

CHAPTER 1

INTRODUCTION

Arthritis is a chronic inflammation affecting joints. There are many forms of arthritis and some types are more painful and fatigued than others. They can affect people of ages with both men and women [1-2]. The treatment of early stage arthritis can be performed with nonsteroidal anti-inflammatory drugs (NSAIDs) for pain suppression. However, patients who take NSAIDs for a long time may cause serious side effects such as stomach irritation, bleeding ulcers or kidney dysfunction. Because of the limitations and risks of conventional therapy, many patients are seeking other ways to treat the disease [2]. Currently, the use of alternative approaches including dietary modifications, nutritional supplements, and particularly herbal products were increased dramatically during the last decade.

Longan (*Dimocarpus longan* Lour.) evinces an important fruit in Northern Thailand and has significant economic impact. Longan is current consumed fresh and commercially prepared dried and canned products as well. The canning industry in Thailand produced many wastes of product especially longan seed [3]. Despite several reports on the antioxidant activity of longan seed extract, the anti-inflammation for arthritis diseases is not well studied. Prima Herb (Thailand) Co., Ltd. reported the anti-inflammatory activity of longan seed extract that inhibits the activity of pro-inflammatory agents as IL-1- β , matrix metalloproteinase enzyme-2 (MMP-2) and matrix metalloproteinase enzyme-9 (MMP-9) activities. It may possible to propose that longan seed extract provides the chondroprotective agent that

can be suppressed degenerative condition of the joints in osteoarthritis [4]. Thus, longan seed could be utilized for sustainable development.

Transdermal delivery systems also known as transdermal patches were emerged in order to increase the effectiveness of drugs or active substances via skin. Transdermal patches were dosage forms involving the control of active compounds transport to skin epidermal and/ or dermal tissues for local or systemic therapeutic effect and suited for the treatment of chronic disorder [5]. Comparing with the common formulations such as cream, lotion and ointment, the patch types are more convenient for application and can prevent active compounds for being washed out from the site of action. Additionally, the advantages of transdermal patch were to maintain constant blood levels for long period of time resulting in a reduction of dosing frequency, improve bioavailability and patient compliance [6]. Therefore, this study aimed to develop transdermal patch containing longan seed extract for reducing inflammation in arthritis by using various types and concentrations of polymers, plasticizers and penetration enhancers. This study expected the primary model of the transdermal patch development that containing natural extract for reducing inflammation in arthritis.

The objectives of study

This study aimed to develop transdermal patch containing longan seed extract and characterize its properties.