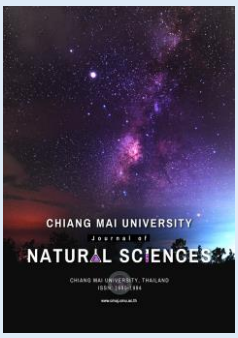

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Research article

Evaluation of The Antioxidant, Antidiabetic and Immunomodulatory Activity of *Cydonia oblonga* Fruit Extract

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Abstract Dietary natural antioxidant consumption can protect the human body from several diseases induced by free radicals. The aim of this study was to evaluate the antioxidant, antidiabetic and immunomodulatory properties of *Cydonia oblonga* fruit. For this; hydroethanolic extract of *Cydonia oblonga* fruit (HECO) was examined for antioxidant activity using DPPH free radical sc avenging, ABTS cation radical decolorization, Cupric reducing antioxidant capacity (CUPRAC), and Metal Chelating on ferrous ions activities. The inhibitory activity of the extract against α-glucosidase enzyme was also investigated. HECO was tested in vivo for the immunomodulatory activity on non-specific immunity by the carbon clearance test. The content of the nonenzymatic antioxidant reduced glutathione (GSH) in liver tissue of used mice was estimated. *in vitro* studies revealed that the HECO has an inhibitory concentration (IC_{50}) value of 249.26 ± 3.75µg/mL, 117.34 ± 1.41 µg/ml for DPPH and ABTS scavenging activity respectively. As well as the ability to reduce cupric (167.17 ± 1.15µg/mL) and iron (Fe) (417.98 ± 48.82µg/mL). The extract showed antidiabetic activity as evidenced by its capacity to inhibit the α-glucosidase enzyme (IC_{50}: 326.48 ± 18.56 µg/mL) near the acarbose (IC_{50}: 275.98 ± 1.57 µg/mL) used as a positive control. In addition, our results showed that HECO at the concentration of 50 and 100 mg/kg significantly increased the clearance rate of carbon from the bloodstream concomitant with increased liberation of GSH from liver cells. This study demonstrates that HECO is effective in scavenging free radicals and can serve as potent antioxidants that provide potential treatment and prevention for diabetes with benefits on the innate defense system.

Keywords: Antidiabetic, Antioxidant, *Cydonia oblonga*, Hydroethanolic extract, Phagocytic activity

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