$\delta^{13}C$ AND ^{14}C ANALYSIS OF CERAMICS

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Organic remains on ceramics have proven to be of special interest in the direct dating of the artefact by the radiocarbon technique (Segerberg et al 1991) and to elucidate the food content and sources by chemical and stable isotope analysis (Arrhenius & Lidén 1989). The amount of organic material found on ceramics is normally small and it is the accelerator radiocarbon technique that has made dating possible since only 0,1–1 mg of carbon is required for an analysis.

The Uppsala Tandem Laboratory has dated c. 250 samples consisting of organic remains removed from the surface of potsherds. We have classified the crust from the view point of mechanical and visual properties. It is obvious from this study that the concept food is not an adequate terminology. A wide variety of remains from thin layers of soot, propably from the hearth, to thick crackelated and burnt fatty materials, are represented. In some cases it is easy to remove the crust from the ceramics but sometimes it sticks more stiffly to the backing.

The pretreatment chemistry applied to the organic material is presented in the figure. Four fractions of interest are revealed: 1) lipids, 2) proteins, 3) alkali soluble or-

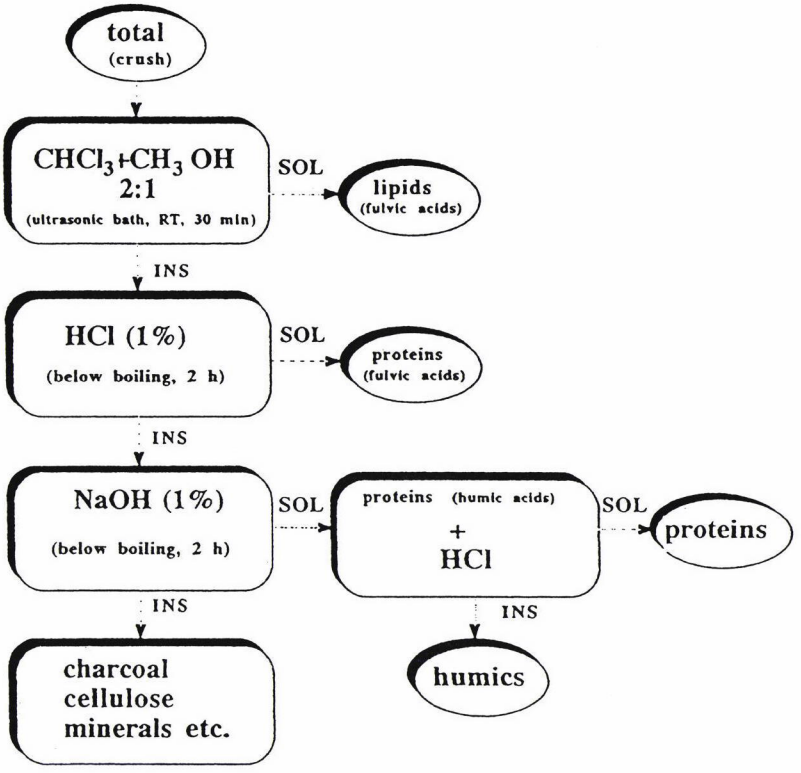

Fig. 1. Pretreatment chemistry for organic remains on ceramics

ganics and 4) insoluble chemicals that to a high degree consist of carbon. Fractions 1) and 2) are normally small compared to fractions 3) and 4) which makes refined dating possible in only few cases. Our experience from fractions 3) and 4) is, that when small amounts of insoluble residues are obtained, problems of contamination can be avoided by dating the soluble fraction.

Stable $d^{13}C$ isotope analysis has been conducted on the dated material in order to find the origin of the organics. It is, however, difficult to distinguish between marine and terrestrial impact, especially for material from the Baltic region. Correlations between radiocarbon ages, stable isotope ratios and archaeological and geographical data will be presented.

References

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