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Data Article

# Dataset on elemental concentration and group identification of ancient potteries from Tamil Nadu, India



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## ABSTRACT

The dataset contains concentration of major and trace elements of ancient potteries from Tamilnadu and grouping different potteries from the statistical techniques of factor and cluster analysis (Figs. 2, 3 and 4). The major and trace elemental concentration data generated using energy dispersive X-ray fluorescence technique (EDXRF) and factor and cluster analysis data obtained using STATISTICA (10.0 version) software. The concentration of major and trace elements determines the type of clay minerals (Calcareous/Non-Calcareous and either low or high refractory) and firing atmosphere adopted by the artisans at the time of manufacture. The statistical tool examined graphically the grouping pattern of the samples in terms of chemical composition and extract information about their provenance. The compilation of this data provides a resource for the wider research community in archeology.

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## Specifications Table

Subject area	Earth Science, Archaeology
More specific subject area	Archeometry
Type of data	Table, Figures
How data was acquired	Energy Dispersive X-ray Fluorescence Spectrometer (EDXRF)
Data format	Raw Analysed
Experimental factors	Powdered pottery samples were dried using hot air oven and stored in desiccators until they were analysed. One gram of the fine powder sample and 0.5 g of the boric acid ( $H_3BO_3$ ) were mixed. This mixture was thoroughly ground and pressed to into a pellet of 25 mm diameter using a hydraulic press. The prepared pellets were analysed using the EDXRF Spectrometer.
Experimental features	Determination of elemental oxide concentration of $SiO_2$ , $Al_2O_3$ , $CaO$ , $Fe_2O_3$ , $K_2O$ , $TiO_2$ and $Cu$ , $Zn$ , $Pb$ , $La$ , $Co$ , $V$ , $Cd$ and $Cr$ of ancient potteries
Data source location	Arcot, Vellore District, Tamil Nadu, India
Data accessibility	Data is with this article

## Value of the data

- Data could be used to identify the nature of clay and raw materials to production of potteries.
- Data given here could motivate the studies on ancient artifacts in future.
- Data on factor and cluster analysis provides the grouping of ancient potteries.
- The data could be more informative to researchers investigating geographical origin and ancient artifacts from the study area.

## 1. Data

A physical nature, period and image of collected ancient pottery samples are given in [Table 1](#). The major and trace elemental concentration of ancient potteries are determined using the EDXRF technique and reported in [Table 2](#). Factor loadings of major and trace elements of ancient potteries are given in [Table 3](#) (STATISTICA (10.0 version) software). [Fig. 1](#) shows the archeological excavation sites in the study area. [Figs. 2](#) and [3](#) represent the factor analysis and [Fig. 4](#) shows the clustering analysis of major and trace elements.

## 2. Experimental design, materials and methods

### 2.1. Sample collections

Ten pottery samples collected from the ancient settlement sites in and around Arcot of Vellore District, Tamil Nadu, India ([Fig. 1](#)). The pottery samples are excavated in 6 m depth from surface of earth. After removal of surface layers, the pottery shreds were ground into fine powder using agate mortar and then stored in polythene bag [1]. These samples are cleaned and dried using hot air oven.

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