Epidemiological aspects and genotypic characterization of strains of *Microsporum audouinii* isolated in the context of a Belgian National survey on anthropophilic tinea

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**Objectives**

- To investigate the epidemiological determinants responsible for the high number of anthropophilic dermatophytes received by the National Reference Centre for Mycosis of Liège (NRCL), during the last years. Indeed, the last two years, clinical cases of tinea capitis caused by *Microsporum audouinii* (M. audouinii), have increased in Belgium.
- To perform a genotypic characterization by the Diversilab® system focusing on *M. audouinii*.
- To present results of the national survey launched between February 2013 and March 2014.

**Methods**

Population: A total of 117 strains of *M. audouinii* (116 clinical + 1 reference strains) collected between March 2013 and February 2014 were included in the study. The strains were collected from different laboratories through Belgium but mainly were coming from Brussels. Figure 1 describes the Diversilab® system (bioMérieux) used for genomic analysis of *M. audouinii* strains.

**Step 1: Fungal culture + DNA extraction**

**Step 2: Rep-PCR**

**Step 3: Diversilab® analysis**

**Results**

The 117 strains have been genotypically characterised by Diversilab® fingerprinting to visualize genomic variants between *M. audouinii* species. Figure 2 represents the DNA fingerprints of these strains (Strains 1 to 26).

Figure 3 represents the scatterplot of all strains analysed showing the differentiation into 6 different groups. The genotypic analysis led thus to the distinction of several genotypic variants of *M. audouinii*. One of these variants was exclusively recovered from South Belgium (11 strains). The major group included 96 strains, well distributed in different Belgian locations.

Analysis of the epidemiological characteristics of the infected population (see Table 1) shows that the main age category concerns 5-9 year-old children (55.7%) with a sex-ratio M/F of 1.97. Data concerning the geographic origin of the family have been obtained in only 52.7% of the cases. It reveals that strains have been mainly isolated from patients with a Belgian nationality (44.7%) suggesting bias in the data collection. The geographic origin of the remaining group includes several African countries such as Congo (21.1%), Guinea (13.2%), and Cameroun (5.3%).

**Conclusions**

The Diversilab® system proved to be an efficient method to investigate the molecular epidemiology of dermatophytes infections, particularly the anthropophilic species increasing in Belgium. The present study shows that several groups of *M. audouinii* isolates co-exist in Belgium providing evidence of genetic heterogeneity inside this anthropophilic species. However, no clear correlation could be established between the appartenance to a group and epidemiological factors, such as the age or ethnic origin.