Chapter 1

Introduction

1.1 Background

Dementia is defined as a loss of cognitive function that is severe enough to interfere with daily activities. Alzheimer's disease (AD) is a neurological condition that is a common cause of dementia. Alzheimer's disease can impair cognitive and behavioral functions such as memory, comprehension, language, attention, reasoning, and judgment. (Kumar et al., 2022). It is the leading cause of dementia in persons aged 60 and over, accounting for around 75% of all dementia cases globally (Qiu et al., 2009). Nine million people are predicted to have AD in 2040, which now tops the list of causes of mortality in developed countries (Markesbery, 1997). Unfortunately, there is no cure for AD and only a few medicines are now available to treat the AD. This correlates with limited effectiveness, a more significant number of side effects, and poor patient compliance due to its high cost (Manuha, 2018).

Currently, herbal medicine is leading the front line as an alternative treatment for Alzheimer's neurological disease. Besides their effectiveness, safe, cost-effective, and lack of side effects compare to chemical pharmaceuticals, some antioxidant-rich herbs are thought to be able to enhance brain functioning due to naturally occurring phytochemicals that have been linked to one of the Alzheimer's disease acceleration factors (John et al., 2022; Sari, 2006). There are over 30,000 plant species in Indonesia, and 7,000 of them have medicinal uses (Jumiarni & Komalasari, 2017). One of the most popular medicinal herbs is coriander (*Coriandrum sativum L.*), a member of the Apiaceae family with both nutritional and therapeutic benefits in preventing AD and memory loss (Jasira et al., 2017).

The development of drug formulation with the active ingredient of coriander leaves has not been previously reported. As AD is mostly experienced by elderly patients who often experience difficulties

in swallowing solid dosage form, effervescent granules would be the most appropriate form of drug in this case (Ibrahim et al., 1989).

In an effervescent granule preparation, the acid and base components play an important role since they support the reaction effervescent which allows the release of gasses. The acid source of effervescent granules can be varied, either by using a single acid or combination of acid. Therefore, through this study, formulations with single and combined acid sources were evaluated for their effect on the characteristic of the products in order to meet the standard of good granules.

1.2 Objective

This study aimed to formulate effervescent granules containing coriander leaves extract and evaluate physicochemical characteristics of the effervescent granules.

1.3 Hypothesis

The variation of acid and base sources is expected to have significant differences in physicochemical characteristics of the effervescent granules.