

Abstract

Multiple studies have demonstrated the health benefits of flaxseed products containing bioactive compounds such as (SDG). It was claimed that grinding, soaking, or roasting seeds might enhance the bioavailability of active compounds. On the other hand, cereal fermentation may increase this bioavailability. This study aims to enhance the bioavailability of SDG in flaxseed milk.

Flaxseeds were reconstituted in distilled water with 5% (W/V) for 15 minutes. The mixture was filtered to produce flaxseed milk (control). Flaxseed milk was autoclaved before culturing with *L. casei* or *B. bifidum*. Treatment of Flaxseed before milk preparation was used as follows: soaking at room temperature or boiled water for 4 hours. Roasting of Flaxseed at 120 or 150 ° C for 30 min. Changes in SDG for control, treated uncultured, and cultured flaxseed milk was monitored using HPLC. Furthermore, cultured flaxseed milk was subject to sensory evaluation.

Results showed that Flaxseed milk (5% w/v) contained 220 and 18.9 mg/ml of carbohydrate and protein respectively. Probiotics were able to grow on the milk with the best cell count after 25 h of incubation reaching log 7 and log 7.23 for *B. bifidum* and *L. casei*, respectively. Several peaks in the chromatograph raised by *B. bifidum* were more than those produced by *L. casei*. However, both probiotics didn't change the percentage of SDG significantly. When *B. bifidum* was introduced to roasted whole flaxseed, several HPLC peaks were generated, which may have been induced by high temperature or bacterial activity. Additionally, SDG or its metabolites were slightly elevated. The best conditions that favored the production of SDG were soaking whole seeds for 4 h at room temperature and then culturing the milk by *L. casei*.

This study emphasised the significance of combining physical treatment and fermentation of flaxseed to achieve larger levels of active compounds.