

Enhancement of Growth and Bioactivities of Probiotic bacterium *Streptococcus thermophilus* as Influenced by Lactalbumin hydrolysate and Inulin Supplementation in Skimmed milk medium

Aparajitha¹, ShyamSundar¹, LalithaVaidyanathan^{1*}

¹Sri Ramachandra Medical College and Research Institute, Porur, Chennai-600 116

* Corresponding author e.mail: lalithav@sriramachandra.edu.in

From National Conference on Interdisciplinary Research and Innovations in Biosciences, NATCON -2018. Post Graduate & Research Department of Biochemistry, Mohamed Sathak College of Arts & Science, Sholinganallur, Chennai-600119, India. 24th & 25th January 2018.

American J of Bio-pharm Biochem and Life Sci 2018 January, Vol. 4 (Suppl 1): PP25

ABSTRACT

This article aims on the probiotic potential of *Streptococcus thermophilus* by studying the effect of supplementation in the production medium on growth and the bioactivity profile under different conditions. The different parameters taken into consideration were specific growth rate, yield coefficient, anti-oxidant, anti-adhesive and anti-pathogenic activities, anti-biotic and drug resistance and acid pH tolerance. *S. thermophilus* is a probiotic treatment not only for gut microbial diseases but also for its effects on nasal canal and skin as a topical probiotic, by release of biosurfactants which provide anti-adhesive property against several bacterial and fungal species. Inulin, which belongs to the class of fructans is one of the commonly used prebiotics. *S. thermophilus* NCDC 74 was exposed to three media formulations such as enriched milk medium of skimmed milk powder (SKM) and two synthetic media of two carbon sources, of which SKM showed maximum growth. Inulin and Lactalbumin hydrolysate showed increase in both specific growth rate and yield coefficient. The biosurfactant released, lead to increase in anti-adhesive property not only in gut but also inflammatory and other infections in lungs. At decreased pH it showed high anti-microbial activity and much resistance to many anti-biotic and anti-fungal drugs when exposed. The pH tolerance potential increased exponentially and it showed huge probiotic potential properties at pH 2-4. One of the promising approaches is the encapsulation techniques to prevent bacteria in human gut. These results may be scaled up for industrial scale production of *S. thermophilus* with increased bioactivity resulting in an efficient strain production.