

3689

S-value of Radioiodine(1-131) in Korean Reference Adult Male

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In order to better understand the effects of absorbed radioiodine upon Korean reference adult male, a mathematical phantom representation was contrived based on composite data of the physiology of Korean reference adult male. Using this, S-values with 12 organs as source and target regions were calculated after deriving specific absorbed fractions of radioiodine per each organ. The calculated S-values were compared to the existing data described in the TM-8381 report of ORNL calculated on the basis of an ICRP-23 reference male. The results indicated that S-values were higher for the phantom based on Korean reference adult male. It is estimated that the result was due mainly to the differences in the masses of organs and body sizes used to form the phantom. It was also indicated that the result depended upon the physical disintegration of radiation and types of radiation as well as energy emitted at the time of disintegration in the source organs. Secondly, in case of setting the kidneys, which are of the same physiological function but separated in two parts as source organs, the S-values of the pancreas and stomach located relatively more at the center of the torso produced higher values than those of the liver and spleen, which are located to the left and right sides of the kidneys. The results of this study illustrate that, while the bio-chemical constitution of each source and target organ of the torso are important, the relative location of the organs and characteristics of the radionuclides also exert important influences.

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