CHAPTER I
INTRODUCTION

1.1 Background of the study

The changing lifestyle of modern society, especially in urban areas, has brought about major changes in food consumption patterns. Busy daily activities, high mobility demands, and the need for time efficiency have made convenience food the main choice. On the other hand, public awareness of the importance of nutrition and health is also increasing. Therefore, there is a need for functional foods that are not only easy to consume, but also provide additional health benefits (Gill et al., 2023).

One of Indonesia's traditional foods that has great potential to answer the need for healthy food today is tempeh. Tempeh is a food product produced from the fermentation of raw materials such as soybeans, and is widely recognized as a source of highly nutritious vegetable protein. Tempeh also contains various bioactive compounds such as isoflavones and natural antioxidants, and is easily digested by the body. Due to its complete nutritional content and relatively simple processing, tempeh has been an important part of the Indonesian diet for centuries (Witoyo, 2023).

Fermentation itself is a natural biotechnological process in which microorganisms such as molds, yeasts or bacteria break down complex components in food into simpler forms. In the context of tempeh, this process involves the mold Rhizopus oligosporus, which grows on the surface of soybean seeds and forms a solid structure. This fermentation plays an important role in increasing the bioavailability of proteins and minerals, reducing antinutritional compounds such as phytic acid, and producing enzymes and probiotic compounds that are beneficial for digestive health (Frias et al., 2017; Aisya et al., 2022). In other words, fermentation not only extends the shelf life of food, but also enriches its nutritional value.

With the growing trend of healthy food and the need for nutritious snacks, snack bars have become a practical and desirable option. Snack bars can be

formulated to meet specific nutritional needs, such as high protein, fiber, and antioxidants. Research by de Melo et al. (2019) showed that the addition of tempe flour in cereal bars was able to increase protein and isoflavone content without reducing the sensory acceptance of the product by consumers.

The nutritional content of snack bars can also be improved by adding local ingredients such as soybeans, peanuts and mung beans.

1. Soybeans are a complete source of plant protein that is rich in essential amino acids, isoflavones and iron. Its isoflavone content has antioxidant effects and plays a role in maintaining heart health and hormonal balance (Messina, 2016).
2. Peanuts are high in healthy fats, vitamin E, magnesium, and protein. In addition to supporting heart health, peanuts also contain resveratrol, an antioxidant also found in red wine (USDA, 2019; Ros, 2015).
3. Mung beans are rich in fiber, folate, and B-complex vitamins, and have a low glycemic index, making them suitable for diabetics. The flavonoids and tannins in mung beans also act as natural antioxidants (Xu et al., 2015).

By combining fermented tempeh and local nuts in the form of snack bars, an innovative product that is practical, healthy, and suitable for the lifestyle of modern society can be produced. The product formulation can also be improved by adding egg whites, oat flour, coconut sugar, and dark chocolate to support nutritional value and flavor. This innovation is expected to be a healthy snack solution based on sustainable local food.

1.2 Objectives of the Study

The objectives of this study are following below:

1. Assess the potential of multi-bean fermentation (soybean, peanut, and mung bean) in increasing the nutritional value of tempeh as the main ingredient in snack bar formulation.
2. to Analyze the nutritional content of healthy snack alternatives based on local ingredients, especially those with a high profile of protein,

fiber, and healthy fat, in accordance with the trend of functional and practical food consumption.

3. To evaluate the sensory test of tempe-based snack bar products, focusing on the assessment of taste, aroma, texture, and overall level of liking.