

THE ENTOMOLOGICAL AND BACTERIOLOGICAL ANALYSES OF THE BELGRADE MUMMY

Branislav ANĐELKOVIĆ, Faculty of Philosophy, Belgrade
Ljiljana ANĐUS, Natural History Museum, Belgrade
Slaviša STANKOVIĆ, Faculty of Biology, Belgrade

The Belgrade mummy was bought in 1888 in Luxor, Upper Egypt, by Serbian squire Pavle Ridički of Skribešće, who donated it to the National Museum in Belgrade in July the same year (Anđelković: 1995). The donation also encompassed an anthropomorphic wooden coffin in which the mummy lay. The following month the mummy was put on public exhibition for the first time, resting in a horizontal glass showcase (Anđelković 1993: 153-154). During World War One, the room where the mummy was exhibited was hit by enemy artillery fire (Anđelković 1994: T. II). After the arrival of the mummy in 1888, the National Museum and its collections were moved several times from one building to another, until the problem of the Museum's permanent location was solved in 1951. The following year the closed coffin which contained the mummy was in a vertical position presented in the Museum's permanent exhibition.

With the arrival of new management, in the early 1960s, the coffin with the mummy as well as the rest of a modest Egyptological Collection were removed to the Museum's depot. From 1986 to 1991 the coffin with the mummy was in the depot of the Art Gallery of the Non-Aligned Countries in Titograd/Podgorica, Montenegro. On its return to Belgrade, after a few months of storage in a depot of the National Museum, the coffin with the mummy was, on 23rd October 1992, moved to the Archaeological Collection of the Faculty of Philosophy in Belgrade.

The study of the Belgrade mummy started for the first time in May 1993. The original integrity of the mummy was probably somewhat damaged as early as 1888, or before, but its present poor shape has been to a great extent caused by recent unsuitable handling,

transport and storage conditions. So far the mummy has not been subjected to any conservation treatment.

The Belgrade mummy is a *c.* 50 years old male, and according to present knowledge, it should be dated to the end of Late Period and the first third of Ptolemaic Period (Andelković: *in press*). The skull, the mandible, a part of the neck and a lower part of the legs, as well as a number of dislocated or fragmented bones, are detached from the trunk. From the original mummy equipment a number of golden, lapis lazuli and faience amulets and necklace, the remains of a painted cartonnage and damaged papyrus scroll are preserved. The relation between the mummy and its present anthropomorphic wooden coffin is still not quite clear.

Samples for the bacteriological analysis were obtained from the bandages close to the mummy's right hand, and from the thorax and abdomen cavity (Fig. 1), whereas the remains of insects have been found so far in the thoracic and abdominal cavity filling and in the coffin. The insects were not embedded in the mass of resin as found in some cases (*cf.* Smith and Dawson 1991: Fig. 42), and they seem to be recent.

