CHAPTER I

BACKGROUND AND RATIONALE

Helicobacter pylori (*H. pylori*) was discovered by two Australian scientists, Barry Marshall and Robin Warren in 1982 but published in 1984 [1]. The *H. pylori* infection is commonly gastrointestinal bacterial disease worldwide. It is usually acquired in childhood, unless eradicated by antibiotic treatment, persists for the life of the patients. Although most patients have no outward symptoms, infection is always associated with histological apparent active chronic gastritis, including epithelial erosion and inflammatory cells recruitment in the lamina propria. In 10-20% of patients, *H. pylori* infection leads to peptic ulcer disease [2]. Moreover, there is a strong correlation between *H. pylori* infection and some forms of gastric cancer [3]. In 1994, *H. pylori* was classified into type I carcinogen by World Health Organization (WHO).

H. pylori infection is transferred by fecal-oral transmission and oral-oral transmission [4]. Epidemiology showed that *H. pylori* infection is correlation with socioeconomic. In developing countries, 70% of the population is infected by age 20, and increase of infection was found 90% in above 30 year-old population. In developed countries, the rate of infection slowly increase with age, and 50% of people aged 60 years old are infected by *H. pylori* [5].

Nowadays, there are *H. pylori* strains that showed antibiotic resistance [6], so that some antibiotic treatments are not successful to eradicate or protect *H. pylori* recurrent. Alternative treatments are interesting for *H. pylori* eradication. Herbal medicine is one choice to use for inhibiting of *H. pylori* growth or *H. pylori*-induced inflammation.

Curcumin (diferuloylmethane), a polyphenol substance, is an active ingredient of tumeric (*Curcuma longa*). Curcumin has many biological activities such as, antioxidant [7], anti-HIV [8], anti-*H. pylori* activity [9], and anti-fungal activity [10]. Moreover, curcumin is a chemopreventive agent [11, 12]. Importantly, curcumin is safety for human and animals [13, 14].

Nowadays, there is rarely research in effects of curcumin on *H. pylori*-induced gastric inflammation. Therefore, this present study will examine the effects of curcumin on pathophysiology of *H. pylori* infection by monitoring macromolecular leakage from gastric microcirculation, expression of nuclear factor-kappa B (NF-KB) subunit p65 in gastric epithelial cells, and serum vascular endothelial growth factor (VEGF) level.