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## **SAMPLE IRRADIATION COUPLED TO ELECTRONIC SPIN RESONANCE ANALYSIS FOR IDENTIFYING A MECHANICALLY SEPARATED MEAT**

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**Introduction:** In accordance with Regulations (EC) No 853/2004 and No 999/2001, a mechanically separated meat (MSM) is defined as the product obtained by removing meat from flesh-bearing bones after boning or from poultry carcasses, using mechanical means resulting in the loss or modification of the muscle fiber structure. The quantification of calcium content has been suggested as a technique for identifying a MSM. However, European Food Safety Authority (EFSA) recommended the development of innovative analytical methods for this identification, as alternative/complementary tools of investigation.

**Materials & Methods:** The method proposed in this study has been developed within the activity of "MPSQA" Project, in progress at Italian National Reference Centre for the Detection of Radioactivity in Feed and Foodstuff. It is based on the use of ionizing radiation on MSM samples, followed by Electronic Spin Resonance (ESR) analysis. Fresh chicken meat and Würstel (with MSM) samples were tested. The interfering signals were removed through sample ashing at 600°C. The ashes were then irradiated by a biological irradiator at 3 kGy (150 kV, 45 mA, 40 Gymin-1) and analyzed by ESR in X-band, after 24 hours. Ashes of chicken bones were analyzed as well, and different percentages of these ashes were added to meat ashes for validation purpose.

**Results & Conclusion:** The ESR spectra obtained from chicken bone resulted more complex, if compared to that obtained from chicken meat, and several characteristic signals were identified. These signals were detected in meat samples with added bone ashes. These results were confirmed by analyzing different chicken meat samples. A final "blind test" was carried out. The analytical method developed in this work allowed to identify the samples with MSM declared on the label (Würstel), and the samples added with different percentages of chicken bone ashes. At the same, the samples with no MSM (chicken fresh meat) were identified as "no MSM", confirming method reliability.

### **Biography**

Iammarino M is a Food Technologist and Chemical Surveyor. Since 2002, he is a Researcher at Istituto Zooprofilattico Sperimentale della Puglia e della Basilicata (IZS-PB) of Foggia (Italy). Currently, he is employed as Principal Investigator at National Reference Centre for Detection of Radioactivity in Feed and Foodstuff of IZS-PB. He deals about food quality and safety, analytical chemistry applied to food analysis, research & development and analytical methods validation. In particular, he has developed several analytical methods (HPLC, HPIC, CE, LSC, TLC, ELISA) for the determinations of food additives (nitrites, nitrates, sulphites, polyphosphates, organic acids, etc.), radionuclides, mycotoxins, pesticides and drug residues in foods and feed materials. He has published more than 100 articles in peer-reviewed and Academic Journals, Congress Proceedings and books. The H index has reached 10 and citation exceeded 235 (source: Scopus). He was a reviewer for 49 international journals.

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