Quantifying Radium-226 in Heart Tissue Using ICP-QQQ-MS: A Study of Radium Exposures

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This study investigates the distribution of radium (^{226}Ra) in cardiac and bone samples of two exposed individuals. ^{226}Ra was preconcentrated from acid-digested tissues using cation exchange chromatography and measured with an Agilent 8900 ICP-QQQ-MS. An instrumental detection limit was 3.4 fg ^{226}Ra/g (0.12 mBq ^{226}Ra/g) and method limit of detection was 4.8 fg ^{226}Ra/g material (0.18 mBq ^{226}Ra/g material). ^{226}Ra concentrations in heart tissue samples from Case 01-0175 ranged from 0.047 pg ^{226}Ra/g tissue (1.9 mBq ^{226}Ra/g tissue) to 1.5 pg ^{226}Ra/g tissue (54 mBq ^{226}Ra/g tissue). For Case 03-666 bone samples, ^{226}Ra concentration of 2200 pg ^{226}Ra/g bone (81 Bq ^{226}Ra/g bone) was measured in the femur and 1700 pg ^{226}Ra/g bone (64 Bq ^{226}Ra/g bone) in the vertebra.

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