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Onsite Bioarchaeological Knowledge of the Neolithic settlements in the Balkans: The case of Vrbjanska Čuka, a tell-site in Pelagonia, Republic of Macedonia

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Introduction

The first part of this contribution comprises of an outline of bioarchaeological studies connected with the Neolithic settlements in the Balkans. A substantial proliferation of environmental studies is recorded in the last decade concerning archaeobotanical and archaeozoological evidence. Main attention is paid to archaeobotanical and archaeozoological studies which consider settlements and their bioarchaeological context. The second part is focused on the Neolithic tell-site of Vrbjanska Čuka in Pelagonia, Republic of Macedonia, where authors have been performing bioarchaeological research since 2016.

In this paper, we present the results of the analyses of botanical macroremains and microremains (starch, phytoliths) and faunal remains collected in season 2016 in the broader context of the Neolithic Balkans in order to estimate the bioarchaeological potential of the site.

Materials and Methods

Archaeobotanical material from Vrbjanska Čuka 2016 field season was obtained by test sampling of archaeological contexts. 79 samples and 404 l of sediments were processed. Samples have been taken from different contexts from the site and from the profile in western part of the excavated area (profile W1). Flotation was applied for the extraction of botanical macroremains (Cappers and Neef 2012) and taxonomic identification (van der Veen 2007), including anthracological determination of charcoal (Schweingruber 1978). For phytolith analysis, seven samples were taken from the whole W1 profile and one sample was obtained from a Neolithic context near the profile. Phytoliths were separated from the sediment by following a standard procedure (Albert et al. 1999). Grindstones was sampled for analysis of starch grains (Torrence and Barton 2016). Hand collected faunal remains from the 2016 campaign were analyzed. In addition, faunal remains collected by flotation were provisionally studied in order to gain more information on the taxon/element distribution with respect to sampling techniques, i.e. the information on smaller taxa which were potentially used as food or inhabited the surroundings of the site.

Results and Discussion

Although the most samples were taken from cultural stratigraphic units, the majority of plant macroremains (wild plants) was preserved in an uncharred (uncarbonised) state. Consequently,

there is a high probability of contamination of Neolithic sediments by the later Classical or Medieval activity, or they could represent part of (sub) recent soil seed bank. Charred plant macroremains represent a smaller portion of the sample, and in general, a lot of them were not very well preserved. They represent species common in the Neolithic (e.g. einkorn, emmer, barley, lentil, peas), however, some species like common millet seem to be intrusions from the later phases of the tell occupation. Charcoal analysis detected remains of fuel and timber from the vicinity of Vrbjanska Čuka tell.

Phytolith analysis attest to a great quality of microscopical plant residues preserved in the sediment. Many specific morphotypes were recognized in samples. Skeletons of Poaceae inflorescences are present in various taphonomical states and indicate of crop processing activities at the site. Starch grain analysis was concentrated on grindstones. The samples contained Poaceae starch grains, structures with Fabaceae shape and probably *Quercus* starch grain. Generally, archaeobotanical remains indicate cereal and legume based agriculture, however, there is also some evidence of wild plants procurement.

The hand collected faunal sample, albeit small, is indicative of a predominantly stockbreeding economy. The majority of elements originate from domestic animals – namely cattle and caprines, and to a lesser extent pig and dog. A single element of wild boar suggests that occasional hunting also took place. Shells of freshwater mussel were also identified. Faunal sample collected by flotation consisted of smaller bone fragments and isolated teeth of previously identified mammal taxa. In addition, sporadic remains of rodents, amphibians (frogs), reptiles and smaller fish (small-bodied cyprinids and salmonids) were also found.

Conclusions

Results from the Vrbjanska Čuka tell-site indicate a mixed economy, involving agricultural production/consumption, stockbreeding, and to a lesser extent hunting, fishing and shellfish collection. Such subsistence strategies, reflected by bioarchaeological data, could be regarded as typical in context of Pelagonian landscape (Naumov 2016).

Main recommendation for future research is that macro-and micro archaeobotanical data should be acquired preferably from floor levels of buildings and from undisturbed infills of features spatially related to buildings. The general quality of bioarchaeological material is very good and promising for the future research.

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References

- ALBERT, R. M., LAVI, O., ESTROFF, L., WEINER, S., TSATSKIN, A., RONEN, A., LEV-YADUN, S. 1999: Mode of occupation of Tabun Cave, Mt Carmel, Israel during the Mousterian Period: A study of the sediments and phytoliths. *Journal of Archaeological Science* 26(10), 1249-1260.
- CAPPERS, R.T.J., NEEF, R. 2012: *Handbook of plant palaeoecology*. Groningen Archaeological Studies no. 19. Barkhuis Publishing and Groningen University Library, Groningen.

NAUMOV, G., 2016: Tell communities and wetlands in Neolithic Pelagonia, Republic of Macedonia. *Documenta Praehistorica* 43, 327-342.

SCHWEINGRUBER, F.H. 1978: *Microscopic Wood Anatomy*. Swiss Federal Institute of Forestry Research, Birmensdorf.

TORRENCE, R., BARTON, H. 2006: *Ancient Starch Research*. Left Coast Press, Walnut Creek, California.