

## Utilization of mucilage extracted from Mallows leaves to improve the qualitative properties of free-gluten cake.

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### Abstract:

The outcomes demonstrated that cakes made with 1 and 1.5% mallow mucilage MM , cakes with 1% mallow mucilage (MM) replaced had a larger volume and specific volume compared to the control, based on all of these findings MM would be a good choice to enhance cake-free gluten quality,. The results demonstrated that cakes made from 1% MM had a larger and specific volume as compared with control cake. Based on findings, the MM cake sample would be a good choice to enhance the free -gluten cake quality. The physical properties such as pH, swelling capacity , water-holding capacity, and solubility were characterized for mallow mucilage. In addition, this mucilage has been characterized using a variety of physico-chemical techniques including fourier transform infrared spectroscopy and thermal stability using thermogravimetry (TGA) technique. Based on the FT-IR spectra, the main functional groups are (3400.50  $\text{cm}^{-1}$  OH) , 1624.06  $\text{cm}^{-1}$  C=O), (1413.82  $\text{cm}^{-1}$  COO) whereas the TGA recorded the most mass loss between 260°C and 548°C, thermogravimetry research revealed that Mucilage exhibited two-stages of breakdown process with good heat stability. Nevertheless, substitution levels of 1 and 1.5% led to greatest physical characteristics,

**Keywords:** Mucilage, FT-IR , Physical characteristics , Cake free gluten, Thermogravimetry .

### Introduction

Many researchers have worked hard to manufacture gluten-free (GF) product. The free-gluten products were very important those who have gluten sensitivity or celiac disease[2]. Therefore, a lot of researchers were keen to find new materials to replace wheat flour which was rich of gluten.

Mucilages are sticky, gummy and high molecular weight compounds that disperse in water. Organic solvents can cause the mucilage dispersion to precipitate as a granular or amorphous material[6]. [8] state that the components of mucilage include acid-resistant nuclei that can be hydrolyzed by enzymes, as

well as arabinose, galactose, mannose, xylose and uronic acids.

The genus *Malva* L., or marshmallow, belongs to the Malvaceae Juss. family, which also contains a number of hybrid species. There are herbaceous annual, biennial, and perennial species in this genus that are indigenous to parts of Asia, Europe, and Africa . *Malva* species are rich in polysaccharides, vitamin A, malvin, flavonoids, terpenoids, and mucilage. For this reason, the entire herb as well as its leaves, blossoms, roots, and seeds were utilized in horticulture, traditional phytotherapy and the functional food business. The *Malva* genus contains mucilage as one of its main ingredients because of the existence