Diatoms from ancient pots: exploring pottery sherds and palaeoenvironmental insights in the lower Kaveri River Basin archaeological landscape, Tamil Nadu, India

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Diatom analysis, despite its existence in archaeological science for over seven decades, remains an underutilized technique. While diatoms are often employed in site-based palaeoenvironmental reconstructions, their application in pottery sourcing and typology is relatively limited. This study focuses on diatom analysis of pottery sherds collected from six Iron Age sites in the lower Kaveri River Basin, Tamil Nadu, India. Scanning Electron Microscopy was utilized to examine the diatoms in 78 samples from 26 pottery sherds across these sites. The analysis revealed the presence of aquatic diatoms, predominantly from freshwater environments, along with desiccation-tolerant taxa belonging to the genera *Nitzschia*, *Hantzschia*, *Luticola*, *Stauroneis* and *Tryblionella*. Notably, the dominant genera were *Nitzschia* (70.73%), *Hantzschia* (21.95%) and *Luticola* (4.87%). These findings confirm the presence of a lacustrine environment with mesotrophic to eutrophic conditions and suggest that the clay used in pottery originated from a freshwater source. Moreover, this study highlights the potential of diatom analysis in reconstructing local environments and shedding light on the palaeoenvironmental conditions underlying archaeological sediment deposition in a tropical context.

Keywords: Archaeological landscape, diatoms, palaeoenvironment, pottery sherds, river basin.

cements. Paleolithic and Mesolithic periods represented the nomadic, hunting–gathering way of life, relying on natural resources for survival. However, during the Neolithic period, people began to settle down and transitioned to a lifestyle focused on food production with the development of agriculture and animal husbandry[1]. Following the Neolithic period was the Chalcolithic period, often referred to as the Copper Age, characterized by the smelting of copper. This period preceded the Bronze Age in certain parts of India. Chalcolithic culture is largely absent in Tamil Nadu. Concurrent with the Neolithic period, the Megalithic period (also known as the Iron Age culture) ensued in Karnataka, Andhra Pradesh and Tamil Nadu. The primary defining feature of megaliths is their utility as sepulchral and commemorative structures[2]. Studies on megaliths since the colonial period have been undertaken by various researchers[2–7].

With regard to Tamil Nadu, more than 2000 Megalithic monuments have been discovered, of which a few hundred sites have been excavated. The recent excavation conducted at several sites, including Kodumanal[8], Thandikudi[9], Marudumparai[10], Adichchnallur[11–13] and Keeladi[14] revealed important information on Megalithic burials. C^{14} dates are available for many Megalithic sites, which helps in the comparative study of this region.