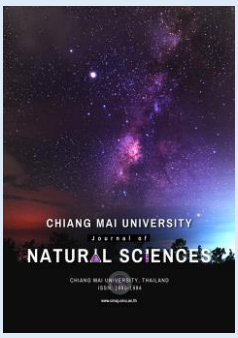

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Research article

Antioxidant, α-Glucosidases and α-Amylase Inhibitory Activities of *Persicaria odorata*

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Abstract The objects of this study were to determine the effects to reactive oxygen species and antioxidant enzymes levels in HEK-293 cells and inhibition of α-glucosidases and α-amylase enzymes of extracts from *Persicaria odorata* or *phak phaeo*. The ethanol extracts from the leaves and the stems of phak phaeo were investigated for their 2,2-diphenyl-1-picryhydrazyl (DPPH) scavenging activities (IC_{50} were 7.74 ± 0.47 and 7.91 ± 0.43 µg/mL, respectively). Cellular antioxidant effects in human embryonic kidney-293 (HEK-293) cells with these extracts (0.1 mg/mL) also increased the mRNA expressions of manganese superoxide dismutase (Mn-SOD), glutathione peroxidase 1 (GPx-1), catalase and glutathione reductase (GRe). The leaf extract showed the higher efficacies in the induction of the mRNA expressions of Mn-SOD, GPx-1 and GRe while the stem extract exhibited a stronger effect to the induction of catalase. Phak phaeo *in vitro* inhibitory effects to α-glucosidase enzyme (IC_{50} values of 9.82 ± 1.64 and 13.99 ± 1.45 µg/mL, respectively and also strong inhibition to α-amylase with IC_{50} values of 90.66 ± 8.75 and 19.96 ± 5.37 µg/mL, respectively). Lineweaver-Burk plot demonstrated that phak phaeo extracts inhibited α-glucosidase and α-amylase in non-competitive manners. Total phenolic and total flavonoid contents were determined by Folin-Ciocalteu and aluminium chloride methods (the leaf and stem extracts were 22.89 ± 9.16 and 22.27 ± 8.77 g gallic acid equivalent in 100 g extract (g% GAE) and 7.20 ± 3.61 and 4.06 ± 1.73 g quercetin equivalent in 100 g extract (g% QE), respectively).

Keywords: Antioxidant enzymes, DPPH, HEK-293, MTT assay, *Persicaria odorata*, Reactive oxygen species, Total phenolic, Total flavonoid, α-glucosidases, α-amylase

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