Session 6 – "Safety and quality"

Mycotoxins in meat products presented by **Dr. María Jesús Andrade**, University of Extremadura, Spain

Mycotoxins are toxic metabolites produced by moulds whose occurrence has been described in meat products. Although the mycotoxin contamination of spices used for manufacturing such foodstuffs and their presence in meat are causes of this chemical hazard, the main one is the mycotoxin production during the ripening of meat products because of the development of toxigenic moulds, which concretely affect the dry-cured meat products. Ochratoxin A (OTA) is the most prevalent mycotoxin in dry-cured hams and dry-cured fermented sausages. Large differences in the OTA incidence and amount have been detected between different studies performed in several countries, most of them Mediterranean. These variations could be related to differences in the contaminating mould population, the manufacturing technology, the environmental conditions and the detection method. Some of the OTA values reported in dry-cured meat products were above the only maximum level currently applied (1 µg/kg for pork products in Italy). Nonetheless, there are still few data available on its occurrence and studies should be conducted on the incidence of OTA in dry-cured meat products, which are considered by the European Food Safety Authority as one of the main contributors to the chronic dietary exposure to OTA. Other mycotoxins, such as aflatoxin B_1, cyclopiazonic acid, sterigmatocystin and citrinin are only occasionally related to dry-cured meat products. Therefore, OTA presents the greatest risk within the mycotoxin hazard in the meat industry and monitoring the OTA occurrence and implementing preventive measures to minimise such hazard to consumers should be a priority for manufacturers. To control mycotoxin contamination, manufacturers have several strategies available, with the biopreservation ones being the most appropriate, since the modification of environmental parameters is not feasible, especially in products with long ripening. Mitigation strategies based on biopreservatives from microbial and plant origins have been proposed as the most promising ones to be used. Concretely, the application of native microorganisms alone or in combination is the most suitable strategy for dry-cured ham, while essential oils can be applied together with microorganisms as part of a hurdle system in dry-cured fermented sausages. However, these measures are not currently being widely implemented in the meat industry, maybe because, although it is to be expected, there is still no regulated maximum OTA. It is noteworthy that such biopreservative strategies also offer a sustainable alternative to traditional chemical preservatives in dry-cured fermented sausages. Thus, their use can respond to the consumers' demand for products that are not only safe but also produced with minimal impact on the environment (M.J. Andrade, J. Delgado, M. Rodríguez, F. Núñez, J.J. Córdoba, B. Peromingo. 2025. Mycotoxins in meat products, Meat Science 227, 109850)



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María J. Andrade obtained her PhD in 2009 in the Food Hygiene and Safety Research Group of the UEx, focusing on the characterization of yeasts from dry-cured Iberian ham using molecular methods. She is currently working on the use of biocontrol agents (microorganisms and plant extracts) to minimize the hazard associated with the accumulation of mycotoxins in dry-cured meat products. She is co-author of more than 50 scientific publications in peer-reviewed journals and several book chapters. She has also participated as Collaborating and Leading Researcher in several projects financed with public fundings obtained in regional and mostly national competitive calls as well as in various research contracts with industries from the meat sector. Regarding teaching, she is the academic Coordinator of the Master's Degree in Meat Science and Technology at the UEx.