

ANTIOXIDANT PROPERTIES OF WATER-SOLUBLE POLYSACCHARIDES FROM
THE LEAVES OF BULUH BETING (*Gigantocloalevis*)

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ABSTRACT

ANTIOXIDANT PROPERTIES OF WATER SOLUBLE POLYSACCHARIDE FROM THE LEAVES OF BULUH BETING (*Gigantochloa levis*)

The aim of this study was to investigate the protective effect of water soluble polysaccharide from the leaves of Buluh beting (*Gigantochloa levis*) (WSPBL) on antioxidant activities. The results revealed that the WSPBL of *Gigantochloa levis* contained 1.15 ± 0.02 % moisture, 1.35 ± 0.01 % ash, 0.08 ± 0.10 % protein and 30.97 ± 0.01 % total sugar content respectively. The aqueous extracts of WSPBL were used to assess antioxidant properties by using Folin-Ciocalteu reagent method (TPC), 2,2-diphenyl-1-picrylhydrazyl method (DPPH assay) and Ferric Reducing Antioxidant Power (FRAP assay). WSPBL of *Gigantochloa levis* was found to contain high amount of bioactive compounds including total phenolic compounds (1601 ± 0.02 mg GAE/100 g of sample), DPPH and FRAP with values of 97.32 ± 0.03 % and 137.25 ± 0.01 mg/g TEAC respectively.

CHAPTER 1

INTRODUCTION

1.1 Background

Bamboo is a tropical and subtropical plant and is widely distributed in Southeast Asia. The leaves of bamboo have been used in traditional Chinese medicine over the centuries for reducing fever and alleviating inflammation, and recently found to be clinically useful in treating hypertension, arteriosclerosis, cardiovascular disease, and certain forms of cancer (Shibata *et al.*, 1975; Lin *et al.*, 2008). Antioxidant of bamboo leaves, an ethanol extract derived from bamboo leaves of *Phyllostachys Sieb. of Zucc.* family especially *Phyllostachys bambusoides*, was demonstrated to be strong inhibitory efficacy on transition metal ions and free radicals inducing deterioration of macromolecules *in vitro* (Hu *et al.*, 2000). It was sufficiently considered as non-mutagenic, non-embryotoxic and non-genotoxic (Lu *et al.*, 2005, 2006). In China, the antioxidant of bamboo leaves has been listed in the state standard GB2760 (Hygienic Standards for Food Additives in Use) and can be added into the edible oils, meat products, cereals, beverages and fried foods.

The main functional components in antioxidant of bamboo leaves are flavonoids, phenolic acids and lactones (Lu *et al.*, 2006). Among them, flavone C-glycosides such as orientin, homoorientin, vitexin and isovitexin, are the key representatives of flavonoids and possess anti-microbial (Cottiglia