TITLE: BAKER´S YEAST ROBUSTNESS TO NATURAL ANTIMICROBIAL AGENTS

AUTHORS: KITAKA, P.R[1,2].; ANDRIETTA, M.G.S.[2] ; STECKELBERG, C. [2]; DUARTE, M.C.T. [2]; FIGUEIRA, G.M.[2]; DELARMINA, C. [2]; OLIVEIRA, V.M. [2]

INSTITUTION: [1]INSTITUTO DE BIOLOGIA (IB), UNICAMP, CAMPINAS, SP BRAZIL / [2]CENTRO PLURIDISCIPLINAR DE PESQUISAS QUÍMICAS, BIOLÓGICAS E AGRÍCOLAS (CPQBA), UNICAMP (AVENIDA ALEXANDRE CAZELATTO, 999 BETEL CEP 13148-218, PAULÍNIA - SP BRAZIL)

ABSTRACT:

Saccharomyces cerevisiae has a long notorious history as the first domesticated microorganism. The relevance of this yeast covers most important biological systems, since it is highly important as much as a model eukaryotic organism as its widespread use in industrial processes like in food industry due to its role in fermentative process. Thus, it is necessary to know the characteristics of this microorganism and its behavior in different situations. *S.cerevisiae is* widely used in different industrial segments, mainly in food industry. The use of natural products free of synthetic additives has been a trend throughout this industrial segment. Therefore, the main objective of this work was to characterize the baker´s yeast strains resistance profile in the face of essential oils (EO). EO are complex mixtures extracted from plants with high potential to scale down the use of synthetic compounds, which are widely used by food industry to control undesirable contaminants, since they have important properties, like antimicrobial and antioxidant actions. Hence, this work aimed to determine the resistance profile of *S. cerevisiae* strains from bakery industry when exposed to EO using benchmarking study. *S. cerevisiae* strains were isolated from baker´s yeast (stronger - SY; active dry - ADY and sweet dough baker´s yeast - SDY). They were distinguished by karyotyping using electrophoretic profile PFGE. The robustness of 6 different strains of *S. cerevisiae* was established through microdilution test determining Minimal Inhibitory Concentration – MIC using 31 different EO extracted from plants belonging to Medicinal and Aromatic Plant Collection of CPQBA at UNICAMP. All strains were resilient to EO of *V. curassavica, A. satureioides, P. pinatfolius, R. graviolens* and several *Piper* sp species EO in all concentrations tested. Conversely, *A.annua, M. alernatifolia, M. aquatica* and *M. piperita* presented slight inhibitory action over the strains, which can reach 0,5mg/mL. In the meantime, *C. citratus, C. martinii, C. articulates, E. muticus, C. ambrosioides, L. alba, Pimenta dióica and T. patula* oils were very harmful for the yeasts assessed. In general, considering all EO tested, strains presented similar resistance around 35% in face all of the oils. However, baker´s yeast and SY strains presented higher robustness (41,9%) when compared with SDY strains (35,5%). As unexpected result, we found that ADY presented the worst resistance performance (32,3%) in the face of EO.

Keywords: *Saccharomyces cerervisiae,* baker´s yeast, essential oil, robustness, food industry

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