DETECTION OF 2-ALKYLCYCLOBUTANONES IN IRRADIATED FOODS CONTAINING FAT USING GAS CHROMATOGRAPHY/MASS SPECTROMETRY-EN1785

E. DENLI, A. AYLANGAN
Saraykoy Nuclear Research and Training Center Turkish Atomic Energy Authority Ankara, Turkey

Food irradiation is the process of exposing food to ionising irradiation. This technology is used for food hygiene, spoilage reduction and extension of shelf-life. Although properly irradiated food is safe, commercialization of irradiated food requires the available methods to identfy irradiated foods. For this purpose a great number of European Standards were adopted by the European Committee for Standardization (CEN). The detection of 2-alkylcyclobutanones (2-ACB) is also a standard method used for irradiated food whose fat content is higher than 1g %. 2-ACB is unique radiolytic product. These products can be detected at doses of 0.5 kGy and higher for raw chicken. Detection limit for irradiated whole egg, raw pork, salmon and Camembert is 1 kGy and above. However these compounds are not detected in nonirradiated food samples.

In this method, 2-ACB are extracted using n-hexane or n-pentane along with the fat. The extract is then fractionated with florisil column chromatography prior to seperation using gas chromatography and detection with mass spectrometer. As alternative procedure for extraction and purification of 2-ACB, supercritical fluid extraction (SFE) has been succesfully employed instead of florisil column chromatography.