



B171 Reconstruction of Decompositional Events by the Use of an Arthropod Community on a Large Number of Partially Burnt Human Mummies in the Catacombe dei Cappuccini in Palermo, Italy

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After attending this presentation, attendees will understand not only how to perform a successful collection of biological stains on human corpses hundreds of years postmortem in a difficult environment that was rearranged and burnt, but also that it is possible to do so.

This presentation will impact the forensic science community by determining that entomological stains can not only be collected hundreds of years postmortem but can also be analyzed to reconstruct both decompositional events and the storage of corpses, even though the environment was burnt.

In July 2012, 622 mummies were examined in the basement of the Capuchin monastery in Palermo, Italy. Corpses were dated to between the 17th and 20th centuries. Their decompositional end state was termed “mummification” by the local population even though skeletonization and differential decomposition were much more abundant. In fact, the mummies must have passed through different, mixed stages of (often active) decomposition.

There were no statistical differences in the type of decay between mummies of males, females, monks, or regular priests nor between the mummies of persons with other occupations (lawyers, etc.). Some of the mummies were stuffed with straw (i.e., they did not contain relevant amounts of body tissue). Inside the skulls, insect remains could be collected.

Only 260 of the 622 mummies showed signs that may have been caused by insect activity (i.e., skin lesions in cases in which skin was intact). The insect remains found on those 260 partially burnt mummies were unusual. Very few blowfly remains (Calliphoridae) were seen even though this group of flies is usually very common in early decomposition. Instead, other arthropods were found (e.g., *Hydrotaea ignava* (Diptera: Muscidae), *Fannia scalaris* (Diptera: Fanniidae), *Conicera tibialis* (Diptera: Phoridae), *Leptocera* sp. (Diptera: Sphaeroceridae), *Necrobia rufipes* (Coleoptera: Cleridae), *Gibbium psylloides* (Coleoptera: Ptinidae), *Oryzaephilus surinamensis* (Coleoptera: Silvanidae), Alysiniinae (Hymenoptera: Braconidae), *Tinea pellionella* (Lepidoptera: Tineidae), and a number of pseudoscorpions (Pseudoscorpionida, Arachnida)).

Certain coffins that could be opened also contained fragments of Clerid, Dermestid, and Staphylinid beetles. The insect findings were compared to arthropod recoveries from human corpses in similar climatical environments.

Comparing the mummies of males, females, virgins, monks, priests, and members of other professions, only priests and virgins showed a significant difference in insect colonization patterns (via the Wilcoxon test). This may be due to very different methods of mummification rather than a reflection of the life of the persons before death; however, the state of the teeth revealed significant differences between the health status of the groups (e.g., mostly missing teeth; also flat, filed-off teeth due to sand in baked goods — an indicator of age at death).

During further searches, a “colatoio” (preparation) room was found in which the fresh corpses had been stored, then dried and reassembled. The method of mummification was often not elaborate, and methods have changed several times over the centuries, as could be deduced from the insect remains.

Mummies, Arthropods, Decomposition

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