The criteria of sampling for ^{14}C dating and its example of application to Kaman- Kalehöyük chronology

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1. Independent

In this study, the first aim is confirmation of the improved result from archaeological real sample checked about the convergence of the dates of ^{14}C dating based on the following criteria which has not been verified in detail, one of it is about the material of the sample. The other criteria are the concentration of the alkaline treatment solution and treatment time on the most basic ABA method of pre-treatment of the carbon sample. In addition, the second aim of the present study is to show the results of analysis by ^{14}C ages from the application of the Bayesian statistical methods to calibration of ^{14}C dates, to reveal a difference between the archaeological chronology and ^{14}C chronology. In this process, the present study focuses on archaeological chronology which is shown the change in the short term than the geological chronology. The archaeological chronology is the past of the natural / social event chronology that is complex of the ages based on the archaeological remains or biological remains. As the result of Atsumi (2010), in the alkaline treatment stage of the ABA method, charcoal samples are treated in a NaOH solution of 1 mol / l and should be omitted the samples which is dissolved of in the solution. In 7 layers of 9, the dates shown good convergence which are observed below 50 ^{14}C yr in the 4 layers, about 66 ~ 85 ^{14}C yr in 3 layers. In other words, there is no old wood effect by old material which back over several hundred years in the site, ages of charcoal samples suggests almost construction age. The ^{14}C dates obtained in the measurement is calibrated by OxCal ver.3.10. Calendar age is analyzed by calibration using INTCAL04. The boundary age between Kaman-Kalehöyük IVa and IVb is provided that had been from the early BC 22 century to the end of the BC 21 th century. The age corresponds to the Ur IIIrd dynasty period in Mesopotamia. In addition, by using the technique of radiocarbon dating and the archaeological chronology, it is able to contrast from the early to the late Bronze Age stratigraphy of Troy in West Anatolia and Kaman-Kalehöyük. As the result of this study, comparison between the stratigraphic analysis which according to the analysis of archaeological remains of Troy and Külltepe, and which ^{14}C ages obtained by present dating, shows a deviation of nearly about one cultural sub-strata.

Keywords: 14C dating(AMS), Archaeological sight, criteria