Advances in Nanomedicine and Nanotechnology Research
ANNR, 1(S1): 03
www.scitcentral.com
ISSN: 2688-5476

Abstract: Open Access

The Effect of Ultra Violet Radiation on Sunflower Seeds and the Edibility of the Extracted Oil

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Published November 01, 2019

ABSTRACT

The work dealt with relationship between exposing the sunflower seeds to the ultra violet radiation of the sun and the oxidative spoilage of the produced oil. The standards used were the acid and peroxide values compared with the recommended codex for edible sunflower oil. The main analytical technique used was the Gas Liquid Chromatography (GLC). The standard fatty acids used to construct the (GLC) chromatogram were the Palmitic (16:0), Stearic (18:0), Oleic (18:1) and Linoleic (18:2) acids. Percentage areas under the peak for each of the four acids were used as a comparative quantitative analysis. The seeds were subjected to the UV radiation via two sources: that of the sun and an artificial light (254 nm; 220-240 W). The aliquot part was also subjected to the artificial light to predict the type of oxidation taking place. With increase the exposure time the acid value was found to increase, while the peroxide value was found to increase gradually in the beginning of the exposure, sharp increase then followed. The ratio of methyl linoleate versus methyl oleate was found to decrease gradually with increase of the exposure period, methyl palmitate and methyl stearate were not affected considerably. The aliquot commercial part was also affected (on the bases of changes in the standard used) by exposure to the artificial light. On refrigerating the methyl ester of a sample for 20 days, instead the sample was found to decompose giving large amount of free acids which indicates that the oxidation is enzymic. The maximum period of time for exposure of the seeds to UV radiation of the sun was found to be six months beyond which the produced oil was found to be inedible. The results found were discussed and suitable conclusions were drawn.

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Citation: Elshiekh MMA. (2019) The Effect of Ultra Violet Radiation on Sunflower Seeds and the Edibility of the Extracted Oil. Adv Nanomed Nanotechnol Res, 1(S1): 03.