

CHAPTER I

INTRODUCTION

Okra is an annual plant which is widely grown in Thailand. It has gained interest because of its nutritional value and medicinal functions. Its fruit contains high amount of vitamins and minerals such as vitamin A, iron, and calcium, whereas its mucilage mainly comprises of carbohydrate and protein (Department of Agricultural, 1998). Okra mucilage can be used as a dietary meal for the treatment of gastric irritation (Lengsfeld *et al.*, 2004). It can also inhibit adhesion of bacteria to human gastric mucosa. On top of those, okra mucilage can increase viscosity, and has been used as a thickening agent in many food recipes (Ndjouenkeu, Akingbala, and Oguntimein, 1997).

In general, hydrocolloids have been used for a long time in formulating reduced fat foods and their use does not require the United States Food and Drug Administration (USFDA) approval. The term hydrocolloid refers to as gum, are long chain, high molecular weight polymers that dissolve or disperse in water. It also embraces polysaccharides that are extracted from plants, seaweeds, and microbial sources, as well as gums derived from plant exudates, and modified biopolymers made by chemical or enzymatic treatment of starch or cellulose (Dickinson, 2003). They provide many properties such as thickening, emulsifying, stabilizing, and textural properties by holding, binding, or entrapping water in their structure up to several times of their weight. Not only does okra mucilage, a hydrocolloid, provide high viscosity at low concentrations, but also act as an emulsifier and a fat replacer (Ndjouenkeu *et al.*, 1996). Many researchers have been interested in using okra mucilage as a fat replacer in baked goods, for example, brownies (Tilmon and Romanchik-Cerpovicz, 2001), chocolate bar cookies (Romanchik-Cerpovicz, Tilmon, and Baldree, 2002), and frozen dairy dessert (Costantin and Romanchik-Cerpovicz, 2004). The outcomes are acceptable because it reduces fat content without changing color, flavor, odor, texture, and overall acceptability of the okra mucilage containing products, compared to the control products.

Although okra has gained interest for quite a long time and many researchers used its mucilage as a fat replacer, reported data on functional properties are still scant.

This research aims to study the precipitating condition, chemical composition, and yield of the extracted okra mucilage as well as its functional properties. Emulsion stabilizing and rheological properties of model oil-in-water (o/w) emulsion containing okra mucilage as a stabilizer at various concentrations will be investigated. Further, the possibility of applying okra mucilage as a stabilizer in food emulsion will be assessed.