“GAMMA IRRADIATION TO EXTEND SHELF LIFE OF A HIGHLY NUTRITIVE BREAD FOR PEOPLE SUFFERING ALIMENTARY EMERGENCIES”

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This work aimed at applying ionizing radiations to extend shelf life at room temperature of a highly nutritive bread for persons suffering catastrophes or malnutrition.

Eighteen formulations were designed considering WHO/FAO daily recommended intakes for this particular case; breads were manufactured, baked, packed and sensorily evaluated to find the more acceptable one. Irradiation was carried out at a Co-60 semi industrial facility, activity: 600,000 Curies, with doses of 6 and 10 kiloGray. Samples were stored for 43 days in the darkness, at 20 ± 1 ºC and 59 ± 6 % RH. Aerobic mesophiles, sporulated bacteria, and moulds and yeasts were analyzed according to ICMSF methods. Samples were sensorily evaluated by a 50 member consumer panel on the 3rd., 29th. and 43th. storage days; results were statistically analyzed with Dunnett test, p<0.05.

Aerobic mesophilic bacteria of control samples exceeded the Argentine Food Code requirements on the 7th. storage day; instead, no microbial growth was detected in any of the irradiated samples at least until day 70. No significant sensory differences were found between control and irradiated samples on day 3; and the latter kept good qualifications throughout the storage period.

Irradiation extended this bread shelf life at least 6 times keeping good sensory quality, which would provide a safe nutritive food, stable at room temperature, without chemical preservatives, cheap, easy to handle, store, distribute and eat.