



Screening of yeast strains with biotechnological properties, isolated from traditional Romanian fermented foods

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Abstract:

Yeasts have high biotechnological potential being used for obtaining biocatalyst, biofuels, hormones, vaccines, for enhancement of desirable flavors of food and drinks, for biocontrol and bioremediation. In present, there is a growing interest for characterizing new yeast strains isolated from natural fermentative processes in order to enhance productivity in food industry. Also, the characterization of new yeast strains able to use a wide range of growth substrates is essential for production of different compounds such as enzymes that can be used as food additives. Before carrying out any tests for determination of biotechnological potential for food industry, it is recommended to evaluate the virulence and pathogenicity of the strains in order to eliminate any possible threat to human health. Our study deals with isolation and characterization of new yeast strains from traditional Romanian fermented foods. The strains were identified using conventional and molecular taxonomy tests (MALDI-ToF and PCR-RFLP) followed by screening tests for determination of virulence and pathogenicity factors. Also, we determined biomass accumulation under stress conditions induced by pH/temperature variations and different NaCl concentrations. The selected strains showing no threat to human health were subject to biodiversity studies and screening tests for lipase production and molasses assimilation. We isolated 10 yeast strains belonging to *Saccharomyces*, *Issatchenkia*, *Hansenula* and *Candida* genera. Most of our strains did not produce virulence and pathogenicity factors and showed good lipolytic activity when grown on tributiryn. Part of the strains showed good growth rates on molasses. Molasses (produced in large amounts in Romania) is a useful waste that can be used for lipids and biosurfactants production, for obtaining food additives and green pharmaceutical solvents. It is well known that during food production and processing, microbial strains used in different phases are exposed to physical treatments such as heat, osmotic shock and addition of chemicals that can influence pH values. More than 50% of the isolated strains have shown an increased ability to grow under stress conditions which recommends them for a wide range of applications in food industry. Our study allowed us to select new yeast strains with high biotechnological potential and limited human health impact. New research directions will be developed for determination of the mechanism of molasses assimilation and the improvement of its biotechnological potential.



Biography:

Viorica M. Corbu is a PhD student at University of Bucharest and she studies the biotechnological potential of yeasts. The PhD thesis involve a high range of conventional and modern molecular biology techniques aiming the identification and complex characterization of yeasts with applications in bioremediation, biocontrol and biomedicine, with high expected impact for the scientific community from Romania as well as at international level. She is always concerned to improve the techniques used in the Department of Genetics and for her PhD thesis: isolation of yeasts from microbial communities, metabolic profiling using screening tests for yeasts able to synthesize natural products, yeast genetic analysis and biodiversity studies. Although she is at the beginning of her career, Viorica M. Corbu is co-author for three ISI Thomson Reuters scientific articles (one as main author), seven IDB articles, main author for three oral presentations and co-author for fourteen participations at conferences.

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