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**PREPARATION OF HYDROGEL FROM
PROPOLIS EXTRACT**

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ABSTRACT

The proposed study goal was to develop and design a hydrogel by adding different concentrations of propolis extract (5ml, 10ml, and 15ml) manufactured via solvent casting method. The best hydrogel membrane was attempted utilising a variety of techniques including tensile strength, porosity, and gel fraction from the following concentrations. The produced hydrogel membrane was discovered to be potentially appealing as scaffolds for wound dressing applications. The best hydrogel propolis outcome was reached as 5ml of concentration propolis.

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CHAPTER ONE

BACKGROUND

1.1 Introduction

Honey is a natural sweet material derived from nectar or blossoms that bees collect, convert, and combine with their own components to ripen and mature (Zulkhairi Amin et al., 2019). Over the last two decades, the potential for stingless bee honey utilisation in the culinary, pharmaceutical, and cosmetic industries has grown. According to (Ávila et al., 2018) Honey is one of the most complex natural foods since it contains sugars as well as enzymes, amino acids, organic acids, carotenoids, vitamins, minerals, and aromatic compounds. Due to rich in flavonoids and phenolics acid, it is also act as natural antioxidant and express the wide range of biological effect. Because stingless bees do not sting, it is easier to extract honey, pollen, and propolis on a regular basis. (Abd Jalil et al., 2017). Propolis can be defined as a resinous compound made by bees from plant exudates such as leaves, stems, and flowers, combined with wax and mandibular secretions. (Campos et al., 2021).

Propolis is one of the stingless bee products with a high potential for exploration for its advantages and uses, as well as a high commercial value in Malaysia. Propolis from stingless bees contains phenolic acids, aromatic acids, terpenes, carbohydrates, and alkaloids, according to research. (Campos et al., 2021). Other research from (Article et al., 2014) state that propolis has a high bioflavonoid concentration, which possesses antioxidant, antibacterial, antifungal, antiviral, and anti-inflammatory properties. Propolis is not appropriate to be use directly due to the high contaminant. To acquire propolis with a high level of bioactive substances and to remove exceldrin, propolis should be refined using an extraction process. (Zainal et al., 2022).

The extraction of stingless bee propolis can be used in preparation of hydrogel due to its unique properties such as antibacterial, antioxidants and anti-inflammatory that is adapted from (Sharaf & El-Naggar, 2019). Hydrogels are crosslinked networks of hydrophilic polymers that inflate in aqueous conditions while retaining structural integrity, and they have been employed as biomedical devices in wound care. (Oliveira