Title : Efficacy of *Stevia rebaudiana* extracts for promoting the growth of probiotic microorganisms

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Major : Microbiology

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ABSTRACT

Stevia rebaudiana, or stevia, is a plant with many applications in the food industry. Because its phytochemical compounds that do not provide energy and are sweeter than glucose. Stevia is widely utilized as a sugar substitute by health-conscious individuals and diabetic patients. Stevia has been extensively studied, including research on its antioxidants, anti-cancer, and anti-microbial properties. Additionally, stevia has been found to promote the growth of beneficial bacteria in the intestines. This research was extracted the stevia with two types of solvents including sterile distilled water and 70% ethanol and sonication in 60°C for 60 min. The highest yield was stevia aqueous extract of 35.10%. Moreover, the total sugar was determined using the phenol sulfuric method, it was found that stevia ethanol extract had the highest sugar content equal to 3.412 mg/g extract. Thus, stevia ethanol extract and stevioside compound were used in the study for promoting the growth of probiotic microorganisms such as *Lactobacillus casei, L. plantarum* and *Streptomyces viridobrunneus*. The sub-MBC concentrations of stevia ethanol extract and stevioside were selected from the lowest concentration of MIC and MBC for testing. The stimulation of the growth of probiotic bacteria by stevia ethanol extract and stevioside was counted the bacteria at 0, 24, and 48 hrs by dilution drop plate technique. It was observed that after 24 hrs, *L. casei* treated with stevia extract at a concentration of 0.49 mg/mL, and *L. plantarum* treated with stevioside at a concentration of 0.25 mg/mL, exhibited significantly higher bacterial growth compared to the control (p = 0.004). Moreover, *L. casei* treatment with stevioside at 0.49 mg/mL was demonstrated significantly promoting the growth of bacteria compared to the control after 48 hrs (p = 0.003). However, neither stevia extract nor the stevioside compound stimulated the growth of *S. viridobrunneus*. Therefore, stevia extract and stevioside compound exhibited a notable ability to promote the growth of *L. casei* and *L. plantarum*.

Keywords: *Stevia rebaudiana*, Stevioside, Prebiotics, Probiotics