

CHAPTER 1

INTRODUCTION

1.1 Overview

Food is the primary need of man. Its requirement is based on both quantity and quality. The provision of abundance quality food has become a global challenge due to the alarming growth rate in population, urbanization, sedentary lifestyle, and modern food habits. In recent years, there has been an increase in food industries and food products and the most growing industries are the ready-to-eat (RTE) food making industries.

RTEs are food supplies by manufacturer for direct consumption and do not require further processing. RTE are consumed by all age groups as snacks and main meal in any part of the day. RTE products include bread and biscuits, chips, cereal bars, and of which bread is the most common.

Bread is a fermented confectionery convenient ready-to-eat baked product of flour. Flour is a milled product of cereals. The nutrient components of cereals play greater role in its end usage. One of the most important and popular cereal grain is wheat (*Triticum aestivum*). This is due to its agronomic adaptability, ease of grain storage and ease of converting grain into flour for making edible, palatable, interesting and satisfying foods. It was rated as the most valuable food and export commodity in USA (Fitzgerald et al, 2014;

Tilley et al, 2012). Wheat flour has been the preferred ingredient for bread and some other products because of its unique pleasant flavour and gluten-forming characteristics. The baking potential of wheat flour is affected majorly by protein content (Baslar and Ertugay, 2011) and protein quality is influenced by wheat genotype (A-Saleh and Brennan, 2012), hence different types of wheat flour exist with differing quality. This has led artisans and professional bakers to engage in modification of available raw materials for the processing to obtain the desired bread quality (Ndife et al, 2013). Process modification is impossible in the commercial bakery because production line equipment set to produce large volumes of products at a high production rate does not allow compensation for undesirable parameters.

In order to reduce wastage of the product, bread improver has been introduced to modern day automated bakeries. An in depth understanding of bread making factor is essential and progress should continue in several aspects to improve the technological and nutritional quality of bread (Campbell et al, 2012; Sasano et al. 2013; Selomulyo and Zhou, 2007). Researchers have worked tremendously on bread, there were several studies on composite bread production (Malomo et al, 2011; Shittu et al, 2007), wheat varieties, gluten and protein quality of wheat (Baslar and Ertugay, 2011).

Virtually, all authors reported using improver in their formulation, but few authors were reported to study the effect of improver on bread quality. Research intervention on the improver because of its numerous usage is a worthwhile project (Selomulyo and Zhou, 2007). Umelo et al, (2014) in a recent study presented ascorbic acid and eggs as an alternative to potassium bromate in improvement of bread functionalities. Another study

by Ali and Halim (2013) used natural formulated improver consisting of enzymes and emulsifier to compensate for sesame flour characteristic in composite bread.

Another recent study reported the suitability of enzyme from fresh pasta by-product as a bread improver (Ellouzi et al, 2014). Oliveira et al, (2014) revealed that enzyme cocktail produced by *Thermoascus aurantiacus* CBMAI 756 improved the properties of the bread obtained and retarded staling. In a previous investigation conducted by Mouliney et al (2011), they compared the performance of wheat durum and fat as bread improvers. It was revealed that their impacts as improver are not the same. Sensory properties such as texture benefit in the usage of improver (Selomulyo and Zhou, 2007).

Many other studies have been reported on bread production using chemical additives or enzyme as improver of bread with a certain degree of success in one way or another. The fact that a particular improver cannot solve all possible problems that can emanate from bread production led to the development of commercial bread improver (CBI).

CBI consists of different additives combined to have a synergistic effect on flour and bread. There was no record of published research that studied the effect of commercial improver on bread production. The purpose of this study, therefore, was to ascertain the physicochemical and sensory quality as relate to the impact of commercial improvers on the regularly consumed white bread in order to improve the prospect of bakery industries.

1.2 Research Problem

- The selection of bread improvers to obtain a premium product still demands further research.
- The product quality varies based on the improver employed by the baker.
- The improver reaction on bread is still an open question.

1.3 Objectives

The broad aim of this study was to examine the physicochemical properties of bread produced from high gluten flour and all-purpose flour using three brands of commercial bread improvers.

The objectives of this study are:

1. To evaluate quality of bread in the presence of different brands of commercial improver.
2. To compare quality of bread from medium and high protein content flour.
3. To assess bread making and sensory qualities of bread produced from Autolyse technique of mixing using different brands of commercial improver.
4. To ascertain the acceptability of different samples of bread produced via sensorial evaluation.

1.4 Research Scope

1. This study is limited to three selected improvers: Nona, Kijang and YTS.
2. The flours tested in this study were high gluten and all-purpose flour.
3. Physicochemical features and sensory attributes of bread samples were investigated.

1.5 Research Hypothesis

Many types of bread improvers exist in the market, with differing quality performance based on types of flour used. Selection of effective bread improver is a concern for domestic and commercial bakers. It was hypothesized that physicochemical features of white bread dictate the effective improver.

1.6 Organization of the Thesis

This thesis comprises six chapters. A comprehensive literature review is furnished in Chapter 2; it highlights the background of the study following by a thorough review of literatures to answer the hypotheses. Chapter 3 tested the effectiveness and important of commercial improver on bread characteristics. Chapter 4 highlights the effect of improver on bread from flour of different quality. Chapter 5 provides an experimental investigation on improver usage on bread production with processing methods mainly the autolyse and straight dough technique of mixing. Chapter 6 summarizes the major findings of this thesis along with further recommendations.