



Research article

## Probiotic Millet-Milk beverage Supplemented with Date Powder: A novel Functional Beverage

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Received on: 06/01/2021, Revised on: 11/01/2021, Accepted on: 15/01/2021, Published on: 01/04/2021.

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**Keywords:** Functional beverage, Probiotic, Millet extract, Dates powder, Biological activities, Mineral absorption.

Vol. 8 (2): 10-22, Apr-Jun, 2021.

### Abstract

Bioavailability's of nutrients are the major concern rather than the supply of an adequate amount of nutrients in the diet. To increase mineral absorption, aqueous millet seed extract (MSE) and date powder were evaluated with or without milk and probiotics as functional beverages. Based on preliminary study, MSE with 7% date powder was prepared as a control beverage (C1). MSE in C1 was replaced by milk (1:1) to create C2. A part of C1 and C2 were inoculated with 1% probiotic bacteria, incubated at 37°C for 24 h to create probiotic T1, T2, beverages. Chemical, rheological, and sensory properties, as well as probiotic viability and biological activities were measured. Both C2 and T2 characterized by high solids, protein, carbohydrates, ash, and fibers, as well as exhibited a higher scavenging activity. During storage, T2 showed the highest viable count of probiotic bacteria (8.64 log<sub>10</sub> cfu/mL), acidity (1.2%) and viscosity (140.6mPa.s). Biologically, rats fed on C1 beverages had no significant effect on body weight gain, liver and kidney weight, and glucose content in plasma. However, the feeding on C2, T1 and T2 raised both calcium and iron content in plasma, as well as total antioxidant capacity and catalase increased, but malondialdehyde decreased. Both calcium and phosphorus concentrations in Tibia were the highest in rats fed on T1 and T2 beverages. The novel beverage can be used to produce a functional beverage, helps in the absorption of minerals, an increase bone density, and increases the antioxidant system in the body.