Evaluation of radioactivity in chanterelle (*Cantharellus cibarius*) and health implications

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The contamination, accumulation, spatial distribution, and potential health risk of ^{137}Cs, ^{210}Po, ^{210}Pb, and ^{40}K in chanterelles collected across Poland were examined using validated methodology and gamma-ray and alpha-particle spectrometric measurements. The values of anthropogenic ^{137}Cs activity concentration in mushrooms were between 118 and 1647 Bq·kg^{-1} dry weight (dw), while for natural ^{40}K from 1316 to 1895 Bq·kg^{-1} dw. The activity concentrations of ^{210}Po in chanterelles were between 2.23 and 8.57 Bq·kg^{-1} dw and in forest topsoil between 11.4 and 83.0 Bq·kg^{-1} dw. Corresponding values for ^{210}Pb were 1.50-6.14 and 7.74-46.1 Bq·kg^{-1} dw, respectively. The obtained results varied significantly – the highest values of activity concentrations were determined for ^{40}K, while the lowest were for ^{210}Po and ^{210}Pb. Studies have shown that lamellae mushrooms such as chanterelles may contain higher activity concentrations of ^{210}Po and ^{210}Pb than tubular mushrooms, but a broader study is recommended. An assessment of the annual radiation doses and cancer risk related to ^{137}Cs, ^{40}K, ^{210}Po and ^{210}Pb consumed with chanterelle showed that ^{137}Cs and ^{210}Po give a similar risk, and 2-3 orders of magnitude higher than ^{40}K and ^{210}Pb.