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The evidence of medicinal plants in human sediments from Furna do Estrago prehistoric site, Pernambuco State, Brazil

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ABSTRACT

Pollen grains were recovered from six human coprolites associated with five skeletons from Furna do Estrago, Brejo da Madre de Deus county, Pernambuco State, northeast Brazil. The remains are dated between 1730 ± 50 (BETA 145954) and 1610 ± 70 (BETA 145955) years BP (before present). Previously, researchers showed that the local population was infected with intestinal parasites. This is a follow-up study to assess whether or not the population used medicinal plants to treat the symptoms of infection. Pollen from anthelminthic plants and other plants with medicinal and analgesic properties were found in all samples in high concentrations. This demonstrates that plants with medicinal properties were used by the population to adapt to the parasites in the area.

1. Introduction

Dietary analyses of coprolites and sediments collected directly from the pelvic region of skeletons reveal dietary patterns, paleoclimate changes, and medicinal plant use (Callen and Cameron, 1960; Fry, 1977; Lee and Devore, 1979; Shafer et al., 1989; Reinhard et al., 1992, 2006; Berg, 2002; Reinhard et al., 2007). Organic remains found in coprolites and sediments include pollen grains, starch granules, phytoliths, fibers, and bone fragments. The analysis of such residues reveals not only what was consumed in an individual's last meals, but also provides information on the environmental context of the site in which they were found (Wing and Brown, 1979; Eaton and Konner, 1985; Fornaciari and Mallegni, 1987; Jurmain, 1990; Berg, 2002). Agricultural practices, the consumption of "preferred" plants, the prehistoric pharmacopeia, and the type of food preparation are some of other activities that can be identified (Riskind, 1970; Bryant, 1974; Pozorski, 1979; Reinhard, 1991; Reinhard et al., 1991; Piperno and Dillehay, 2008).

Based on the relationship between food remains in paleoenvironmental context, the frequency of certain items can be used as an indicator of ancient eating habits and the palaeopharmacopeia of ancient peoples (Callen and Martin, 1969; Reinhard and Bryant, 1992; Araújo et al., 1998; Chaves and Reinhard, 2003; Bouchet et al., 2003). Little is known about the Brazilian palaeopharmacopeia used by prehistoric population of Northeast region. The current study was conducted on sediments collected directly from the pelvic regions from primary burials of a hunter–gatherer group that inhabited Northeast Brazil during the recent Holocene (Brothwell and Brothwell, 1971; Lima, 2001; Sonvesso, 2007). The main goal of this study is to identify the pollen grains from plants with medicinal properties to understand the palaeopharmacopeia used by this group.

2. Material and methods

2.1. The samples and Furna do Estrago archaeological site

Coprolites were collected from the pelvic regions of skeletons found in the Furna do Estrago rock shelter (Fig. 1). The coprolites were collected from primary burials corresponding to the use of Furna do Estrago as a cemetery. This corresponds to the more recent occupations of the site, considering the human bones dated from 1860 ± 50 BP (BETA 145954) 1610 ± 70 BP (BETA 145955). Two samples (A731 and A827) were collected from burial 23, the interment of a 12-year-old boy. An adult female who died between the ages of 35 and 40 years was represented by two samples (A730 and A830) from burial 6. One sample (A728) was associated with a young man in burial 8 who died between the ages of 25 and 27. Finally, a coprolite (A837b) was recovered from a comingled burial of four individuals. This was recorded as burial 87 (Fig. 2).

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Fig. 1. Archaeological site Furna do Estrago in Brejo da Madre de Deus municipality, Pernambuco State, Brazil. Image captured by: Teixeira-Santos, 2013.

The samples were collected during the archaeological excavations that began in the 1980s. Jeannette Lima coordinated the fieldwork done by an archaeological team from the Catholic University of Pernambuco. The material was sent to the Paleoparasitology Laboratory at Fiocruz and was first analyzed by Duarte (1994) for parasite remains. Since then, the material was stored in the Paleoparasitology Collection of ENSP (Escola Nacional de Saúde Pública). For the purpose of laboratory analysis, the

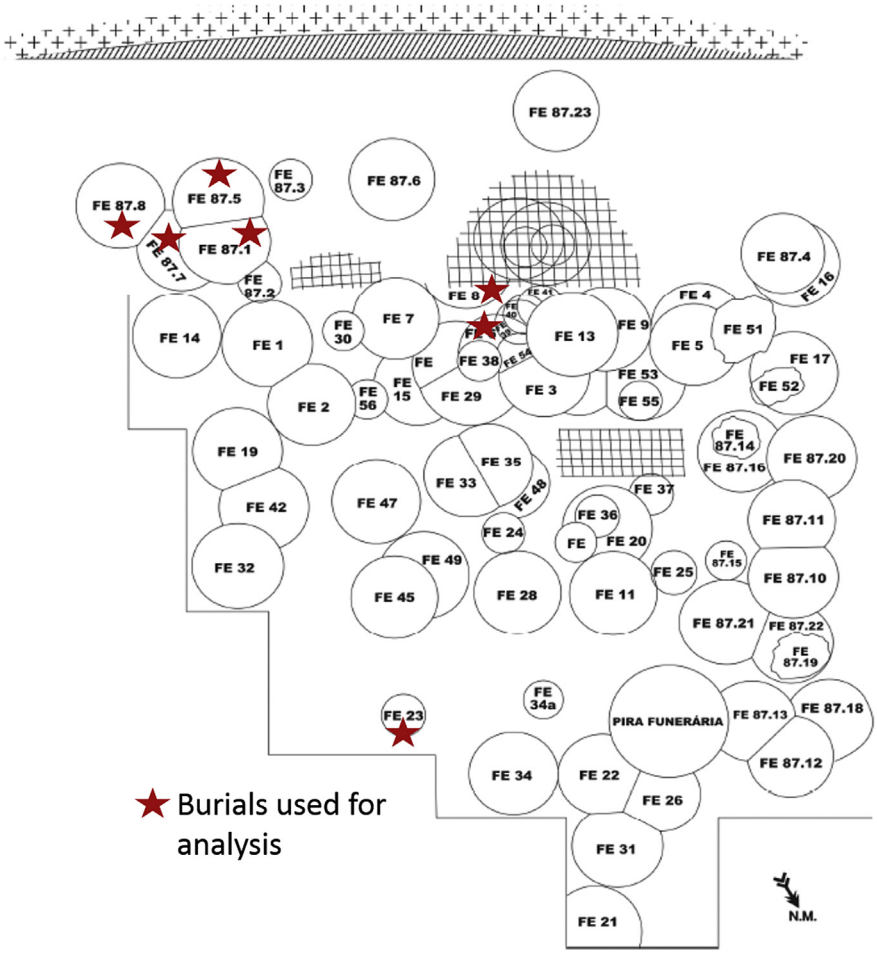

Fig. 2. Distribution of burials in the archaeological site Furna do Estrago, Pernambuco – Brazil. Burials whose samples were collected and used in this paper are marked at the figure.