

Title: Isolation and Characterisation of Potential Probiotic Microorganisms from Kefir

Author(s): Mr. Surachai Khorkamphon

Student ID: 640510302

Major: Microbiology

Advisor(s): Assistant Professor Dr. Thararat Chitov

Type of presentation

- Oral Presentation
- Poster
- Cooperative Education

ABSTRACT

Kefir is a fermented dairy product produced using kefir grains, which contain a variety of microorganisms, some of which have probiotic potential. However, studies on kefir microorganisms remains limited, despite their potential advantages. This study investigates and characterises the microbial species present in kefir grains, evaluates their probiotic potential, and determines the antioxidant activity of kefir. Lactic acid bacteria, acetic acid bacteria, and yeasts were isolated from kefir grains cultured in cow's milk using de Man-Rogosa Sharpe-cysteine-bromophenol blue agar, acetic acid bacteria selective agar, and dichloran rose Bengal chloramphenicol agar, respectively. The bacterial and yeast isolates were identified through their 16S *rRNA* and *its* sequences, respectively. The probiotic potential was evaluated by examining tolerance to acidic pH (pH 2.0) and bile salts (0.4%). The antioxidant activity of kefir supernatant was also assessed. The results showed that microorganisms isolated from kefir grains include *Lentilactobacillus kefiri*, *Lactocaseibacillus paracasei*, *Leuconostoc mesenteroides*, *Pichia fermentans*, *Saccharomyces cerevisiae*, and *Kluyveromyces marxianus*. The isolates exhibited acid tolerance with survival rates ranging from 65.4% to 100% and demonstrated bile tolerance with survival rates between 50.3% to 100%. Kefir supernatant demonstrated antioxidant activity, inhibiting free radical formation by 8.297%, which corresponds to 0.16 TEAC/mg relative to the standard Trolox. In conclusion, kefir represents a significant source of beneficial lactic acid bacteria and yeasts with probiotic potential, as well as serving as an antioxidant source.

Keywords: Kefir, Beneficial microorganisms, Probiotics, Fermented milk