Radiocarbon and uranium profiles in marine gastropods around the Japanese archipelago

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In this study, we investigate the distribution of radiocarbon and uranium in the calcified opercula of *Turbo* sp. collected from Ryukyu region and Chiba, Japan, to explore the potential of U/Th dating using of mollusks around the Japanese archipelago. We acquired high-resolution radiocarbon and uranium concentration measurements using singlestage accelerator mass spectrometry and laser-ablation–inductively coupled plasma–mass spectrometry at Atmosphere and Ocean Research Institute, The University of Tokyo. Our results show that uranium in opercula of modern *Turbo* sp. is unevenly distributed at concentration 1000 times less than those in coral skeletons. Radiocarbons presented in the calcified opercula samples are reflected the radiocarbon values in ambient seawater as well as corals. Uranium in the calcified opercula of the Holocene *Turbo* marmoratus was also unevenly distributed but its area of concentration within the opercula was found to be different from that of modern samples, suggesting uranium exchange after death. Uranium distributions in fossil samples can affect U/Th ages by up to 800 years in case of 1 ka-old samples. Our results suggest variable uptake of uranium isotopes into mollusk shells, and highlights that it is important to define criteria for choosing mollusks species for U/Th dating around Japan.

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