TITLE: ENZYMATIC EXPRESSION OF FENNEL AUTOCHTHONOUS YEASTS

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ABSTRACT:
The biotechnological advances provided greater comprehensiveness of the applications of hydrolytic enzymes produced by different types of microorganisms. Cellulase, protease, chitinase, lipase, phospholipase, and esterase are enzymes of great interested and application as a biotechnological tool in the area of medicine, industry, pharmaceutics, and agriculture. Unicellular microorganisms, such as yeasts, can develop different strategies for maintenance, operation, and protection of colonies, as the mechanism of enzymatic production, for example. We aimed to qualitatively evaluate the yeasts enzymatic expression from the microbiota of *Foeniculum vulgare* Mill. Thirty yeasts isolates, obtained from leaf tissues of fennel, were cultivated individually for five days in yeast extract, peptone, dextrose, and agar – YEPD+AGAR medium at 28 ± 2 °C and 12 hours photoperiod. Portions of the yeast colonies were transferred, with the sterile Swab, to the surface of Petri dishes containing esterase (peptone 10g; NaCl 5g; $CaCl_2$ 0,1g; agar 20g; tween 20 1%; H_2O distilled 1 L), amylase (cornflour 20g; yeast extract 5g; agar 18 g; H_2O distilled 1 L), protease (gelatin 10g; skim milk 10 g; agar 10 g; phosphocitrate buffer 100 mL; H_2O distilled 1 L) and pectinase (sucrose 2g; Na_2PO_4 6g; KH_2PO_4 3g; NaCl 0,25 g; NH_4Cl 1 g; $CaCl_2$ solution 10 mL; $MgSO_4$ solution 10 mL; H_2O distilled 1 L; pH:7,0), in punctual and equidistant arrangements (six isolates per Petri dishes). The experiment was performed in triplicate, with three replicates in each treatment and, as a control treatment, plates containing specific medium were used without the culture of yeasts colonies. The plates were maintained in a completely randomized design at 28±2°C in absence of light and, after fifteen days of incubation, the enzymatic expression was qualitatively evaluated, observing the presence or not of a translucent or opaque halo around the colonies. Usually esterase presented higher expression, being produced by 86,66% of the isolates. Pectinase and protease were expressed by 33,33% and 30% of the isolates, respectively. Only two isolates (6,66%) produced amylolytic enzymes. These data suggest that yeasts have relevance to the enzyme spectrum and, because of their large esterase production, are potentially applicable to processes related to esters hydrolysis and/or lipid metabolism. However, biotechnological applications propose gaps that need to be explored in detail.

Keywords: Hydrolityc enzyms; Yeasts; Biotechnology.

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