

CHAPTER I

INTRODUCTION

1.1 Background of the Study

In recent years, maintaining human health has gained significant attention due to free radicals that can cause oxidative damage to body cells, which are the main triggers of chronic diseases such as cancer, heart disease, and diabetes. These diseases occur when the number of free radicals exceeds the body's capacity to neutralize them with antioxidants.

Antioxidants are compounds that help protect body cells from damage caused by free radicals, which are unstable molecules that can damage cells and tissues. Natural antioxidants include vitamin C, vitamin E, and several secondary metabolic compounds such as phenolic and flavonoid compounds that can be obtained from plants (Ibroham, Jamilatun, & Kumalasari, 2022), such as *cosmos caudatus*, which is high in antioxidants.

Cosmos caudatus, commonly known as "kenikir" leaves, is a plant often found in Southeast Asia. This plant is frequently used as a vegetable and traditional medicine because it is rich in nutrients and compounds beneficial for health, and its leaves contain high antioxidants. The compounds found in *cosmos caudatus* include flavonoids and phenolics, which have anticancer, antifungal, anti-inflammatory, antimicrobial, and antioxidant properties (Silvani, Kurniawan, & Lestari, 2023). The *cosmos caudatus* leaves will be extracted into canola oil through the sous vide method. Sous vide is a cooking technique where food is cooked in vacuum-sealed plastic bags at precisely controlled temperatures in water over a long period. The purpose of using sous vide is to retain the antioxidant nutrients of the *cosmos caudatus* leaves extracted into the canola oil, which will be used for preservation in *sottolio*'.

The term *sottolio*' comes from Italian, meaning "under oil," and refers to a food preservation technique by submerging it in oil. *Sottolio*' is used to

preserve various vegetables and proteins; in this case, Spanish mackerel is the protein chosen because it is widely found in marine areas and, compared to other fish, has delicious meat with a soft texture, rich in protein and omega-3. The oil commonly used in *sottolio*' products is olive oil, which is known to have high antioxidant content, but the price of olive oil is often a limitation. On the other hand, canola oil is more affordable and has similar properties to olive oil, making it a viable alternative. Since few people are familiar with *sottolio*' products, this product aims to introduce *sottolio*' to a broader audience and provide a food product option rich in antioxidants.

1.2 Objectives of the Study

The objectives of the study are:

1. To introduce the *sottolio*' product more widely to the society
2. To provide an additional food option rich in antioxidants to the society