EFFECT OF STRAIN AND AGE ON CIRCULATING LEVELS OF NITRIC OXIDE IN TURKEY AND GUINEA FOWL

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The free radical gas Nitric Oxide (NO) is now known to be an important biological messenger in animals. Nitric oxide mediates different physiological functions in the mammalian and avian reproductive systems. The aim of the present study is to find out the circulating levels of metabolites of NO, i.e., Nitrite and Nitrate (NO₂⁻/NO₃⁻) in different strains of turkey and guinea fowl at 8th, 14th and 50th week of age. Blood samples were collected from three different strains of turkey and guinea fowl maintained at Institute of Poultry Production and Management, Nandanam, Chennai. Serum samples were separated and stored at -20°C until analysis. The Nitrite and Nitrate levels were estimated using colorimetric Nitric Oxide assay kit. The strain had a significant (P<0.05) influence on circulating levels of metabolites of NO in Beltsville small white (28.73 imol/l) and Nandanam turkey-1 hen (28.16 imol/l) at 50th week of age than Non-descript turkey hen. The effect due to age were found significant (P<0.05) on circulating levels of metabolites of NO at 8th, 14th and 50th week of age. As the age advanced, circulating levels of metabolites of NO also increased. In Guinea fowl, the strain had a significant (P<0.05) influence on circulating levels of metabolites of NO in pearl (15.70 imol/l) and white breasted hen (14.03 imol/l) at 8th week of age than white guinea fowl hen. The effect due to age were found significant (P<0.05) on circulating levels of metabolites of NO at 8th, 14th and 50th week of age in white breasted hen than other strains. However, numerical increase in circulating levels of metabolites of NO was noticed as the age advanced in all the three strains of guinea fowl. It could be concluded that the increased levels in NO metabolites in turkey layers and guinea fowl brooders irrespective of strains indicating trivial mechanism to combat stress in these birds, yet needs further confirmation with production of oxidants and antioxidative enzyme status.

Key words: Turkey, guinea fowl, age, strain, circulating levels of nitric oxide.