

ORIGINAL ARTICLE

The Effect of Jujube Fruit Flour on Physical, Chemical, Sensory and Microbial Properties of Biscuits

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ABSTRACT

Background: Due to the nutritional and functional qualities, jujube fruits are a good functional food to be used to augment other diets for individuals with malnutrition conditions including anemic patients, pregnant women, and children. This study evaluated the microbiological, chemical, sensory, and physical characteristics of biscuits enriched with jujube.

Methods: The traditional method was utilized to produce four biscuit samples with some modifications in the ratios of jujube powder, wheat flour and the addition of ground sugar, vegan butter, salt, and dry milk. The biscuits were analyzed for their physicochemical properties, sensory assessment, and microbiological analysis including total bacterial count, coliform bacteria, yeasts, and molds.

Results: The moisture, ash, protein, fat, carbohydrates, and energy were 9.40%, 2.43%, 5.28%, 1.648%, 1.25%, and 360.88 Kcal, respectively. The diffusion coefficient increased from 5.4% to 7.6%. A decrease in the total bacterial count from 14×10^4 in the control sample reached to 30, 54, and 60×10^3 when jujube powder was added at concentrations of 0.5, 1.5, and 3%.

Conclusion: Textural characteristics and sensory quality of biscuits were acceptable when enriched with jujube powder. A maximum of 3% jujube powder was considered desirable to have the best quality for biscuits.

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Introduction

The jujube (*Ziziphus jujuba*) is a member of the Rhamnaceae family of the genus *Ziziphus* which has over 50 species and is one of the most significant recognized species in temperate parts of the globe. As it is native to China, it is also known as Chinese jujube, Chinese dates, or poor man's fruit. Its cultivation goes back to about 4000 BC in the Mediterranean nations, and it was expanded from China through other regions in Asia, North Africa,

Southern Europe, Australia, and South and North America (1, 2). It is high in essential functional components like as phenols and flavonoids. Flavonoids are a kind of chemical found in a broad range of plants. The flavonoid-rich plant extracts were shown to be beneficial in treatment of anemia (3-6). They can activate many biological activities in the body, inhibit cancer spread, decrease neuronal dysfunction, control the immune system, and lower triglycerides in the blood (7, 8).