

Comparison between functional and microbial properties of milk and sugary kefir

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【Objective】

Kefir is an ancient fermented beverage produced by kefir grains, which includes lactic acid bacteria, acetic acid bacteria and yeasts. Several health-promoting properties have been associated with kefir consumption. The aim of this work was to compare the different functional and microbial composition between cow's milk and brown sugar kefir.

【Materials and Methods】

Kefir grains (10% w/v) were cultured in cow's milk and brown sugar (4.9° Brix) at 25 °C for 24 h. After fermentation, grains were removed by a sieve. From fermented products, samples were taken for microbial analysis. Then, fermented products were centrifuged, filtered and used for several functional analyses (ACE inhibitory, antioxidant and antibacterial activities).

【Results】

ACE inhibitory and antibacterial activities improved after fermentation. Unfermented cow's milk showed the weakest ACE inhibitory activity in all samples. However, fermented milk showed even stronger activity than brown sugar kefir. Unfermented substrates were suitable media for *E. coli*, *S. Typhimurium*, and *S. aureus* (except brown sugar for *S. aureus*). After fermentation, no growth of any pathogen was observed. Regarding antioxidant activity, contrary results were observed. Cow's milk enhanced this property by kefir grains fermentation (1.40 mM Eq Trolox/mL). However, brown sugar kefir showed an opposite behavior by kefir fermentation, although brown sugar showed higher inherent activity (6.51 mM Eq Trolox/mL). As for microbial composition, fermented cow's milk was dominated by *Lactococcus lactis*, *Acetobacter lovaniensis*, *Saccharomyces unisporus* and *Galactomyces candidus*, whereas in fermented brown sugar, *Lactobacillus nagelii*, *A. lovaniensis*, *Saccharomyces cerevisiae* and *Brettanomyces bruxellensis* were the main populations.

【Conclusions】

Kefir presented different function and microbial composition depending on grain type (sugar or milk). Milk kefir showed better ACE inhibitory activity and lower antioxidant activity than sugar kefir.