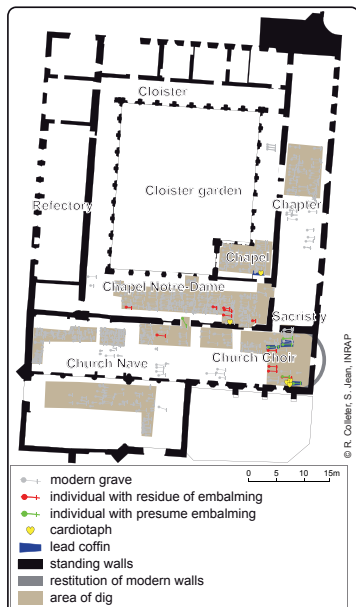


PLANTS OF EMBALMING IN MODERN TIMES

Archaeobotanical results from the Jacobins' Convent at Rennes (Brittany, France)

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A rescue excavation was conducted by the INRAP (2011-2013) in Les Jacobins' convent at Rennes (Brittany, France). About 800 burials including lead coffins dated to the 17th century have been uncovered together with 5 lead reliquaries (cardiotaphs); 4 of them had an inscription revealing the identity of the deceased.



Lead coffin #1001:
3 lead cardiotaphs (CA) are visible at the head of the coffin, including heart #3

Lead cardiotaph with an inscription containing heart #5

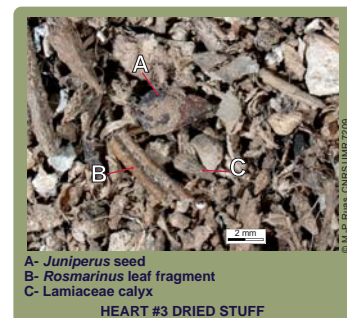
The anthropological analyses revealed marks of post-mortem manipulations of some of the skeletons: skulls were sawed and sterna were cut. In addition, compacted stuff were filling the cavities of any bodies, as well as the hearts in the cardiotaphs. These evidences testified embalming practices which were restricted to the social elites (Mafart *et al.* 2004; Georges 2006; Devriendt *et al.* 2012).

MATERIAL AND METHODS

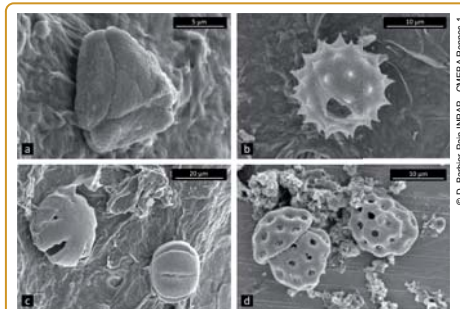
The burials which presented embalming evidence were sampled for several organic remains analyses at different locations in the lead coffin, in the different body regions and inside and outside the hearts in the cardiotaphs, as well. To date, 2 cardiotaphs (#3 & 5) and 1 coffin (1001) provided positive results for plant remains. The spore-pollinic material was extracted according to the current physico-chemical techniques, and analysed with a transmission photonic microscope. Subfossil plant macro-remains, dry, charred or mineralized, have been sampled without sieving and directly sorted in water under the stereomicroscope.

MAIN PLANT INGREDIENTS

The different preserved plant remains (pollen, flowers, stems, twigs, leaves, fruits or seeds) which are the embalming ingredients revealed a high taxonomic diversity (70 taxa). Hearts #3 & 5 provided 59 more or less precisely identified taxa. Some of these plants were used because of the aromatic and antiseptic properties of their organs. They are frequently mentioned in the 17th century recipe treatises (Ruas 1992; Corbineau 2014): **blooming plant of mugwort, camomile, oregano, lesser calamint, lavender, thyme and rosemary leaves, fennel and juniper fruits.**



A - Juniperus seed
B - Rosmarinus leaf fragment
C - Lamiaceae calyx
HEART #3 DRIED STUFF



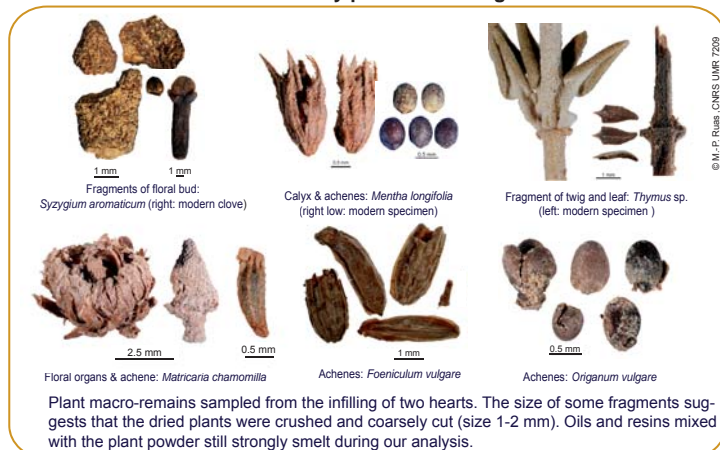
SEM (Scanning Electron Microscope) images of pollen grains
a - Myrtus-type, Heart #3
b - Anthemis-type, Heart #3
c - Lamiaceae, Heart #5
d - Beta-type, Lead coffin #1001

Fragments of cloves, a common spice also used in the recipes, are the only exotic plant identified at Les Jacobins (Heart #3). **Myrtus-type** pollen may also come from flowers imported from the Mediterranean region. Flax tow was filling the cavity of the cardiotaph and the hearts. Charcoal (Angiospermae) testified the use of ashes.

Two different recipes were used for preparing the dough filling the two hearts. With 6 different morphotypes, the **Lamiaceae** largely predominated the pollen spectrum of **heart #5** (80%); the latter mostly provided **fennel** seeds and **lavender** flowers. **Heart #3** mainly yielded Asteraceae pollen (**Anthemis-type**), together with lesser proportions of Myrtaceae (**Myrtus-type**) and **Lamiaceae** (unident.); macro remains analyses evidenced **camomile** flowers and **rosemary** leaves.

Much noticeable is the over-representation (>80%) of **Beta-type** pollen in burial #1001. Conversely, there is not any mention of Amaranthaceae among ca. hundred plant ingredients which are mentioned in the 17 pieces of texts that we analysed (surgery and pharmacological encyclopaedias, and 14-19th c. embalming reports (Corbineau 2014). This burial opens new reflection avenues about the funerary practices during the Modern times.

MAIN PLANTS RECORDED BY MACRO-REMAINS & POLLEN HEARTS 17 th C. AD	PART OF EMBALMING PLANTS				
	VEGETATIVE		FLOWER		FRUIT
	LEAF	TWIG STEM FIBRE	BUD	BLOOMING	RIPE
<i>Rosmarinus officinalis</i>					
<i>Thymus vulgaris</i>					
<i>Origanum vulgare</i>					
cf. <i>Linum usitatissimum</i>					
<i>Syzygium aromaticum</i>					
cf. <i>Lavandula</i>					
cf. <i>Myrtus</i>					
<i>Clinopodium nepeta</i>					
Apiaceae, Asteraceae & Lamiaceae					
<i>Matricaria chamomilla</i>					
<i>Artemisia vulgaris</i>					
<i>Mentha longifolia</i>					
<i>Foeniculum vulgare</i>					
<i>Juniperus communis/oxycedrus</i>					



Plant macro-remains sampled from the infilling of two hearts. The size of some fragments suggests that the dried plants were crushed and coarsely cut (size 1-2 mm). Oils and resins mixed with the plant powder still strongly smelt during our analysis.

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