

Tuesday, November 8, 2016 - 15:30 to 17:30
Poster Session: Other Applications - Food (C)

Potential evaluation of mutagenic compounds 2-dodecylcyclobutanone and 2-tetradecylcyclobutanone through the Ames test

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Food irradiation is an effective and safe method for preservation and long-term storage for various applications in a wide variety of food products. This process is performed by the use of accelerated electron beams, X-rays or gamma radiation. The 2-Alkylcyclobutanones (2-ACBs) are the only known radiolytic products generated in foods that have fatty acids and were subjected to irradiation. In this study, the stearic and palmitic acid was analyzed when irradiated medium 2-Tetradecylcyclobutanone (2-tDCB) and 2-Dodecylcyclobutanone (2-dDCB). Since the 1990s toxicological safety studies of 2-ACBs have been conducted extensively through synthetic compounds. Additionally, tests to determine if the compounds have any mutagenic activity are strictly necessary. The Ames test was the test chosen for assessing the genotoxicity of both 2-dDCB and 2tDCB compounds. It was used five different bacterial strains TA-1535, TA-1537, TA 98 and TA 100 Salmonella typhimurium, to detect mutations in specific sites Guanine-Cytosine (GC) and WP2 uvrA, Escherichia coli was used to detect point mutations at sites of Adenine-Thymine (AT). This research, unlike those undertaken by other authors up to now, presents some particularities in their factors for a more complete assessment, such as the use of all necessary cell lines to identify possible mutations in specific sites, changes in solvent commonly used, appropriate plates and the investigation of possible mutagenic effects on two important compounds 2-dDCB and 2-tDCB simultaneously. The study revealed no mutagenic activity in any of the cell lines and concentrations evaluated. In conclusion, the compounds 2-dDCB and 2tDCB showed no mutagenic effect in concentrations detectable by the AMES test.

2-Alkylcyclobutanones; Ames test; Food Irradiation