

PAST CLIMATE RECONSTRUCTION AT ARSLANTEPE (MALATYA, TURKEY): THE CONTRIBUTION OF THE STABLE CARBON ISOTOPE

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The site of Arslantepe (*Arslan* = Lion; *Tepe* = mound) is located on the Malatya plain in eastern Turkey. Today it is a 30 m high hill, formed by a series of settlements built and destroyed over 5000 years of almost uninterrupted occupation. Arslantepe has been bringing to light extraordinary remains of past prehistoric and protohistoric cultures of eastern Anatolia. The excavation is still ongoing, the oldest archaeological level dates back to the 7th millennium BP, the most recent is of Byzantine times.

Excavations by a team from "La Sapienza" University of Rome at the site have been carried out uninterruptedly since 1961, bringing to light a large amount of archaeobotanical material from the entire sequence of occupation of the site.

The archaeobotanical studies have highlighted the presence of various botanical taxa preserved by charring, belonging to arboreal and crop species. Great variety was found, and the diversity in cultivated taxa and the selective use of wood could be either due to a choice or even to environmental availability. Many studies have correlated cultural changes with environmental factors. At Arslantepe, a number of important changes is found. It is not clear, however, if the important variations found in plants used by the successive settlers are due to cultural choices or to environmental changes.

A contribution comes from the study of the stable carbon isotope carried out both on ancient and present-day plants. The relationship between the fractionation of carbon isotope and climate is well known. The ¹³C/¹²C ratio depends mainly on moisture and the isotopic ratio of atmospheric CO₂. Such independent information on environmental variations permits discrimination between cultural and environmental changes.

More than one hundred charred samples of deciduous *Quercus* and *Juniperus* were analyzed. They come from five archaeological periods at Arslantepe, ranging from late Chalcolithic V (5350-5000 BP) to early Bronze Age III (4500-4000 BP). The variability of data is high, however a $\delta^{13}\text{C}$ variation is present and some trends recognisable. The data from fossil assemblages are compared with those from living plants of the same genus in order to reconstruct past environment and climatic trends through more than one millennium.

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