**TITLE:** MORPHOLOGICAL CHANGES OF YEASTS CELLS IN RESPONSE TO THE ADAPTATION PROCESS TO ENRICHED WITH SELENIUM

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As a major by-product of the ethanol production industry, yeast has great potential for use in the food and pharmaceutical industries. The consumption of yeast biomass enriched with selenium increases its absorption by the organism and reduces the risk of toxic effects caused by consumption of its inorganic form, sodium selenite (Na2SeO3). Selenium is a non-metal of the 6A family and a micronutrient essential for health, with antioxidant action, aid in the immune system, hormonal activation, among other benefits, acting in the prevention of various diseases. In this context, it was proposed to develop a bioprocess to obtain yeast biomass (*Saccharomyces cerevisiae*) with high selenium content. However, changes in the macro and micromorphological characteristics of the yeast were observed in the assays, such morphological differences may alter the way the colonies are organized, reflecting the fermentation performance and the accumulation of selenium by the cell. Petri dish studies were carried out with superficial inoculation in YEPD enriched with sodium selenite. The treatments evaluated were 0 mg $mL^{-1}$ (control); 60 mg $mL^{-1}$ (T1); 105 mg $mL^{-1}$ (T2); 153 mg $mL^{-1}$ (T3); 204 mg $mL^{-1}$ (T4) and 249 mg $mL^{-1}$ (T5). Cultivation was performed in quadruplicate and the plates were incubated under 30 °C ± 2 °C. After verification of the growth of the colonies, the transfer was performed around 48 h or growth confirmation. Due to the addition of higher concentrations of the element, the cell growth was altered in relation to the time necessary for the appearance of colonies, at the concentrations of T1, T2, and T3 it was possible to observe the formation of colonies with 48 h, already in the concentrations T4 and T5 took around 72 h. In macromorphological observations, it was observed changes in the shape, color, smell, texture and height of the colonies. Micromorphological alterations were observed in the optical microscope, such as cell formats, cell grouping (flocculated); and lower cell viability in T4 (50%) when compared to control (98%).However, due to the results obtained, it is necessary to ferment with each different morphotypes of yeast after exposure to selenite, and to observe the alteration in the fermentative yield and accumulation of selenium. In conclusion, the evolutionary adaptation of yeast cells when exposed to sodium selenite can promote morphological changes.

**Keywords:** sodium selenite, morphotypes, *Saccharomyces cerevisiae*, bioprocess.

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