Analysis of the Usage of Pottery in the Late Jomon Period

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This paper presents a comparison of pottery deposits from different locations and times. In addition to their \(^{14}\text{C}\) dates, their stable carbon isotope ratios (\(\delta^{13}\text{C}\) values) are analyzed to estimate the amount of marine resources consumed in people’s livelihood in the Late Jomon period. In this study, the same analytical method is used as in the foregoing paper (Kobayashi 2014) which analyzed pottery deposits from the Final Jomon to the Early Yayoi period, a transitional period when dry- and wet-rice cultivation began in the Japanese Archipelago. Therefore, this paper can also contribute to the purpose of the preceding paper to compare differences between the Final Jomon and Early Yayoi periods.

Pottery deposits, such as burnt residue on the inside and outside of vessels, are considered as evidence that the pottery was used for cooking. Among them, the radiocarbon dates of the samples with a \(\delta^{13}\text{C}\) value of greater than -24‰ appear significantly older than they should have been. This has been considered due to the marine reservoir effect. Meanwhile, the pottery deposits with a \(\delta^{13}\text{C}\) value of greater than -20‰ has been assumed to be used to cook C4 plants including cereals and grains. However, these results have not been fully analyzed from an archaeological point of view.

This paper analyzes the 256 samples (except for contaminated or improperly-labelled samples) which the dating research group of the National Museum of Japanese History collected and dated to the Late Jomon period (some to the end of the Mid-Jomon period) by AMS radiocarbon dating. The results indicate that many of the pottery deposits with a \(\delta^{13}\text{C}\) value from -24‰ to -20‰ are estimated at more than 100 \(^{14}\text{C}\) years older. These deposits seem to be derived from seafood. These results match the ones reported in the preceding paper on pottery deposits from the Final Jomon to the Early Yayoi period.

Many potsherds of the Late Jomon period excavated in Hokkaido have deposits derived from marine products, which indicates a high possibility that seafood was often cooked in the region. Some of the pottery of the Late Jomon period unearthed in Eastern Japan shows signs of being used to cook seafood, while no such sign has been found in Western Japan except for some exceptions in Kinki, Chūgoku, and Shikoku regions. This is assumed because they cooked salmon and trout taken from rivers. None of the analyzed samples contain C4 plant remains.

The results of this study confirm that the \(\delta^{13}\text{C}\) values of pottery deposits can serve as an indicator that may reveal people’s livelihood in the Late Jomon period.

Key words: Late Jomon period, livelihood, \(\delta^{13}\text{C}\) value, radiocarbon date/carbon-14 date/\(^{14}\text{C}\) date, marine reservoir effect