544. THERMOLUMINESCENCE INVESTIGATION OF GAMMA IRRADIATED BEAN

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Introduction: For insect disinfestation, irradiation offers an attractive alternative to chemical treatments Irradiation of food is recognized as a safe and effective method for a range of specific applications, among them the disinfestation of various food products, such as grains, strawberries, dried fish, dried fruits and legumes (Loaharanu, 1994, Heide et al., 1990). In the last ten Thermoluminescence has been used for food irradiation detection, the method has been successfully tested in interlaboratory tests with herbs and spices and their mixtures, isolating minerals (Schreiber et al, 1993, 1994; Delincée, 1992, 1993); it is also an established technique utilized in a variety of applied sciences (Makeover, 198S; Bull, 1986). The principle of this method is based on the mineral content of food products which Iceep energy by an imprisonment process, as a result of exposition to ionizing radiation. The liberation of such enemy is achieved by controlled heating of the isolated miner. (LAEA TECDOC-S87,1991). In this world we compare two processes of extraction of minerals from the samples and excellent results were obtained using the thermoluminescence (TL) methodology to detect

immediate Brazilian bean after the irradiation prongs, in order to disinfect ~e grain, even when the storage period had been 3 months. **Experimental:** Chance beans (*PHASEOLUS VULGARIS L.*), an important bean in the diet of Brazilian people was analyzed before extracted in two ways: I) minerals extracted by ul~ sound bath and; 2) for the packet residues and hand washed. First of all, the samples were packed in plastic bags, be beans were immediate already in Brazil using ^{60}Co source (gammacell 220) with doses of 0, 0.5, I .0, 2.5, 5.0, 10.0 and 20 kGy. Following immediation, the bean5 were stored atl room temperature for 2 months in Brazil and then shipped to Germany, where storage was contemned until we made the tests. Thermoluminescence measurements were carried out using an ELSEC model 7185 TL reader with heating rate of 10°C, and final temperature of 500°C. The beagin, chamber of TL header was flushed with pure nitrogen (99.996%) and the system was checked with a ^{14}C light source. **Results and Discussion:** Measuring this two processes of exact the minerals, we did not and any difference in the kind of preparation, we had good response pertinent to the doses applied. Our results like some others in literature (Khan & Delincée, 199S; Pinnioj~, 1993) show that we can detect without doubt the inoculated being. Base the identification of irradiated foods by TL analysis on the value of the TL glow ~o, evaluated over a recommended temperature interval. }n addition, shapes of glow curves offer support for identification. TL glow ratios film inadia~ed samples are typically greater dlan 0,S where as those fmm unirradiated samples are generally below 0,1. References: Bull (1986) Nucor. Tracks 05.; Delincée (1992) Ir~ad. for food Sector, Proceedings Sump. pp.24-60 (Quebec) Canada.; Delincée (1993) Radiate. Phys. C~7em. 42, 351-357.; Meide et al. (1990) ~ c. Food Chem., 38, pp.21fiO-2163.; IAEA~TECI)OC-S87,1991, Khan &: Delincée (1995) ~adfaf. Phys. Chem. 46, 319-322; Loaha~anu (1994) ~ l B~ltetin, 30-3S.; Mckeever (1985j Cam~ridge Unfversfty Press, Carnbridge.; Pinnioja (1993) EUR-143~5. Comfss10n of the EuJopean Commun)tfes, pp. 183-191, Luxembourg.; Schreiber et al (1993) SozEp-Hef~ 2/1993 (Bundesgesundheitsamt, Berlin), Schreiber et al (1994) JAOAC, in press. Acknowledgments: This wo~c was sponsored by the Intemational