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The Archaeobotanical Studies from Cova des Pas Burial Cave, Minorca, Balearic Islands. Plants Used in Corpse Treatments during the Bronze Age

Former archaeological works carried out in Minorca (Balearic Islands, Spain) have shown that Bronze Age funerary rites are mainly characterized by practices related to corpse and hair treatments such as dyeing, tonsure and hair-dressing. Burial caves are located in cliff-walls of deep canyons, which play a special role in the symbolic world of these Bronze Age communities.

Excavation of the Late Bronze Age funerary cave Cova des Pas (Minorca) revealed that 66 corpses were buried over a relatively short period of time (900-800 cal yr BC). Archaeology indicates that corpses were piled up successively and remained in primary position. They were buried bent in flexed position, and some of them were covered by branches, wrapped with a leather shroud and tied up with ropes. Once the corpses were prepared, they were introduced into the cave with the aid of ropes and wooden litters. Environmental conditions inside this cave and probably also the treatment of corpses allowed the good conservation of organic remains, such as leathers, soft tissues and palynomorphs.

Pollen, charcoal and wood analyses have been carried out in burials with the aim of reconstructing plants uses as part of ritual practices, corpse and hair treatments. To achieve these objectives, pollen and branches of 17 individuals and several elements such as hair locks, hair-containers and shrouds have been analyzed. Samples were taken at high spatial resolution in a wide range of archaeological microcontexts and from different parts of the corpses.

Pollen and wood results reveal a high diversity of taxa (ca. 150 pollen types), indicating the wide diversity of plant uses and offerings in funerary rituals. The main pollen families and taxa present in the corpses are Brassicaceae, *Pistacia*, Plantaginaceae, Poaceae, Cerealia type, *Ficus*, Fabaceae, Apiaceae and Ericaceae. Some of these plants are present as immature pollen clumps, suggesting the presence of flowers in corpses. Brassicaceae was widely used in corpse treatment and it could have contributed to the preservation of tissues and organic material. The corpses were deposited on mats and pillows made of grasses, cereals and plantains and were probably covered by a variety of flower offerings. The use of resins and food has also been attested in the mortuary preparation of corpses. However, one middle-aged woman was an exception to this general plant treatment, as she received specific plant and floral offerings made from *Ranunculus ficaria* cf. and *Rosmarinus* type. Archaeological information reinforces the pollen data for this individual. In her plait

was preserved a hair-slide of pure tin, an exotic material in Minorca which was necessarily imported, suggesting a special role for her.

Pollen analyses suggest that women received a distinctive hair treatment, hairdresses (plaits) and ornaments that implied the use of resins, clays, flowers and dyes.

Most of plants shown by pollen analyses have been also identified as branches, corroborating that these plants were used in the corpse treatments and covers. Wood analyses also identified plants characterized by aromatic features, such as *Rosmarinus*, *Pistacia*, *Cistus*, *Laurus* and *Myrtus*.

The proposed approach of study, based on *multiproxy* analyses and high spatial resolution and context of samples is confirmed as an adequate tool to decipher fine reconstructions of mortuary practices and plant meanings.

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