

## Four new combinations in Yeasts

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Four new combinations are proposed: *Saccharomycopsis lipolytica* (syn. *Candida lipolytica*), *Hansenula muscicola*, *Kluyveromyces thermotolerans* (syn. *Kluyveromyces veronae*), *Sporobolomyces puniceus*.

In two recent publications (van der Walt and Scott, 1971; von Arx, 1972) it has been pointed out that the generic name *Endomycopsis* is invalid and most of the species listed in this genus by Kreger-van Rij in Lodder (1970) have been transferred to various other genera. Two species which were not covered by the previous publications of van der Walt and von Arx are *Endomycopsis lipolytica* Wickerham et al. and *Endomycopsis muscicola* Nakase et Komagata, and therefore the following new combinations are proposed for these.

### ***Saccharomycopsis lipolytica* (Wickerham et al.) Yarrow nov. comb.**

Basionym: *Endomycopsis lipolytica* Wickerham et al., *Spectrum*, Monogr. Ser. Arts Sci., Georgia State Univ. 1: 81 (1970).

Synonyms: *Mycotorula lipolytica* Harrison, *Trans. Roy. Soc. Can. Sec. V*, 22: 187 (1928), *Monilia cornealis* Nannizzi, in Bencini and Federici, *Atti Reale Accad. Fisiocritica Siena*, Ser. X, 3: 748 (1928), *Candida lipolytica* (Harrison) Diddens et Lodder, *Die anascosporogenen Hefen*, 2. Hälfte, p. 324 (1942), *Candida olea* Kreger-van Rij et Verona, *Atti Reale Accad. Naz. Lincei* 7: 249 (1949), *Candida paralipolytica* nom. nud., Yamada and Ota, *J. Agr. Chem. Soc. Jap.* 37: 649 (1963).

Twenty-one strains were examined, one was a self-fertile diploid (CBS 6124), the rest were haploid, eleven belonged to one mating type and nine to the other.

Three additional strains were identical with the others but did not sporulate either alone, when mixed together or when mixed with the mating types. One of

these asporogenous strains (CBS 2071) is the type strain of *Candida deformans* (Zach) Langeron et Guerra; therefore this species can be considered as the imperfect, asexual state of *S. lipolytica*. Van Uden and Buckley in Lodder (1970) described this species as *Candida lipolytica* var. *deformans*, distinguishing it from the variety *lipolytica* by its ability to use  $\beta$ -glucosides. However, as  $\beta$ -glucoside-negative and -positive strains mate readily and are included in *S. lipolytica* this criterion appears to be unsuitable for distinguishing a separate variety and so strains both with and without this ability can be included in *C. deformans* also. Two of the three strains in the CBS collection use  $\beta$ -glucosides.

Despite repeated testing, one of the strains of *S. lipolytica* (CBS 6102) did not split fat on Eijkman plates but this strain liquefied gelatin.

***Hansenula muscicola* (Nakase et Komagata) Yarrow nov. comb.**

Basionym: *Endomycopsis muscicola* Nakase et Komagata, J. Gen. Appl. Microbiol. 12: 347 (1966).

*Hansenula muscicola* closely resembles *Hansenula silvicola* Wickerham. Nakase and Komagata (1971a) reported that the GC content of the DNA of the type strain of *H. silvicola* (CBS 1705 = AJ 5048) is 35.1% and of the second strain (CBS 1706 = AJ 5160) is 34.4% whereas that of the type strain of *H. muscicola* (CBS 5800 = AJ 4272) is 37.3%. In view of the difference in the GC content of these two species it seems advisable to maintain them as separate species despite their other similarities. They may be distinguished from each other morphologically. On Wickerham's morphology agar the cells of *H. muscicola* are spherical or oval,  $2-4 \times 2.5-5 \mu\text{m}$ , long hyphal elements may also be present; those of *H. silvicola* are larger,  $2-5 \times 4-8 \mu\text{m}$ , and ellipsoidal (Fig. 1). Both species produce pseudohyphae and true, septate hyphae but those of *H. muscicola* grow more rapidly and abundantly, and are longer.

Three strains of *H. muscicola* and two of *H. silvicola* were examined.

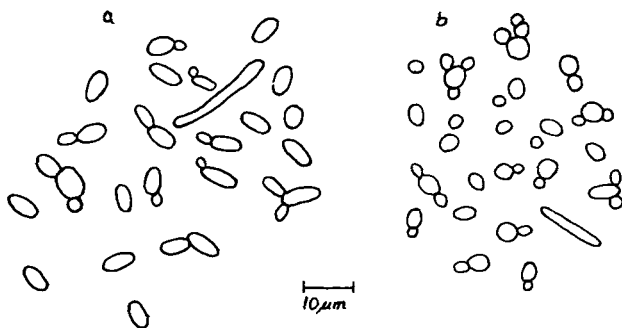


Fig. 1. Cells of (a) *H. silvicola* and (b) *H. muscicola* from Wickerham's morphology agar after 48 hr at 25 C.