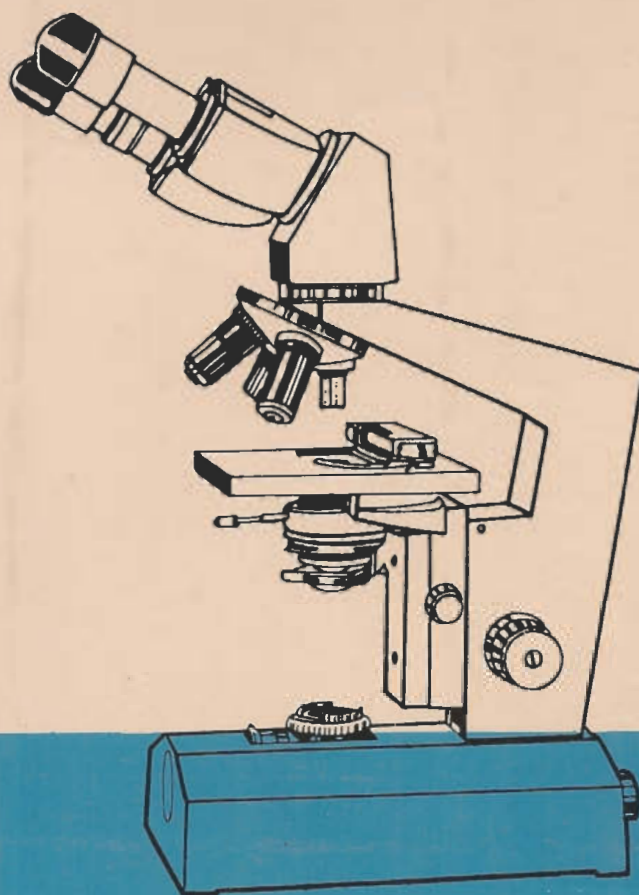


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ABSTRACTS



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HYBRIDIZATION OF YEAST BY PROTOPLAST FUSION FOR IMPROVED PRODUCTION OF FAT

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Rhodotorula gracilis has been known as a fat overproducing yeast (70% fat in dry cells). However, this organism has slow growth rate, is unable to tolerate high sugar content and hence does not make biomass more than 30 gm per litre (wet biomass). Moreover, its cell wall is hard which interferes with efficient extraction of fat. The present studies were undertaken to hybridize *R. gracilis* with other fungi, in order to produce hybrids in which the aforesaid problems could be overcome. Protoplast fusion was attempted between *R. gracilis* and yeast, *Saccharomyces cerevisiae* and a mycelial fungus, *Aspergillus niger*. The yeast was chosen for its ability to make high quantities of biomass and the fungal culture for its ability to make citric acid.

Protoplast fusion was brought about after digestion of cell wall by a commercial enzyme preparation (NOVOZYM 234) and employing PEG-6000 as the fusogen. Auxotrophic markers were used for selection of the hybrids, which also indicated the success of the technique employed in these studies. The hybrids obtained between *R. gracilis* and *S. cerevisiae* did not prove to be very promising in our hands, as the hybrids that were obtained were either low fat producers or those which made less biomass. Two of the interesting hybrids obtained as a result of fusion between *R.*

gracilis and *A. niger* were the one which forms a white colony initially but turns red later and another which exhibits red colony morphology right from the beginning. The former makes fat comparable to the parent – hence can be considered promising. The hybrids have also been examined for the presence of ATP: citrate lyase which is known to be a key enzyme in fat biosynthesis.