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Potential Use of Essential Oils on Baker´s Yeast

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Saccharomyces cerevisiae is one of the most important domesticated microorganisms, widely used in different industrial segments, mainly in food industry due to its role in fermentative process. In food industry, it is employed as baker´s yeast, where the replacement of synthetic additives by natural products has been a trend. Among natural products, essential oils (EO) have recently emerged as possible source of safe and natural alternative as antimicrobial agent. The aim of this work was to evaluate the effect of 25 EO on baker´s yeast strains of *S. cerevisiae* from bakery industry when exposed to EO using benchmarking study. All strains were isolated from different baker´s yeast (stronger, active dry and sweet dough baker´s yeast). They were distinguished by karyotyping using electrophoretic profile PFGE. The effect of EO over 6 strains of *S. cerevisiae* was established through microdilution test determining Minimal Inhibitory Concentration – MIC using 25 EO extracted from plants belonging to Medicinal and Aromatic Plant Collection (CPMA) of CPQBA at UNICAMP. These EO were analyzed by Gas Chromatography – Mass Spectral Analysis (GC-MS) (1). Oil components were identified by comparison of mass spectra and retention indices with spectral library and literature. We found different activity profile of EO in the face of baker´s yeast strains. Among them, there can be highlighted 3 EO: *Elyonurus muticus; Varronia curassavica* and *Achyrocline satureioides*. The first EO presented one of the most severe effect on all strains tested. In contrast, for the last two EO, there was no inhibitory action over all strains. Although *E. muticus* EO has been mentioned as repellent (2) and antimicrobial, there are no references about its effect on *S. cerevisiae.* The main chemical compound founded in *E. muticus* EO was citral, a mixture of two geometric isomers known as geranial and neral that represent 82%. Conversely, *V. curassavica* and *A. satureioides* EO, did not affect any yeast strains even though studies consider that these EO present antimicrobial activity (3,4). The results show the same chemical profile for both EO regarding the major components (33%; 45% α-pinene; 33%; 25% trans-caryophyllene and 7,5%; 13% α-humulene respectively). Hence, *V. curassavica* and *A. satureioides* EO have potential to be antimicrobial agents in processes that use baker´s yeast since they did not present inhibition over all *S. cerevisiae* strains and were described as antibacterial EO.

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