

Natural Radioactivity Levels in Canned Food

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The aim of this book is to set up a database for concentrations of natural and anthropogenic radioisotopes in Iraq in (55) canned food samples of wheat flour, milk powder, legumes and other foods available in Iraqi markets. The principal and naturally occurring Radioactivity in human and natural environments radioisotopes: ^{238}U (^{226}Ra), ^{232}Th and ^{40}K have been measured via gamma ray spectroscopy with a NaI(Tl) detector. Also (42) canned liquid samples of the most common forms of liquid milk, juice and soft drinks have been examined for detecting the presence of Radon with an innovative measurement technique by means of alpha spectrometry of Radon short-lived progenies using the RAD-7 Radon-in-air analyzer. Total samples of conned food in present study is (97) samples.

The average value of specific activities ^{238}U (^{226}Ra), ^{232}Th and ^{40}K were in samples of wheat flour (6.421) Bq/kg , (2.122) Bq/kg and (133.096) Bq/kg respectively, in the samples of milk powder (13.229) Bq/kg ,(1.619) Bq/kg and (284.813) Bq/kg respectively ,in samples of legumes (5.155) Bq/kg , (1.924) Bq/kg and (192.488) Bq/kg ,respectively and in samples of other foods (6.653) Bq/kg, (1.885) Bq/kg and(173.662) Bq/kg respectively. Also, it was found that, the average value of Radium Equivalent and the Internal Hazard Index were (19.6346) Bq/kg and (0.0708) respectively in samples of wheat flour, in samples of milk powder were (32.337) Bq/kg and (0.112) respectively, in samples of legumes and in samples of other foods were (20.776) Bq/kg, (0.0684), (20.467) Bq/kg and (0.067) respectively.

The average total of annual Effective Dose associated to the exposure due to annual intake of ^{238}U (^{226}Ra), ^{232}Th and ^{40}K were calculated from ingestion of wheat flour samples (in adults), milk powder samples (in different ages) and legumes samples (in different ages).All these results for the average specific activities and the Radiation Hazard Indices of ^{238}U (^{226}Ra), ^{232}Th and ^{40}K were compared with the limits recommended by UNSCEAR and found to be below those values.

The average value of Radon activity concentrations resulting from ingestion of liquid milk, juices and soft drinks was measured by the new proposed technique and the result were(150.78) mBq/L ,(77.877) mBq/L and (138.966)mBq/L respectively.

All results of radon concentrations were lower than the recommended limits indicated by the World Health Organization and by the regulatory bodies of European Union.