

CHAPTER I

INTRODUCTION

1.1 Background of the Study

In recent years, there has been a growing consumer demand for healthier snack options that cater to specific dietary needs, such as sugar-free and gluten-free products. This trend is driven by increasing awareness about health issues including diabetes, gluten intolerance, and the general pursuit of wellness through natural and functional foods. Processed snacks often contain high amounts of refined sugars and gluten, which can negatively impact individuals with metabolic disorders or sensitivities (Smith et al., 2021). As a healthier alternative, snacks made with natural, sugar-free, and gluten-free ingredients such as banana and dates can offer nutritional benefits while being safer for those with dietary restrictions.

Bananas and dates are widely recognized for their substantial nutritional benefits and are frequently used as natural ingredients in health-oriented food formulations. Bananas (*Musa acuminata*) are particularly valued for its high content of dietary fiber, especially soluble fiber like pectin, which aids in regulating blood sugar levels and improving digestive function. Additionally, bananas are an excellent source of potassium, a key mineral involved in maintaining fluid balance, nerve function, and normal blood pressure. It also contain significant levels of vitamin B6, which supports brain development and immune function, as well as vitamin C, an antioxidant that contributes to skin health and cellular repair (USDA, 2023).

Dates serve as a natural sweetener due to their high levels of natural sugars such as fructose and glucose. Yet, despite their sweetness, most varieties of dates exhibit a low to moderate glycemic index (GI between approximately 42–60) when consumed in moderation, making them a healthier alternative to refined sugar (AlGeffari et al., 2021; Meenakshi et al., 2023). Nutritionally, dates are rich in dietary fiber typically between 6–

8 g/100 g which promotes satiety, supports bowel regularity, and slows glucose absorption (Elleuch et al., 2020). These fruits also provide an abundant source of essential minerals including magnesium (important for muscle and nerve function), iron (necessary for red blood cell production), and calcium (for bone health) as well as polyphenolic antioxidants, which reduce oxidative stress and inflammation in the body (Elleuch et al., 2020; MDPI review 2020). These combined properties make dates an ideal component in the development of functional snacks aimed at promoting overall wellness.

The combination of bananas and dates in snack form offers an innovative approach to develop functional foods that are both nutritious and appealing. By creating a banana-dates stick paired with banana-dates jam, it is possible to produce a natural, sugar-free, and gluten-free snack that meets the needs of health-conscious consumers while also utilizing locally available resources.

Furthermore, gluten-free formulations are vital for individuals with celiac disease or non-celiac gluten sensitivity, where consumption of gluten-containing products can trigger adverse health reactions. Incorporating naturally gluten-free ingredients such as bananas and dates ensures product safety without compromising taste or texture—especially since fruits like bananas and dates are inherently gluten-free and help avoid the risk of cross-contamination associated with certain processed flours.

In Indonesia, there is a notable reliance on imported wheat-based products. As of 2023, the country brought in around 57,448 metric tons of wheat or meslin flour, primarily from Turkey, Vietnam, and South Korea. □ Additionally, Indonesia imported over 4,186 metric tons of wheat gluten, largely from China and Japan. This dependency on imported flour not only increases exposure to international supply chain disruptions but also affects national food resilience. To overcome this, Indonesia has the opportunity to reduce its reliance on imported wheat by utilizing locally sourced, gluten-free ingredients. Bananas and dates, which are widely cultivated in the country, offer excellent nutritional value and functionality in food processing.

Replacing imported flour with these local alternatives can strengthen food independence, support local farmers, and fulfill the growing demand for healthier, gluten-free snack options. The most crucial process in the making of this product is the formulation and controlled dehydration of the banana-dates mixture into a solid stick form using low-temperature drying. This method preserves the nutritional content of the ingredients while achieving the desired chewy texture and ensuring microbial safety without the use of preservatives. The preparation of the banana-dates jam, which involves gentle heating and homogenization, is also critical to maintain natural sweetness and spreadability without added sugar.

Given these considerations, the development of a sugar and gluten free banana dates stick with accompanying banana dates jam represent a promising effort to introduce a healthy, natural snack option that aligns with current consumer demandsb and dietary restrictions.

1.2 Objectives of the Study

The objectives of this study are following below:

1. To develop a healthy snack formulation using bananas and dates as the main ingredients in the form of a sugar-free and gluten-free stick product.
2. To utilize banana and date jam as a natural sweetener and functional filling in the snack product without the addition of refined sugar or gluten-based ingredients.
3. To analyze the nutritional content, evaluate product shelf stability, and explore market potential.