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Multi-Residue Analysis (GC-ECD) of Some Organochlorine Pesticides in Commercial Broiler Meat Marketed in Shivamogga City, Karnataka State, India

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Abstract : Organochlorine (OC) insecticides are among the most important organotoxins and make a large group of pesticides. Physicochemical properties of these toxins, especially their lipophilicity, facilitate the absorption and storage of these toxins in the meat thus possess public health threat to humans. The presence of these toxins in broiler meat can be a quantitative and qualitative index for the presence of these toxins in animal bodies, which is attributed to Waste water of irrigation after spraying the crops, contaminated animal feeds with pesticides, polluted air are the potential sources of residues in animal products. Fifty broiler meat samples were collected from different retail outlets of Bengaluru city, Karnataka state, in ice cold conditions and later stored under -20°C until analysis. All the samples were subjected to Gas Chromatograph attached to Electron Capture Detector(GC-ECD, VARIAN make) screening and quantification of OC pesticides viz; Alachlor, Aldrin, Alpha-BHC, Beta-BHC, Dieldrin, Delta-BHC, o,p-DDE, p,p-DDE, o,p-DDD, p,p-DDD, o,p-DDT, p,p-DDT, Endosulfan-I, Endosulfan-II, Endosulfan Sulphate and Lindane(all the standards were procured from Merck). Extraction was undertaken by blending fifty grams (g) of meat sample with 50g Sodium Sulphate anahydrous, 120 ml of n-hexane, 120 ml acetone for 15 mins, extract is washed with distilled water and sample moisture is dried by sodium sulphate anahydrous, partitioning is done with 25 ml petroleum ether, 10 ml acetonitrile and 15 ml n-hexane shake vigorously for two minutes, sample clean up was done with florosil column. The reconstituted samples (using n-hexane) (Merck chem) were injected to Gas Chromatograph–Electron Capture Detector(GC-ECD). The present study reveals that, among the fifty chicken samples subjected for analysis, 60% (15/50), 32% (8/50), 28% (7/50), 20% (5/50) and 16% (4/50) of samples contaminated with DDTs, Delta-BHC, Dieldrin, Aldrin and Alachlor respectively. DDT metabolites, Delta-BHC were the most frequently detected OC pesticides. The detected levels of the pesticides were below the levels of MRL(according to Export Council of India notification for fresh poultry meat).

Keywords : accuracy, gas chromatography, meat, pesticide, petroleum ether
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