EFFECT OF ALTERNATIVE NUTRIENT MEDIA ON BIOMASS AND ANTIOXIDANT STATUS OF *SACCHAROMYCES CEREVISIAE* STRAINS

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Background: *Saccharomyces cerevisiae* baker's yeasts represent a promising platform for bakery biotechnology, particularly when cultivated using nutrient media derived from wastes such as fruit and vegetable peels. These low-cost substrates can effectively support yeast growth and biomass production. Such approaches align with circular economy principles by converting waste materials into valuable microbial products with potential antioxidant properties. This highlights the relevance of baker's yeasts not only in baking, but also in sustainable biotechnology and functional food research.
The aim of this research was to evaluate the growth performance and bioprotective potential of *S. cerevisiae* yeasts isolated in pure culture from different artisanal bakery sourdoughs cultivated on natural nutrient media, obtained from agro-industrial wastes of carrot (CE), red beet (BE) and barley (BaE), as the single source of nutrition.
Materials and methods: Four *S. cerevisiae* strains were used in the study: *S. cerevisiae* 7P, isolated from artisanal sourdough prepared from rye flour (Ukraine); *S. cerevisiae* 10P, isolated from artisanal sourdough prepared from homemade rye flour (Ukraine); *S. cerevisiae* 9P, isolated from the commercial dried sourdough "O-Tentic-Durum" (Romania); and *S. cerevisiae* 11P, isolated from the commercial dried sourdough "4199 Spring Pane" (MILBO S.P.A., Italy). The studied strains cultivated on liquid YPD nutrient medium served as the control. Total antioxidant activity of biomass samples was determined using the spectrophotometric ABTS•+ radical cation method.
Results: It was established that the use of nutrient media based on CE, BE and BaE increases the biomass productivity of yeasts compared to the control medium. Thus, the biomass production of strains *S. cerevisiae* 7P, 9P, 10P and 11P on YPD medium constituted 4.73±0.23, 3.67±0.19, 3.72±0.31 and 4.28±0.15 g L^{-1} d.w., and on CE, BE and BaE media it was significantly ($P \leq 0.05$) higher by 52.34-89.25%, 66.12-134.04% and 95.35-119.89% depending on the strain. The use of the BE nutrient medium led to a significant increase ($P \leq 0.05$) of 154.06-202.38% in the total antioxidant activity of yeast biomass, whereas CE and BaE media exhibited less pronounced differences compared to the control medium.
Conclusions: Overall, nutrient media based on carrot, beet, and barley wastes are effective nutrient sources for the cultivation of baker's yeast and the accumulation of biomass with antioxidant potential.

Keywords: *Saccharomyces cerevisiae* yeasts, wastes, biomass, antioxidant activity

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