Engyodontium album, a new species of microscopic fungi for Slovakia and its keratinolytic activity

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The paper describes macro and micromorphological characteristics of *Engyodontium album* (LIMBER) DE HOOG (Hyphomycetes) and its keratinolytic activity on children hair. This species of microscopic fungi, new for Slovakia, was isolated from a moist and damaged wall in a historical building from 17^{th} century in Bratislava, where the collection of some objects of primitive African art had been arranged.

Key words: microscopic fungi, Hyphomycetes, *Engyodontium album*, keratinolytic activity.

The species *Engyodontium album* was isolated from damaged and moist wall in the building originated in 17^{th} century. In this building, the collection of some objects of primitive African art (textile material, wooden and serpentine sculptures) collected from different parts of Africa (Zimbabwe, Zaire, Zambezi valley) was arranged.

The samples of damaged wall were taken by wiping with sterile cotton swab and transferred onto Petri dishes with media. The species *Engyodontium album* was isolated from a mixed culture on Sabouraud Maltose agar. For the cultivation of pure fungus the following media were used: Malt Extract Agar (MEA) and Sabouraud Maltose Agar (SAB), (Himedia, Bombay). The pure culture was kept on MEA and SAB agars in the dark at room temperature (22–25 °C). The culture of *Engyodontium album* was observed microscopically. Observations under light microscope (Fig. 1) was made in a drop of distilled water with methylene blue. For more details scanning electron microscope (SEM) JEOL JXA-840 was used (Fig. 2). The samples were dried up at room temperature and coated with gold. The accelerating voltage 5V and electron current beam 50–100 PA were used.

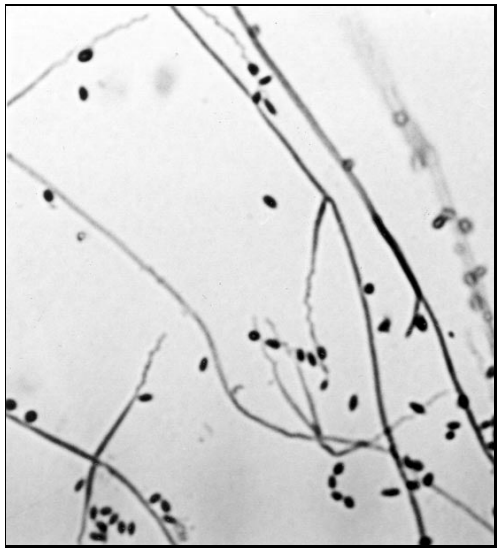

Fig. 1. Conidiophores with conidiogenous cells of *Engyodontium album*, 1000×.

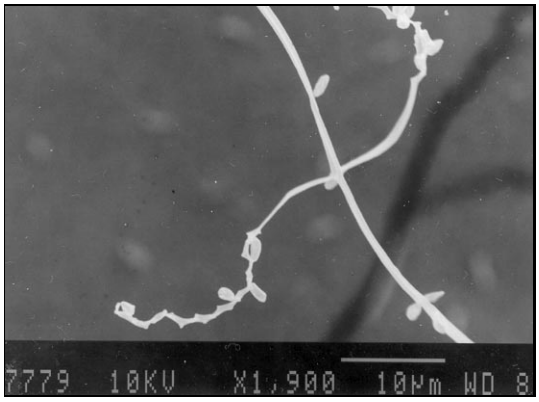

Fig. 2. Detail of zigzag bent part of conidiophores of *Engyodontium album*, 1900× (SEM). Slightly flattened conidiophores and conidia were caused by rehydration (artifact in SEM).

For testing the keratinolytic activity autoclaved children hairs were added to the fully grown cultures on Sabouraud agar and brought into contact with the surface mycelium. Alternatively, autoclaved hairs were inoculated directly with the mycelium and spores and kept in a humid chamber at 29 °C in the dark. The degradation of hairs was observed under a light microscope after 1 to 8 weeks.

The species *Engyodontium album* was determined using the key DE HOOG & GUARRO (1995). The isolate is held in CCF of the Department of Soil Science.

Engyodontium album (LIMBER) de HOOG

Recent synonym: *Tritirachium album* Limber
Systematic position: Hyphomycetes, Moniliales
On MEA and SAB the species *Engyodontium album* forms fast growing (2–3 days) and white coloured colonies appearing lanose to floccose up to 2 mm high. The reverse is uncoloured or light ochraceous. Colonies reaching 3.0–4.0 cm diam in seven days at room temperature 22–25 °C. Conidiophores are ascending, 2–4 μm wide, bearing elongate to subcylindrical conidiogenous cells (Fig. 1). Typical feature of the genus *Endyogontium* is zikzak bent part of coniodiophores (Fig. 2) similary in the genus *Beauveria* (ŠIMONOVIČOVÁ & BENKOVÁ, 2000). The conidia are hyaline, smooth-walled, subspherical, 2–3 × 1.5–2.5 μm. On MEA or SAB agars in test-tubes the species *Engyodontium album* grows extremely fast, in two-three days. In human population this species causes keratitis, cerebritis and endocarditis (DE HOOG & GUARRO, 1995). *Engyodontium album* is often regarded as a keratinophilic fungus (DE HOOG & GUARRO, 1995). Our strain overgrew the human hairs in culture. However, even after 8 weeks the hair degradation was week.

The species *Engyodontium album* is rare and new for Slovakia and it has been not listed in the Checklist of non-vascular and vascular plants of Slovakia, part Fungi (LIZOŇ & BACIGÁLOVÁ, 1998). In the CCF in Prague, this species has been reported ex man from the Netherlands (KUBÁTOVÁ et al., 1996).

Acknowledgements

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