

## 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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