

DETERMINATION OF ^{234}U , ^{235}U , ^{238}U , ^{228}Th , ^{230}Th , ^{232}Th , ^{226}Ra , ^{228}Ra , AND ^{210}Pb IN FOODS OF THE BRAZILIAN TOTAL DIET

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The activity concentrations of ^{234}U , ^{235}U , ^{238}U , ^{228}Th , ^{230}Th , ^{232}Th , ^{226}Ra , ^{228}Ra , and ^{210}Pb were determined in food groups of the Brazilian Total Diet (TDS). In this study, the TDS was based on the evaluation of food representing a Market Basket, which reflected the dietary habits of the São Paulo State population, corresponding to 72% of the average food consumption for the state of São Paulo. The food consumption data and information were obtained from the National Household Food Budget Survey conducted by the Brazilian Institute for Geography and Statistics in 2002-2003, which included 5,440 foods. For selection of the foods in this TDS only the food consumed more than 2 g/day/person, except fish were considered. This resulted in 71 foods grouped in 30 food groups. To determine ^{226}Ra , ^{228}Ra , and ^{210}Pb activity concentrations a radiochemical separation using sulphate co-precipitation followed by total counting in a gas flow proportionally low background was developed. The U and Th isotopes were determined by anion exchange and chromatographic resin for purification followed by alpha spectrometry. From the radiological point of view the determination of these radionuclides is relevant because they are decay products of the natural series of ^{238}U and ^{232}Th , being responsible for the natural radioactive exposures of man. The results showed that a low activity concentration can be detected in the food samples analyzed