







EVALUATION OF YEAST STRAINS FOR BIOSTIMULANT POTENTIAL APPLICATIONS

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<https://doi.org/10.52757/bsd26.37>

Background: The intensification of global agricultural production in response to a rapidly growing population has led to extensive reliance on synthetic fertilizers and pesticides, which, despite their short-term agronomic efficacy, might caused significant long-term deterioration of soil health, disruption of native microbial communities, and accumulation of environmental pollutants. Microbial biostimulants, such as yeasts, serve as promising alternatives to chemical pesticides through mechanisms including competition, production of bioactive compounds, and induction of plant growth. According to recent data, yeasts are increasingly recognized as promising biostimulants due to their ability to enhance plant growth, improve nutrient uptake, and stimulate plant defense responses.

The aim of the present study was to select yeast strains belonging to the genera *Wickerhamomyces* (*Hansenula*), *Saccharomyces*, and *Lipomyces*, and to evaluate the biochemical composition of their biomass as a potential source of bioactive compounds and derived preparations with practical applications in sustainable agriculture.

Materials and methods: The screening of yeast strains was carried out using spectrophotometric methods, based on productivity indices, protein and carbohydrate content, total antioxidant activity, and the activity of the enzyme superoxide dismutase.

Results: As a result of the study, the yeast strain *Wickerhamomyces anomalus* CNMN-YS-07, demonstrating superior biomass accumulation (5.45 g/L) and high protein (48.22% dry weight) and carbohydrate (19.89% dry weight) content compared with the other investigated strains, was selected for further research. The enzymatic and antioxidant profiling of the yeast biomass revealed strong antioxidant activity in *W. anomalus* CNMN-YS-07 (62.36% ABTS radical scavenging), while superoxide dismutase activity reached 225.5 U/mg protein, exceeding that of strains from other genera.

Conclusions: The results obtained has demonstrated that the yeast strain *Wickerhamomyces anomalus* CNMN-YS-07 represents an promising biotechnological object with significant biocontrol potential. I

Keywords: yeast, screening, biostimulant, antioxidant activity

Acknowledgments: The research was supported by 020101 InBioS – “Innovative biotechnological solutions for agriculture, medicine and environment,” funded by the Ministry of Education and Research of the Republic of Moldova.