

2-007-5

Diversity of yeasts and yeast-like fungi isolated from household air-conditioners

Shigeki Inaba¹⁾, Atsushi Yamazaki¹⁾, Kazumi Sasaki¹⁾, Kazunobu Kuwabara²⁾,
Takahiko Horiguchi²⁾, Masashi Nakamura^{2,3)}, Kayoko Matsunaga²⁾

¹⁾NITE Biological Resource Center, National Institute of Technology and Evaluation, Japan

²⁾Fujita Health University, Japan

³⁾Hoyu, Co., Ltd., Japan

Purpose: The aim of this study is to survey yeasts and yeast-like fungi flora in household air-conditioners (ACs). Fungi are important aeroallergens in private houses and ACs have known to be one of supply sources of such fungal allergens. While some studies have reported filamentous fungal contamination in ACs, research focusing on yeasts and yeast-like fungi is relatively limited.

Methods: Yeasts and yeast-like fungi flora in ACs of private houses was studied in 2018. Using the swabbing method, total 37 dust samples accumulated on internal parts of 18 ACs, mainly filters and heat-exchangers, were collected in Chubu region, Japan. The samples were spread onto PDA plates supplemented with chloramphenicol and incubated at 25 and 40°C. Yeast colonies appeared on the plates were isolated and identified based on the nuclear ribosomal ITS and partial 26S rRNA region sequences and the morphological features.

Results and conclusions: In total, 71 isolates were obtained from the dust samples, and 30 species were recognized. At 40°C, 4 ascomycetous yeast species, *Candida metapsilosis*, *C. parapsilosis*, *Meyerozyma caribbica* and *M. guilliermondii*, which are known as opportunistic pathogens, were isolated. The occurrences, however, were very low and the species were isolated from only 1, 1, 1 and 3 of 18 ACs, respectively. At 25°C, 23 described (4 ascomycetes and 19 basidiomycetes) and 4 undescribed basidiomycetous species were isolated. The basidiomycetous yeast species are belonging to 3 subphyla, Pucciniomycotina, Ustilaginomycotina and Agaricomycotina. *Rhodotorula mucilaginosa* was the most dominant species and appeared from 10 of 18 ACs. The results suggest that taxonomically diverse yeasts and yeast-like fungi, including opportunistic pathogens and new species candidates, inhabit in the household ACs.