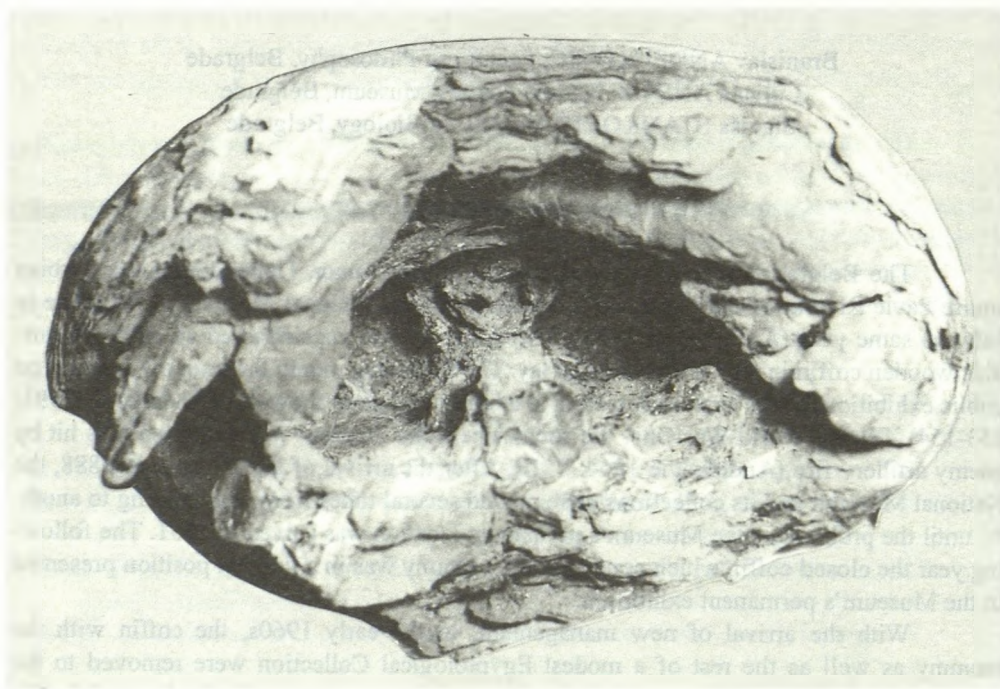


Fig. 1. - A view into the thoracic cavity of the Belgrade mummy

The occurrence of insects or their parts in the remains of mummies is not uncommon and has already been recorded (*cf.* Cockburn *et al.* 1975; Curry 1979). The insect bodies found in mummies, however, are often damaged and incomplete, which renders the identification of taxa extremely difficult. The discovered insects are usually determined to the level of family and genus, and seldom to the species level.

In the course of examination of the Belgrade mummy, the oothecae of the cockroach *Blatta orientalis* L. (Fig. 2) and the exuviae of the museum beetle *Anthrenus museorum* L. were found in its thoracic and abdominal cavity filling as well as in the coffin. Although there were no *Blatta orientalis* L. adults, the cockroach species was indubitably ascertained owing to the characteristic shape of its oothecae and the number of egg cases. Entomological literature describes cockroaches as conspicuously polyphagous insects which feed both on animals and plants. Several insect species, including the cockroach, have adapted to the household living conditions and plague man throughout the world (Richards and Davies 1977). As

regards the species *Anthrenus museorum*, the identification was rendered possible by the characteristic appearance of the exuviae of its larvae. This species is a well-known museum pest; its larvae drill holes in the prepared museum items of organic origin.

Curry (1979) provides the data on the insects found in the Manchester mummies; several *Coleoptera*, and *Diptera* species, as well as the remains of *Blatta orientalis* were found. The number of beetles and true flies was reported to be significantly larger than that of the cockroach oothecae. In the Belgrade mummy, however, no *Coleoptera* and *Diptera* have been found so far, while the cockroach oothecae were more numerous. In further contrast to our finds, no *Anthrenus museorum* remains were noted in the Manchester mummies.

It would be interesting to know when the aforementioned insects inhabited mummies, in other words, to ascertain whether they are as old as the mummies or of a more recent date. Curry (1979) maintains that the *Blatta orientalis* ootheca found in one of the Manchester mummies belongs to the time when the mummy was made. In our investigations, it was difficult to determine the age of the insect remains and the cockroach oothecae. The insects might be coeval with the mummy as cockroaches have not undergone many changes since the mummy was made and the oothecae structure has remained much the same. Furthermore, the species is known to have inhabited human settlements in North Africa at that time. It is just as possible, however, that the cockroach is of a more recent date.

Five samples were taken from the Belgrade mummy for microbiological investigation. Four samples were taken from thorax and abdomen and one sample from bandages. Samples were taken aseptically. They were analyzed in the Laboratory for Microbiology, Faculty of Biology, University of Belgrade.

