Title : Isolation and Prebiotic Characterization of Exopolysaccharide Produced from *Limosilatobacillus fermentum*

Author(s) : **1.** Intiranee Suwanrueng **Student ID :** 650510130

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Advisor(s) : **1.** Associate Professor Dr.Apinun Kanpiengjai

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ABSTRACT

Prebiotics are non-digestible food ingredients that resist absorption in the gastrointestinal tract but beneficially affect the host by balancing the microbiota within the large intestine, and activity of beneficial microbiota in the colon, thereby improving host's digestive health. Besides prebiotic oligosaccharides, exopolysaccharides (EPS) are alternative potential prebiotics. Lactic acid bacteria are the major EPS-producing microorganisms which play a role in the manufacturing of fermented food products. *Limosilatobacillus* (*L.*) *fermentum* FS 15.2 has been previously characterized as a probiotic lactic acid bacterium. It produces a viscous broth, thereby being presumptively assumed as EPS, when grown in the deMan Rogosa and Sharpe (MRS) medium. This research aimed to isolate and characterize exopolysaccharides (EPS) produced from *L.* fermentum, as a prebiotic. Preliminarily, *L. fermentum* FS 15.2 was grown in MRS broth containing 50 g/L of glucose. After 48 h of cultivation, culture supernatant was harvested for further precipitation and isolation of EPS using absolute ethanol. The EPS yield was recorded at 45.71 mg/50 mL culture as determined by the phenol-sulfuric acid method. It was found that MRS broth containing 50 g/L of sucrose and 1% NaCl was found as an optimal medium for EPS production. *Limosilatobacillus fermentum* FS15.2 produced the highest EPS content of 126.78 mg/50 mL culture at 48 h of cultivation. The extracted EPS showed high resistance to simulated gastrointestinal digestion as its residual EPS ranging from 96–97% and 87–88% were retained after the simulated gastric and intestinal condition, respectively. In addition, this EPS was partially fermentable by eight strains of probiotic lactic acid bacteria. In summary, EPS possesses primary properties of prebiotics however, other properties are recommended to further explore.

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