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Anti-microbial Properties of Thai Traditional Flower Vegetable Extracts

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Abstract

In this research, three types of Thai traditional flower vegetables, Sesbania grandiflora, Senna siamea and Telosma minor, were used due to their claim on helping person who has stomach disorder. Ratio of flower to water of 1:2 was used for water extraction with shaking condition for seven days. The crude extracts were then examined for anti-microbial properties using disc diffusion test on three types of bacteria, Bacillus cereus, Escherichia coli and Staphylococcus aureus. The results indicated that the seven-day extraction provided the highest anti-microbial properties of these three flower vegetables on all bacteria, especially for S. aureus that had the highest inhibition zone. In addition, the anti-microbial activity of Senna and Sesbania were higher than that of Telosma extract. Using column chromatography, the crude flavonoid was separated. The percentage of flavonoid found in Sesbania flower, Senna flower and Telosma were 8.4, 8.6 and 3.4%, respectively. The anti-microbial properties of these crude flavonoids were also investigated and the obtained results were corresponding to those of crude extracts.

Keywords: *Stomach disorder, crude extract, flavonoid, Senna, Sesbania Telosma*

1. Introduction

In Thailand, there are many kinds of flower vegetables that have medicinal properties. Flower vegetables are flowers of traditional vegetable plants that have flowers and have been used for cooking since ancient time. It was believed that consumption of these flower vegetables can cure illness and diseases. They also help people who suffer from diarrhea, which indicates the anti-microbial activity of these vegetables (Somanapan 1990; Vachirasup 1995; Boonyaprapatsara 1996 and 2000). In addition, the countries in Central Africa, West Africa and Indonesia used 'Khilek' flower *(Senna siamea)* to treat patients who had stomachache (Grieve 1981). The flower vegetables are composed of various chemical compounds that can be grouped as flavonoid, anthraquinone and glycoside. Flavonoid is expected to be the main component that plays a major role in microbial inhibition. This research was aimed to study the extraction of flavonoid from three types of flower vegetables, namely: Thai copper-pod or 'Khilek' flower *(Senna siamea)*, cork-wood tree or 'Dok Khae' flower *(Sesbania grandiflora)* and *Telosma* or 'Khachon' flower *(Telosma minor)*. In addition, the anti-microbial activity of these flower vegetables was investigated.

2. Materials and Methods

2.1 Extraction of Flavonoid from Flower Vegetables

Three kinds of flower vegetables were used in this experiment, namely: Thai copper-pod or 'Khilek' flower *(Senna siamea)*, cork-wood tree or 'Khae' flower *(Sesbania grandiflora)* and *Telosma* or 'Khachon' flower *(Telosma minor)*. They were blend with distilled water with the ratio of flower to water as 1:2. The mixtures were left to stand for seven days with occasional shaking. The samples were collected everyday and then filtered using Whatman No. 4. The supernatants were kept in brown bottles in the refrigerator. These samples were then tested