

**BIOCHEMICAL AND PHYSIOLOGICAL CHARACTERIZATION OF
LACTOBACILLUS SPP. ISOLATED FROM CURD
(‘MEEKIRI’ AND ‘DEEKIRI’)**

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Lactic acid bacteria have a widespread use in the fermented milk production as starter cultures and strongly determine flavor, texture and nutritional value of the fermented products. In Sri Lanka, curd is one of the oldest fermented milk product providing several health benefits and is prepared both under household and commercial conditions. The diversity and probiotic potential of *Lactobacillus* spp. available in Sri Lankan curd has not been studied yet. This study is carried out to isolate different *Lactobacillus* spp. available in curd prepared in different parts of Sri Lanka and to investigate several biochemical and physiological properties which are important in deciding the potential of these isolates to be used in commercial fermentation processes.

Isolation and purification of *Lactobacillus* was done using 50 curd samples covering different regions of the country obtained through convenient sampling. The *Lactobacillus* spp. present in curd were isolated by plating a homogenized curd suspension in de Man Rogosa and Sharpe agar until a pure cultures were obtained. The isolates were identified as belonging to the genus *Lactobacillus* by considering the results of Gram stain, catalase test, motility test and endospore staining. Biochemical characterization of the isolates were done by performing Voges –Proskauer (VP) test, Hydrogen Sulfide (H₂S) production, Hugh and Leifson's oxidation fermentation test. The ability of the isolates to produce carbon dioxide from glucose and their carbohydrate utilization patterns using 10 different carbohydrates were also evaluated. Under physiological characterization, the ability of the isolates to grow at different Sodium Chloride (NaCl) levels (2, 4, 6.5 %) and temperature levels (5, 10, 15, 45 °C) were investigated

Thirty nine *Lactobacillus* isolates were obtained with four different colony morphologies and four Gram stain morphologies. All isolates showed negative results for H₂S production and VP test with fermentative sugar utilization pattern. Eighty percent of the isolates demonstrated characteristics belonging to *Lactobacillus* group III (betabacteria), 15 % exhibit the characteristics of *Lactobacillus* group II (Sterptobacteria) while 5 % showed uniqueness with *Lactobacillus* group I (thermobacteria). Thermobacteria are usually used as commercial dairy starter cultures and betabacteria are commonly found in fermented vegetable and dairy products which can be incorporated in to curd through the raw materials used. Fifty percent of the isolates showed an ability to grow at 2 % NaCl Lactobacilli need to withstand varying pH , salt and temperature conditions as they are used as starter cultures in different food fermentation processes. An enhanced salt resistance is important in using *Lactobacillus* spp for fish, vegetable and shrimp waste fermentation. Molecular identification methods are needed to identify the isolates in to species level which will be carried out in future research.