

## Production of Buttermilk as a Bio-Active Functional Food by Utilizing Dairy Waste

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**Abstract :** Galactooligosaccharide (GOS) is a type of prebiotic which is mainly found in human milk. GOS belongs to those bacteria which stimulates the growth of beneficial bacteria in human intestines. The aim of the present study was to develop a value-added product by producing prebiotic (GOS) in buttermilk through trans galactosylation. Buttermilk is considered as an industrial waste which is discarded after the production of butter and cream. It contains protein, minerals, vitamins and a smaller amount of fat. Raw milk was pasteurized at 100° C for butter production and then trans galactosylation process was induced in the butter milk thus obtained to produce prebiotic GOS. Results showed that the enzyme (which was obtained from bacterial strain of *Escherichia coli* and has a gene of *Lactobacillus reuteri* L103) concentration between 400-600µl/5ml can produce GOS in 30 minutes. Chemical analysis and sensory evaluation of plain and GOS containing buttermilk showed no remarkable difference in their composition. Furthermore, the shelf-life study showed that there was non-significant ( $P>0.05$ ) difference in glass and pouch packaging of buttermilk. Buttermilk in pouch packaging maintained its stability for 6 days without the addition of preservatives. Therefore it is recommended that GOS enriched buttermilk which is generally considered as a processing waste in dairy manufacturing can be turned into a cost-effective nutritional functional food product. This will not only enhance the production efficiency of butter processing but also will create a new market opportunity for dairy manufacturers all over the world.

**Keywords :** buttermilk, galactooligosaccharide, shelf Life, transgalactosylation

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