

ABSTRACT

This study was designed to determine the concentrations of heavy metals in broiler feed, body tissues and litter. Five poultry farms were selected from different locations of district Lahore. For feed analysis one sample of each pre-mixer and foodstuff was collected from each selected poultry farm. Five samples of broiler were collected from each poultry farm to analyze the body tissues (skin, muscles, liver). Five samples of domestic layer were selected from nearest villages of poultry farms for its comparison to broiler. All samples were dried and grinded for analysis by using the technique Particle Induced X-ray Emission (PIXE). Copper, Manganese, Iron, Nickel and Zinc were detected in feed, body tissues and litter samples of broiler. Statistically this data was subjected to Analysis of Variance (ANOVA), T-Test and Correlation. There was significant difference in heavy metal concentrations in feed, body tissues and litter samples among all poultry farms. Concentrations of detected heavy metals were hundreds of times higher than the Food and Agriculture Organization/World Health Organization FAO/WHO limits in feed and body tissues of broiler. All detected heavy metals were found in muscles and litter samples of broiler. Broiler skin showed bioaccumulation of all detected heavy metals except Zn. All heavy metals in broiler feed showed positive correlation with muscles and litter except Mn that showed positive correlation with liver of broiler. Only Cu, Fe and Mn were detected in body tissues and litter samples of domestic layer. Liver samples of domestic layer showed higher accumulation of Fe and Cu than broiler. This study provides information about higher concentrations of heavy metals in broiler meat and can be helpful in risk assessment of consumers. Results of current study showed that daily intake of broiler meat as per WHO limits ranges from 3-152 g/day for 70kg person depending upon the detected concentrations of different heavy metals. Average intake of broiler meat for all heavy metals is calculated to be 50g/day or 1.5kg/month. Study suggests that there should be strict monitoring on heavy metals added in poultry feed to maintain the quality of broiler meat and there should be proper disposal of poultry litter to avoid soil and water pollution. To avoid the hazards of poultry meat consumers should reduce its consumption.