treatment groups $T_1$ to $T_3$ respectively. No significant difference was observed between enzymes added groups and control group. However, the enzymes added groups had a numerically higher tibial bone ash compared to the control group. These results agree with the earlier findings. Who also reported that supplementation of phytase to corn soya based broiler diet numerically increased the tibial ash content by 0.9 -2.8 per cent. The mean value of tibial bone phosphorus as percent of total ash for the groups $T_1$ to $T_3$ was 12.40, 11.81, and 12.65 respectively. There was numerical increase in tibial bone phosphorus in $T_2$ and $T_3$. But the results were not significant. But some workers observed significant increase in bone phosphorus content due to the
supplementation of NSP degrading enzymes to corn soya based broiler diet. Some authors have also reported a significant increase in the bone calcium and phosphorus content due to the supplementation of phytase to broiler diet\textsuperscript{10-11}. The mean (per cent) phosphorus balance in birds fed diets T\textsubscript{1} to T\textsubscript{3} was 38.60, 40.89 and 41.07 per cent respectively. Significantly (P<0.05) increased phosphorus balance was noticed in T\textsubscript{2} and T\textsubscript{3} groups when compared to T\textsubscript{1}. In the entire enzymes added groups phosphorus balance was either significantly or numerically higher than the control group. The increase in phosphorus balance could be due to the enhanced break down of phytate phosphorus present in the vegetable feed ingredients by phytase. Similarly, other workers in their study, supplementing NSP degrading enzymes either alone or in combination with phytase to corn soya based broiler diet observed a maximum improvement of phosphorus balance by 5.8 per cent over the control\textsuperscript{9}. Many authors have reported a significant increase in the phosphorus retention due to the supplementation of phytase to broiler diet\textsuperscript{10-13}.

**CONCLUSION**

A significant difference in phytate phosphorus degradation was observed in T\textsubscript{3} - control + 600 IU/kg group. Further significant increase in phosphorus balance was noticed in the both the treatment groups when compared with control. The present study indicates that phosphorus excretion can be reduced through the use of phytase in feed.

**REFERENCES**