Subsistence as Suggested by the State of Use of Earthenware from during the Transition to the Yayoi Period

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This paper conducts a time-and-place-specific study, using stable carbon isotope composition (δ¹³C value) and carbon 14 dating, to estimate the amount of marine resources exploited by the livelihood activities in the transitional phase from the Late Jomon period to the Early Yayoi period, when dry-land and wet rice cultivation began.

Among pottery adhesions considered as signs of cooking, such as burnt residue on the inside and outside of earthenware pots, many of the samples whose δ¹³C values are −24 permil or over are estimated older based on carbon 14 dating, which is considered to have been affected by the marine reservoir effect. On the other hand, it has been suggested that the pottery adhesions whose δ¹³C values are −20 permil or over may have been traces of cooking C₄ plants including cereals and grains. However, these results have not been fully analyzed from the archaeological viewpoint.

The measured values of the remains collected and dated in the transitional phase to the Yayoi period based on AMS (accelerator mass spectrometer) carbon 14 dating by the dating research group from the National Museum of Japanese History were reviewed site by site. The result indicates that many samples of pottery adhesions with δ¹³C values ranging from −24 to −20 permil are estimated to be 100 ^¹⁴C yr. or older based on carbon 14 dating, and reconfirms that those charcoals may have been derived from seafood.

This study also reveals that many pieces of pottery in the Late Jomon period in Hokkaido have adhesions originated from marine products. In other words, there is a high possibility that people cooked much seafood. It also appears that in Tohoku, a certain amount of marine products were exploited in the Late Jomon period though little in the Early Yayoi period. The adhesions may have been left by cooking salmon or trout or boiling them to extract fish oil. On the other hand, in Tokai and western Japan, scorches considered to be derived from C₄ plants are seen on the surface of pottery dated after the Late Jomon period. In northern Kyushu, a certain amount of marine products seems to have been exploited before the Early Yayoi period, which indicates that various kinds of livelihood activities coexisted.

The result of the above analysis confirms that the δ¹³C values of pottery adhesions can serve as an indicator that partially clarifies subsistence patterns.

Key words: Transitional phase to the Yayoi period, Subsistence, δ¹³C values, ^¹⁴C dating, Marine reservoir effects, C₄ plants