

**IMPROVEMENT OF BREAD CRUMB STRUCTURE
USING CINNAMON LEAVES EXTRACT ALONG WITH
FUNCTIONAL PROPERTIES**

(Cinnamomum verum)

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ABSTRACT

Bread is a popular food product across the whole cross profile of the society. This study was carried out to produce bread with a soft crumb structure along with well leavened bread mass for the competitive and dynamic market. Every ingredient used in bread making has a function that causes improved bread quality. Physical properties of certain types of polysaccharides in cinnamon leaves can be applied as gums and mucilage. To select the best growth stage of cinnamon leaves for extraction of mucilaginous material, the strength of the gum obtained from each maturity stage of leaves was measured as viscosity. In viscosity evaluation, fully matured leaves resulted in the best gum-forming ability as 9 centipoises. In prevention of enzymatic browning reaction of cinnamon leaves, gum extracted was subjected to three treatments as steam blanching process in 5 minutes, treatment with vitamin C and both together. A Pantone color chart was used to identify the least color occurrence. The lightest Pantone color number 471 was observed in the treatment subjected to both heat treatment and vitamin C application. When selecting the best drying method to preserve the gum-forming ability of cinnamon leaves, cooling with dehumidifying resulted in the highest viscosity as 9 centipoises. To determine the influence of cinnamon extract on the leavening process and leavening time with four variables such as, Magnitude of leavening agent, sugar content, plant extract, and leavening time, at two levels (low and high) a two-factor factorial design was used. The best treatments were selected in terms of less leavening time to reach leavening index 2. Incorporation of the best treatments into commercial-scale bread manufacturing, the prepared bread resulted in 40% moisture content, 0.13 and 0.14 of bulk density and 5.23, 5.31 in pH values. In sensory evaluation, the appearance of the bread and fragrance of the bread were highly accepted in cinnamon-incorporated bread comparatively to ordinary bread.

KEYWORDS: pantone color chart, steam blanching, cooling with dehumidifying, leavening time, leavening index