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Concentration of ^{226}Ra , ^{232}Th and ^{40}K radionuclides in natural products commonly used as cosmetics materials

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Natural Cosmetics containing plant extracts and minerals are commonly used all over the Arab regions by applying directly to the human skin and hair in order, to clean, improve or change the appearance of them. So, these materials should be safe for health, especially the increasing sale and use of natural cosmetics without available censorship in the presence of dangerous metals or codified instructions. Common natural product samples used as cosmetic materials were collected from various markets in Saudi Arabia, analysed by using a high purity germanium detector (HPGe) to determine radioactivity concentrations of the natural radionuclides ^{226}Ra , ^{232}Th and ^{40}K and to assess the risk present in these materials to human health. The obtained concentrations for ^{226}Ra and ^{232}Th ranged from 0.65 ± 0.17 to 6.47 ± 1.07 and from 0.34 ± 0.11 to 8.54 ± 1.16 Bq kg^{-1} , respectively, while the concentration of ^{40}K ranged from 10.62 ± 0.35 to 1202.84 ± 15.95 Bq kg^{-1} , with overall mean values of 2.72, 3.73 and 444.09 Bq kg^{-1} respectively. The mean values of radium equivalent, absorbed dose rate and the annual effective dose of the samples under study were determined as 42.25 Bq kg^{-1} , 22.58 nGy h^{-1} and 0.028 mSv y^{-1} , respectively. This work would be useful for establishing baseline data on the gamma background radiation levels in the studied samples for assessment the radiation exposures to the population. It was found that the present results are lower than the permitted limits (UNSEAR2000) and the studied natural samples products are safe to the human usage as cosmetic materials.

Biography

Dr. Jamilah Al-zahrani has completed her PhD at the age of 20 years from King Abdulaziz University (KAU) and Postdoctoral studies from same University. She is the Director of Physics, a premier Bio-Soft service organization. She has published more than 12 papers in reputed journals and has been serving as a lecturer and member of several physics associations in Saudi Arabia. She also attended and participated in many National and International conferences and has received Scientific Publishing awards.

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