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The study of the organochlorine pesticide residues traceability in food chain: Feeds-fatty tissue-meatmeat products

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Pesticides residues contamination is one of the major concerns worldwide, which influences the practical and structural integrity of an environment. Their direct and indirect effects on human health cannot be avoided. The purpose of this study was to highlight the traceability of organochlorine pesticide residues on the food chain: feed - fatty tissue, - meat - meat products. All samples were collected from a slaughter house in Cluj County. The fat and meat samples were stored at 18 °C temperature and the feed samples at room temperature. The gas chromatographic method was followed for identification of organochlorine pesticide residues from vegetable and animal food. In the collected samples, the largest weight had DDT and its metabolites (375.9 ng/g fat) and HCH isomers (277.7 ng/g fat) site by chlordane, heptachlor, heptachlor epoxide, as well as endosulfan. Regarding the contents of Σ DDT it can be observed that the largest amount was found in fatty tissue, mainly being bioaccumulated in mesenteric tissue and organs. This may be due to the cumulative effect of DDT and its metabolites in fatty tissues and organs (liver, kidney, heart, and spleen) reported also by Covaci et al. In the case of Σ HCH was found a preferential accumulation in meat followed by organ, fatty tissue and meat products. Regarding organochlorine pesticide residues traceability, it can be concluded that their presence in feed make them to be presented both in the adipose tissue, organs and muscle tissue, as well as in the meat products. Codification of the samples was as follows: feed samples Fj; fatty tissue samples: fat O, bacon S, caul M; meat samples: pork neck CF, chops CO, leg P; samples of paste composition: paste composition for frankfurters and rosy sausages CFP, paste composition for semi-smoked samples PCS; and meat products samples: frankfurters CW, rosy sausage PZ, salam vară salami SV, smoked sausages CA, trandafir sausages CT, and liverwurst LB.

Recent Publications

- 1. Poma G, Cuykx M, Amato E, Calaprice C, Focant J F and Covaci A (2017) Evaluation of hazardous chemicals in edible insects and insect-based food intended for human consumption. Food and Chemical Toxicology 100:70-79.
- 2. Mureşan C, Covaci A, Socaci S, Suharoschi S, Toafană M, Muste S and Pop A (2015) Influence of meat processing on the content of organochlorine pesticides. J. Food Process Technology 6:11.
- 3. Mureşan C, Socaci S and Muste S (2012) Content evaluation on organochlorine pesticides in local vegetables. Bulletin of the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca Agriculture 69(2):513.
- 4. Covaci A, Gheorghe A and Schepens P (2004) Distribution of organochlorine pesticides, polychlorinated biphenyls and a-HCH enantiomers in pork tissues. Chemosphere 56:757-766.

Biography

Crina Carmen Muresan a Postdoctoral Researcher, has more than seven years experience in exploitation of food industry by-products, development and optimization of functional food products, food safety, and determination of food products quality parameters. She started the PhD stage (2004-2010) in the field of Veterinary Medicine, having as research theme "Researches concerning the influence of processing on organochlorine pesticide residues from meat and meat products", granted by the PhD evaluation commission with the very good degree. In 2015 and 2016 she was awarded with Excellence Diploma at the International Salon of Inventions Pro Invent approved by Ministry of Education and the Academy of Technical Sciences of Romania and in 2017 she is responsible for one project (Innovation Checks: PN-III-P2-2.1-CI-2017-0343) and Research Assistant in three projects.

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