All samples were divided in two parts, the first designated from M₁ to M₅. M samples were inoculated in LB medium (5g NaCl, 10g tryptone "Torlak", 5g yeast extract

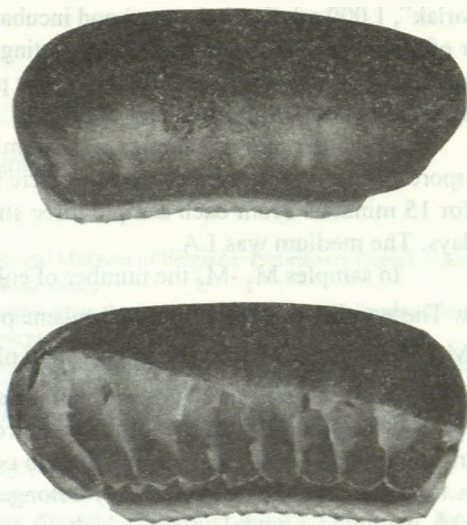


Fig. 2. - The oothecae of the *Blatta orientalis* from the thoracic cavity of the Belgrade mummy

“Torlak”, 1,000 ml distilled water) and incubated 7 days at 25° C. After incubation, the number of viable cells was determined by plating 0.1 ml of undiluted and diluted cultures onto LA plates (LB with 15g agar “Torlak”). The plates were incubated 2, 3, 5 and 7 days at 25° C and another set of plates 3 days at 37° C.

The other part of samples was submitted to thermal inactivation for determination of spore-forming bacteria. The samples were suspended in distilled water and heated at 80° C for 15 minutes. From each sample three streak plates were made and incubated 3, 5 and 7 days. The medium was LA.

In samples M₁ -M₅ the number of colonies on plates incubated 7 days at 25° C was low. The number of viable microorganisms per ml of cultures ranged from 10 in M₁ to 23 in M₃. The number of colonies obtained on plates incubated 3 days at 37° C was similar.

In all samples three types of colonies dominated. Examination of cell morphology and Gram reaction showed that all colonies consisted of Gram positive cocci clustered into pairs and tetrads (Holt 1984). According to colony morphology and microscopic examination we concluded that they probably belonged to genus *Micrococcus* (Holt 1994). In sample M₂ we found a fungal colony which we considered a contamination. After thermal inactivation of samples there was no growth on streak plates.

Since we detected no spore-forming bacteria which are expected in dry material, we concluded that the bacteria we found were introduced into material secondarily.

Further analyses and examinations of the Belgrade mummy are to be expected.*

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ЕНТОМОЛОШКА И БАКТЕРИОЛОШКА АНАЛИЗА БЕОГРАДСКЕ МУМИЈЕ

Београдска мумија купљена је 1888 у Луксору од стране Павла Риђичког од Скрибешћа и јула исте године поклоњена Народном музеју у Београду. Прва проучавања Београдске мумије започета су маја 1993. Изворни интегритет мумије био је највероватније нарушен још 1888, или раније, али њено садашње стање проузроковано је донекле и рецентним неодговарајућим руковањем, транспортом и чувањем. Мумија до сада није подвргавана конзервацији. Београдска мумија припада мушкарцу старом око 50 година и према садашњим сазнањима може се датовати у крај Позног и прву трећину Птоломејског периода. Остаци инсеката пронађени су у торакалној и абдоминалној шупљини, као и у ковчегу у коме је мумија лежала, и постоји могућност да су рецентни. Уочено је више оотека бубашвабе *Blatta orientalis* и егзувија ларве музејске бубе *Anthrenus museorum*. *Blatta orientalis* је позната као изразито полифагна, била је распрострањена и у Северној Африци тога доба, док се *Anthrenus museorum* најчешће храни музејским експонатима органског порекла. Из Београдске мумије је узето пет узорака за микробиолошку анализу, од тога четири узорка из торакалне и абдоминалне шупљине, и један са овоја у пределу десне шаке. Издвојена су три типа колонија који доминирају у свих пет узорака. Методом бојења по Gram-у и посматрањем на микроскопу (увеличање 1000 x), утврђено је да припадају грам-позитивним кокама груписаним у дипло и тетра коке. На основу облика и боје колонија, као и микроскопских препарата (величина и распоред), вероватно се ради о припадницима рода *Micrococcus*. Такође је констатовано присуство колоније неке врсте гљива у узорку M_2 . По истеку периода инкубације узорка који је имао термичку инактивацију, на подлогама се није развила ниједна колонија. На основу добијених резултата можемо закључити да се вероватно ради о секундарном уношењу микроорганизама у испитивани материјал, те да нема микроорганизама аутохтоне природе који формирају споре.