Bibliography
VII. BIBLIOGRAPHY


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Abstract
VIII. ABSTRACT

Halquinol, a quinoline derivative is a mixture of 5,7-dichloroquinolin-8-ol, 5-chloroquinolin-8-ol and 7-chloroquinolin-8-ol. The present study was carried out in broiler chickens to determine the distribution into edible tissues and to establish pre-slaughter withdrawal period for meat following dietary inclusion of halquinol (Halquinol BP80®, manufactured and procured from M/s. Provimi Animal Nutrition India Pvt. Ltd., Bangalore, India). Experimental birds consisted of four hundred, day-old broiler chicks (Vencobb-400). They were divided into four groups of 100 chicks each. Group I birds served as control (C) and received poultry diet without any antimicrobial substances in it, while experimental birds in group II (T₁), III (T₂), IV (T₃) received poultry diet containing halquinol @ 60, 120 and 240 ppm respectively for a period of 40 days. Plasma samples and edible tissues viz: liver, kidney and breast muscles were collected by sacrificing experimental birds (n=6 birds on each occasion) on day 5, 10, 20, 30 and 40 of the halquinol exposure through diet and at 2 h and on day 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 following withdrawal of halquinol.

The plasma or tissue clean-up and analytical procedures were standardized to quantify 5,7-dichloroquinolin-8-ol and 5-chloroquinolin-8-ol by employing high performance liquid chromatography (HPLC) with permissible limits of repeatability, precision and sensitivity. The detection limit of the assay system for both the constituent molecules was 20 ng.g⁻¹ tissue. However the levels of 5-chloroquinolin-8-ol in plasma or tissue samples belonging to various treatment groups were below the limit of detection of the assay. The 5,7-dichloroquinolin-8-ol was not detected in plasma samples of experimental birds except in samples belonging to group IV (240 ppm). There was
significant (p≤0.05) increase in concentration of 5,7-dichloroquinolin-8-ol in liver and kidney between each successive sampling days of 5, 10, 20, 30 and 40 in T1, T2 and T3 groups of experimental birds exposed to halquinol. However, 5,7-dichloroquinolin-8-ol in breast muscle samples belonging to T1 and T2 group were below the detection limit of assay (<20 ng.g⁻¹) while its concentration was significantly (p≤0.05) increased in experimental birds belonging to T3 (240 ppm) group between each successive sampling days of halquinol exposure.

There was a significant decrease (p≤0.05) in concentration of 5,7-dichloroquinolin-8-ol in liver and kidney tissues on each successive sampling days and reached to non-detectable levels on day ‘4’ following withdrawal of halquinol exposure in all the treatment groups (T1, T2 and T3). At the termination of dietary exposure of halquinol the concentration of 5,7-dichloroquinolin-8-ol in liver and kidney tissues were 178.8 ±4.83 and 223.6 ± 6.85 ng.g⁻¹; 310±5.82 and 335.7±7.06 ng.g⁻¹ and 503.7±7.07 and 520.3±10.09 ng.g⁻¹, respectively in T1, T2, and T3 groups of experimental birds. The depletion of 5,7-dichloroquinolin-8-ol from breast muscles of experimental birds exposed to halquinol @ 240 ppm was relatively rapid and the residues were non-detectable on day ‘3’ following its withdrawal of halquinol from diet.

Irrespective of halquinol exposure levels, the depletion trend for 5,7-dichloroquinolin-8-ol from edible tissues was in the order of breast muscles > liver ≥ kidney. Keeping in view of the extensive use of halquinol in poultry in India and other Asian countries, and the possible residual effects on human health, it is suggested to adopt three days pre-slaughter withdrawal period in broiler chickens.