CHAPTER VII
CONCLUSION

Legumes are widely known as the richest sources of macronutrient and micronutrient as well as protein, carbohydrate, lipid, vitamin, mineral and dietary fiber. Legumes are plants in *Leguminaceae* family with high nutritive contents and health benefits in term of being the good providers of phenolics. In this study, bioactive compounds (such as phenolic acids and flavonoids), TPCs, antioxidant activities, anti–obesity (lipase inhibitory activities), anti–diabetes (α–amylase and α–glucosidase inhibitory activities), anti–hypertension (ACE inhibitory activities) and anti–AD (cholinesterase inhibitory activities and BACE1 inhibitory activities) of six legumes in Thailand including mung bean, black bean, red kidney bean, white kidney bean, soy bean and peanut were investigated. Besides, the effects of cooking process and legume parts (whole bean and seed coat) on antioxidant activities and enzyme inhibitions of these six legumes were examined.

As results, all legumes with darker seed coated color exhibited high levels of antioxidant activities, TPCs, lipase inhibitory activities, α–amylase inhibitory activities and α–glucosidase inhibitory activities. Legumes with lighter seed coated color, especially soybean, exhibited high anti–cholinesterase activities and anti–BACE1 activities. Nevertheless, ACE inhibitory activity was not observed in all legumes under experimental conditions.

After heat treatment by cooking process, the results suggested that cooked legumes possessed higher antioxidant activities, TPCs and lipase inhibitions than raw legumes. On the other hand, cooked legumes exhibited lower α–amylase and α–glucosidase inhibitions than raw legumes. Interestingly, cooking process seemed to destroy cholinesterase activities, while higher BACE1 inhibitions were observed in cooked legumes rather than in raw legumes. ACE inhibitory activity, on the other hand, was only found in cooked soybean.

The effect of legume parts suggested that seed coat of red kidney bean provided the highest anti–lipase activity, anti–amylase activity, anti–glucosidase activity and anti–cholinesterase activity. BACE1 inhibitory activities were only found in mung bean and black bean. Black bean exhibited the highest anti–ACE activity. Most enzyme inhibitions from seed coat were higher than whole legumes. It was suggested that enzyme inhibitory activities were related to the quantity of bioactive compounds, which were mostly found in seed coat.

This information could provide supportive evidence of the fundamental knowledge to promote the usage of legumes as the excellent choices of healthy food for health conscious individual regarding control of NCDs through enzyme inhibition.