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Oleaginous yeasts for biodiesel from Ethiopia

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Microbial oils as feedstock for biodiesel production has increasingly attracted attention as a promising renewable source. Microorganisms accumulate considerable amount of oil when cultivated under specific conditions. Yeasts are one of the potential groups of microorganisms for biodiesel production. With the aim to identify promising oleaginous yeast species, a study was undertaken. From 200 natural samples 340 yeast isolate, 18 strains inhabiting soil and plant were found to be oleaginous. Further characterization by morphological, physiological and molecular methods, showed that *Rhodotorula muscilaginosa, Cryptoccoccus culvatus and Rhodosporidium kratochvilovae* were yeasts that produce up to 50% oil within their cell dry biomass under high sugar and low nitrogen medium, at 25-30oC, pH range 5.0 to 6.0 in 144 hours in a highly aerated submerged cultivation. These oleaginous have the ability to accumulate oil when grown on cheap and abundant agro-industrial wastes such as molasses, mango and papaya peel hydrolysates. Moreover, theses strains produced high proportion of fatty acids which are ideal for biodiesel. Further optimization of cultivation processes and development of strains with enhanced oil production capacity can provide suitable strains for large scale production of biodiesel.

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