

CHAPTER I

INTRODUCTION

1.1 Background of the Study

Obesity is an increasingly alarming global health crisis. Since 1980, the prevalence of obesity has nearly doubled, with more than 650 million adults classified as obese in 2016 (Mushtahid Salam et al., 2023). Obesity is defined as excessive body fat accumulation, indicated by a body mass index (BMI) ≥ 30 kg/m², and is associated with an increased risk of chronic diseases such as type 2 diabetes, cardiovascular disease, and certain types of cancer (Wharton et al., 2020). Furthermore, obesity imposes a significant economic burden, as evidenced in the United Kingdom, where the estimated cost ranges between £3.3 and £3.7 billion (Tahir Omer, 2020). Therefore, a comprehensive approach is needed, involving both individual and community-level interventions, including innovations in food products that support healthier dietary patterns.

One of the behavioral factors contributing to obesity is snacking. Although not all studies show a direct association between snacking frequency and weight gain, several longitudinal studies have revealed a positive correlation between discretionary snack intake and weight gain over time (Cooke et al., 2024). Particularly, late-night snacking, snacking in unhealthy environments, and eating snacks primarily for pleasure are linked to poorer diet quality and a higher risk of obesity (Prapkree & Palacios, 2023). The widespread availability of high-sugar, low-fiber snacks, combined with limited nutrition knowledge, further exacerbates this issue (Somavarapu & Jagadeeswari, 2020). Thus, developing healthy snacks that are high in fiber, low in glycemic index, and made from natural ingredients becomes a strategic step in reducing obesity risk through dietary behavior modification.

Sukkari dates are nutrient-dense fruits containing natural sugars such as glucose and fructose, and are rich in minerals including potassium, magnesium, and calcium (Zhang et al., 2015; Siddeeg et al., 2018). Their phenolic and flavonoid compounds contribute to strong antioxidant activity. Studies have

shown that date seed extract exhibits antidiabetic and hypolipidemic effects in animal models (Hasan & Mohieldein, 2016). Dates have also been successfully incorporated into food formulations such as protein bars, resulting in products with higher fiber and ash content and favorable sensory acceptance (Alfheeaaid et al., 2023). On the other hand, oats also play a crucial role in managing metabolic syndrome. Oat consumption has been proven to lower blood cholesterol, improve glycemic control, and enhance satiety in overweight and obese individuals (Janda et al., 2019; El Shebini et al., 2015). Reformulated oat-based snack products have demonstrated lower glycemic indices and support better energy intake regulation (Yan et al., 2020; Li et al., 2023).

Considering these challenges and scientific findings, the development of oat-date-based biscuits emerges as a promising alternative solution. The combination of these two natural ingredients offers a nutritional synergy that is not only low in added sugars and high in fiber but also delivers metabolic benefits supportive of obesity management. This innovation is expected to meet the growing public demand for healthy, enjoyable, and functional snacks as part of a better lifestyle.

1.2 Objectives of the Study

The objectives of this study are following below:

1. To develop biscuits made from dates and oats as a healthy, low-sugar snack by utilizing the natural sweetness of dates.
2. To analyze market opportunities and production costs to determine whether these biscuits can be an attractive and profitable product.
3. To analyze the nutritional value, shelf life, and packaging of the biscuits to ensure product quality that meets health standards and consumer preferences.