ISOLATION AND CHARACTERIZATION OF A YEAST STRAIN CAPABLE OF PRODUCING MICROBIAL OILS AS FEEDSTOCK FOR BIODIESEL

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Introduction. Currently, the world was witnessing a major problem regarding non-renewable energy sources, as there is a decrease in oil reserves and the increase in the costs of search and retrieval. Another of the most important issues are the environmental consequences of the gases that are released by petroleum fuels, this together, leads us to consider as an alternative source of energy to biofuels. During the past decade has focused attention on the biodiesel, a renewable and environmentally friendly biofuel, because its combustion produces only CO_2 and water. Biodiesel is rather an attractive alternative because of its characteristics: biodegradable, non-toxic, renewable and clean, for similar properties to those of conventional diesel (1). The objective of this work was to isolate and characterize a yeast strain capable of producing microbial oils as a raw material for biodiesel.

Methods. The isolation of strains was performed on YPD agar by streak plate methods. Microscopic identification of the strains was performed staining with crystal violet. Cell growth was determined by optical density at 580nm. The measure of the production of microbial oils was achieved using a semi-quantitative method developed by Thakur *et al* in 1989 (2) and with a quantitative technique according to Bligh and Dyer modified by Li-Xia Pan *et al* in 2008 (3). The identification of yeast strain was performed by 26S rDNA sequencing and comparison of identity in the BLAST database (4).

Results. 10 yeasts were isolated from various soils and fruits samples, of which two FAChp and Hi2 were good producers of microbial oils (Fig. 1). The growth of the strains and production of oils was measured during 25 days, shows that the highest production of microbial oils is reached at 10 incubation days when the yeast culture has 8 days in stationary phase (Fig. 2).

It was found that both strains belonging to the genus and species *Clavispora lusitaniae*.

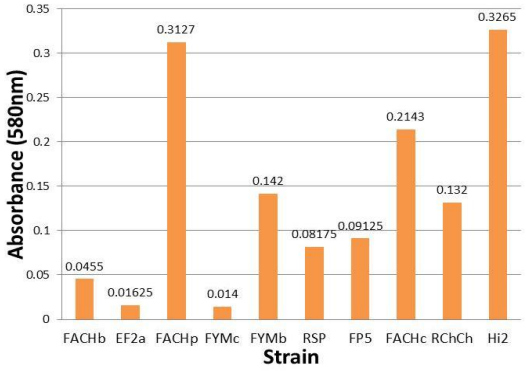

Fig.1 Estimation of intracellular microbial oils accumulated in different oleaginous yeast strains stained with *Sudan Black B*.

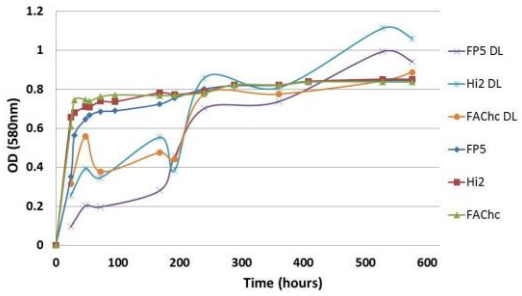

Fig.2 Microbial oil production along the growth curve of yeast strains FP5, Hi2 and FAChc.

Conclusions. Through 26S rDNA sequencing, it was determined that the two best oleaginous strains characterized in this work were FAChp and Hi2. Although both isolates were from different geographical areas, Chiapas and Morelos, respectively, both belong to the same genus and species of yeast (*Clavispora lusitaniae*).

References.

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