

CHAPTER II

OBJECTIVES

General objective

To determine and compare antioxidant activities, total phenolic contents and inhibition of key enzymes that control obesity (pancreatic lipase), diabetes (α -glucosidase and α -amylase), hypertension (angiotensin-converting enzymes) and AD (cholinesterases and β -secretase) of different types of legumes, including peanut, mung bean, soy bean, black bean, white bean and red kidney bean in the form of crude extracts.

Specific objectives

1. To determine the effect of legume parts including whole seed and seed coat on antioxidant activities, total phenolic contents and inhibitory activities of some key enzymes relevant to obesity, diabetes, hypertension and AD.
2. To determine the effect of heat treatment (cooking process) of legumes on antioxidant activities, total phenolic contents and inhibitory activities of some key enzymes relevant to obesity, diabetes, hypertension and AD.
3. To determine the bioactive compounds including phenolics and flavonoids in different types of legumes.

Expected Results and Benefits

The results obtained from this research will provide information as follows:

1. Biological properties regarding antioxidant activities, total phenolic contents and inhibitory activities of some key enzymes that control obesity, diabetes, hypertension and AD of different types of legumes.

2. The effect of legumes parts (whole seed and seed coat) and cooking process on antioxidant activities, total phenolic contents and inhibitory activities of some key enzymes that control obesity, diabetes, hypertension and AD.

3. The quantity and quality of phenolics and flavonoids from different types of legumes.

The results obtained from this research will provide fundamental knowledge on antioxidant activities and total phenolic contents of different types of legumes, which are generally found in local markets in Thailand. Besides, the anti-obesity, anti-diabetic, anti-hypertension and anti-AD properties through inhibition of key enzymes that control these particular diseases from legumes will support further investigation on a particular pathway to prevent these diseases. Moreover, seed coats of legumes, the wastes from industrial food processing, could be recycled into valuable sources of bioactive compounds. Besides, the effect of cooking process was analyzed since all legumes were consumed in cooked forms. This study would as well promote health benefit of legume as useful sources of antioxidants, anti-diabetes, anti-obesity, anti-hypertension and anti-AD agents, which could be further developed into nutraceuticals or function foods.