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Thermostable catalase as an excellent supplement for growth media of industrially important lactic acid bacteria strains

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Lactic acid bacteria (LAB) are exceptionally important strains in food industry. It is a heterogeneous group of Gram-positive bacteria that are acid-resistant, generally non-sporing, microaerophilic bacilli or cocci which have the same metabolic and physiological properties including the ability to degrade carbohydrates and produce lactic acid. LAB include many genera, e. g. *Oenococcus*, *Sporolactobacillus*, *Teragenococcus*, *Vagococcus*, *Lactobacillus*, *Leuconostoc*, *Pediococcus*, *Lactococcus*, *Streptococcus*, *Aerococcus*, *Carnobacterium*, *Enterococcus* and *Weisella*. They are usually catalase-negative strains, which represents a big disadvantage in food production in comparison with pathogenic bacteria as staphylococci and listeria existing in the same environment, because one of the most used disinfection agent is hydrogen peroxide that is utilized by catalases. We focused on increase in LAB surviving through the disinfection using thermostable catalase (produced in our laboratory) in growth media. In our functional test 10 mM hydrogen peroxide was applied to bacteria and this suspension was cultivated for 60 minutes. 10 mM thermostable catalase AfKatG was added to solid media to cultivate bacteria afterwards. Our control samples were cultivated without catalase addition. As predicted there was no difference in the growth of pathogenic bacteria with or without catalase addition to media. However, we showed a huge positive effect on surviving LAB. With addition of catalase to solid media we gained 2-38 times higher number of surviving colonies than in control samples without catalase. We can assume catalase as an excellent supplement for growth media of food strains.

Biography

Eva Struharnanska has completed her Master degree in Biotechnology at the Comenius University in Bratislava, Faculty of Natural Sciences, Department of Molecular Biology in 2015. She has also completed her Master degree in Pharmacy at the Comenius University in Bratislava, Faculty of Pharmacy in 2017. She started her PhD studies in Biotechnology after graduation in 2015 at the same Department of Molecular Biology. The theme of her studies: New strategies in production of recombinant proteins; and she focuses on production and purification of a thermostable catalase.

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