Mating Between Strains of the Yeasts *Aessosporon salmonicolor* and *Sporobolomyces* spp.

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Although *Aessosporon salmonicolor* was described with a homothallic life cycle, mating studies of strains of *A. salmonicolor* and *Sporobolomyces* spp. demonstrated a heterothallic life cycle typical of other basidiomycetous yeasts.

van der Walt (4) described a homothallic sexual cycle in a strain (CBS 5937) of *Sporobolomyces salmonicolor* (Fischer et Brebeck) Kluyver et van Niel 1894 in which a diploid teliospore was formed by fusion of haploid mother and daughter cells. Teliospores were reported as thick-walled, lipid-rich cells that germinated to the haploid stage. Based on this life cycle and on a study of the deoxyribonucleic acid content of cells that suggested the presence of haplo- and diplophases (5), the genus *Aessosporon* van der Walt 1970 was described.

Bandoni et al. (1) reported mating between the type strains of *Sporobolomyces hispanicus* Pelaez et Ramirez 1956, *Sporobolomyces odoratus* Derx 1930, and *Sporobolomyces salmonicolor*. The mating system was typical of heterothallic basidiomycetous yeasts in the genera *Leucosporidium* and *Rhodospiridium*. Conjugation between compatible mating types was followed by the formation of a mycelium with clamp connections and chlamydospores (presumably teliospores). Germination of the teliospores,

which would complete the life cycle, was not observed. Bandoni et al. concluded that the three species were nonspecific and that the oldest name, *S. salmonicolor*, should be accepted.

We examined the possible relationship of *Aessosporon salmonicolor* to *S. salmonicolor* by mixing strains (Table 1) on corn meal agar at 18°C. The results (Table 1) demonstrated two mating types; intermating within a mating type did not occur. Mating of *Sporobolomyces holsaticus* CBS 2630 or *S. odoratus* UBC 948 with *A. salmonicolor* CBS 5937 resulted in the response reported (1) for other strains of *Sporobolomyces*. After 2 to 3 days there was the formation of a mycelium with clamps and teliospore-like structures (Fig. 1). Teliospore germination was not observed. The life cycle appears to be identical to the heterothallism reported in *Leucosporidium* and *Rhodospiridium* (2, 3). This does not preclude the possibility of a homothallic life cycle, as reported by van der Walt. It is our opinion, based on the heterothallic life cycle of this organism, that *A. salmonicolor* belongs to

TABLE 1. Mating reactions of strains of *Sporobolomyces* spp. and *A. salmonicolor*^a

Strain	Mating with:	
	<i>S. odoratus</i> UBC 948	<i>S. holsaticus</i> CBS 2630
<i>A. salmonicolor</i> CBS 5937 ^b	+	+
<i>S. salmonicolor</i> CBS 490 ^b	+	+
<i>S. salmonicolor</i> var. <i>fisheri</i> CBS 6832 ^b	+	+
<i>S. odoratus</i> UBC 949	+	+
<i>S. odoratus</i> UBC 950	+	+
<i>S. odoratus</i> 5Y	+	+
<i>S. odoratus</i> 7Y	+	+
<i>S. holsaticus</i> CBS 1522 ^b	-	-
<i>S. hispanicus</i> CBS 2873 ^b	+	+

^a Sources: UBC cultures were from R. J. Bandoni, University of British Columbia, Vancouver, Canada; CBS cultures were from D. Yarrow, Centraalbureau voor Schimmelcultures, Delft, The Netherlands; cultures 5Y and 7Y were from S. A. Meyer, Georgia State University, Atlanta.

^b Type strain.

FIG. 1. Hyphae, clamps, and teliospores formed from a mating of *A. salmonicolor* CBS 5937 and *S. odoratus* UBC 948. Nomarski differential phase contrast microscopy. Bar = 10 µm.

the same heterothallic sexual species as *S. salmonicolor*, which includes the synonyms provided by Bandoni et al. *S. holsaticus* may or may not be included in this species. Although one strain of *S. holsaticus* (CBS 2630) demonstrated a mating response, the type strain (CBS 1522) was not sexually compatible with any of the strains listed in Table 1.

The systematics of these yeasts still requires clarification. *Aessoporon* is described as a sexual genus, and *Sporobolomyces* is an asexual genus. Final taxonomic decisions will require a determination of the complete life cycles of the yeasts in the two genera.

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REPRINT REQUESTS

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