


Study of The Bioactivity and Antioxidant Activity of Dried Fig Puree and Its Effect on The Shelf Life of Ice Cream

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Abstract

Dried figs were mashed, to assess the DPPH radical scavenging capacity, at concentrations of 0, 5, 10, and 15 mg/ml, comparison with 5 mg/ml ascorbic acid. Ice cream was made and supplemented with dried fig puree, at four replacement ratios (0, 1, 3, and 6%) symbol by T0, T1, T2, and T3 respectively. Physical and sensory tests were performed after 0, 3, 7, and 10 days.

The solubility of the dried fig puree extract ranged from 85.97-42.51%, pH value (6.33-5.06%), the acidity value (0.14-0.27%), the spread ability (15.11-11.26%), the solubility (35.25-26.32%), the taste (19.39-13.02%), the aroma (18.35-12.01%), and the overall acceptability (19.35-11.09%).

The active compounds of the aqueous and alcoholic dried fig extracts were identified by GC-MS, using an Agilent Technologies 7890B GC system, the aqueous extract yielded 10.172, 16.119, and 26.3148% area percentages, respectively, for the compounds 4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl-, 8-(2-Phenylethyl)-1-oxa-3,8-diazaspiro[4,5]decan-2-one, and methane-diethoxy, while the alcoholic extract yielded 6.931% area percentages, 11.002% area percentages, and 11.0542% area percentages, for the compounds Dimethyl 2,5-thiophenedicarboxylate, Dimethyl 2,5-Methyl-5-fluorouracil, and 1,3,5,7-Tetroxane. This indicates that adding dried plant extracts to ice cream, led to improved composition and physicochemical, biological, and sensory properties.

Keywords: DPPH, Ferrous ion, GC-MS, pH, Titratable acidity.

I. Introduction

Fresh fruits contain biological compounds, such as antioxidants called flavonoids and carotenoids, that shield the body from the harmful effects of free radicals, which can cause chronic illnesses and early aging (Yulianto et al., 2024). Dried fruits are filled with essential vitamins, minerals, fiber and antioxidants that support general health and improve physical function (Murawska et al., 2023). Innovative drying techniques have been introduced to quickly address fruit problems and create nutritious products that are long and durable. These methods focus on extracting water and concentrating it on essential nutrients (Salvadoetal., 2020). An important feature of dried fruits is its high nutritional content. They are many vitamins, minerals, carbohydrates, fiber and antioxidants (Alasalvar et al., 2020). The fibers found in dried fruits can support digestion by improving intestinal movement and reducing the risk of constipation (Stojanovska et al., 2023). According to Zhang et al. (2023), dried fruits are loaded with beneficial vitamins such as retinol and ascorbic acid, along with minerals such as potassium, magnesium and iron that promote all heart, bone and eye health and strengthen the immune system.

According to Debib and Menadi (2023), dry figs play an important role in improving bone and dental health, regulating blood pressure, and promoting metabolism. Furthermore, the fibers determined in these figures. 1 and 2 help to relieve constipation and symptoms of irritable bowel syndrome and treat digestion by improving overall colon health (Gençdağetal., 2021). Furthermore, the presence of flavonoids and phenolic compounds in dried fruits helps to combat free radicals and reduces oxidative damage to cells (Sandhu et al., 2023). According to Samaras et al. (2019) represent