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Identifying human migration and hunting area revealed through Strontium isotope analysis of mammal remains

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Human migration, exchange and distribution spread the culture and technology and produces regionality and change of the Japanese archipelago.

Cultural transmission of Jomon period revealed by finding evidence that the human movement.In order to clarify aspects of use of animal resources, we are working to clarify the distribution area and hunting and fishing area using stable isotope analysis. In this paper, we report on the study area in the region of the Boso Peninsula Jomon hinting using strontium isotope ratios.

For this study, we used samples from the 55 tooth enamel of deer (Cervus nippon) and wild boar (Sus scrofa) excavated from 12 sites which located on the Boso Peninsula during the late and final Jomon period. We collected plant samples from 32 locations in the Boso Peninsula and evaluated regional differences in environmental Strontium isotope ratios by these plant samples.

The strontium isotope analyses, including the pretreatment steps, were performed at the Research Institute for Humanity and Nature. Strontium isotope ratios were measured with a TRITON thermal ionization mass spectrometer (Thermo Fisher Scientific). Sample 87Sr/86Sr data was normalized to the standard reference material of the NIST SRM 987 (0.710250). Internal precision based on ion counting 100 times was +-0.000004-0.000006(=1 standard error).

We created the map of a geographic 87Sr/86Sr distribution of plants. The graphic representation was performed with ArcGIS (ESRI, Inc.) software by using the kriging calculation method. 87Sr/86Sr ratio showed different range, with high ratios (up to 0.7090) dominating the tip area of the peninsula and low ratios (low as 0.7056) occurring in the base and central area. In addition, Strontium isotope ratios in plants from the river basin had intermediate values. We can distinguish 87Sr/86Sr ratio of plants in the tip of Boso Peninsula from the value of base and central areas.

The strontium isotope ratio in the mammal tooth enamel was varied in the range of 0.7056-0.7075. The isotope ratio of A site mammal showed the value from 0.7056 to 07059, and B site showed 0.7069 to 0.7075. The strontium isotope ratio of A site and B site showed clearly different value.

The strontium isotope ratio of C site showed from 0.7062 to 0.7068 and was intermediate value of A and B site. Thus, we can determine that the mammal carried to these sites inhabited the different area respectively.

In this announcement, we point out that the evidence that strontium isotope ratio to identify the hunting area.

Keywords: animal remains, hunting area, strontium isotope ratio, Jomon period, Boso peninsula