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Enhanced Production of Nisin by Co-culture of Lactococcus Lactis Sub SP. Lactis and Yarrowia Lipolytica in Molasses Based Medium

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Abstract : Nisin is a commercial bacteriocin that is used as a food preservative and produced by Lactococcus lactis subsp. lactis. Nisin production through co-culture fermentation can be performed for increasing nisin quantities. Since lactate accumulation in the fermentation medium can prevent L. lactis growth and therefore reduce nisin production, the simultaneous culture of microorganisms can enhance L. lactis growth by a reduction in the amount of lactic acid. In this study, conducted coculture of L.lactis subsp. lactic and the yeast Yarrowia lipolytica. Both strains are cultured in a molasses-based medium that is mainly constructed of sucrose. Y. lipolytica is not able to use sucrose as a carbon source but is able to consume lactate and decrease lactic acid in the medium. So, Lactic acid consumption can increase pH value and stimulate L. lactis growth. The results showed the mixed culture increased L. lactis growth 6 times higher than that of pure culture and could enhance nisin activity by up to 40%.

Keywords : co-culture fermentation, lactococcus lactis subsp lactis, yarrowia lipolytica, nisin
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