

Inhibitory activity of *Urena lobata* leaf extract on dipeptidyl peptidase-4 (DPP-4): Is it different *in vitro* and *in vivo*?

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Abstract

This study was aimed to compare the anti diabetic effect of *Urena lobata* leaf extract through DPP-4 inhibitory activity by *in vitro* and *in vivo*. *Urena lobata* leaf was extracted in ethanol and hot water to evaluate its activity on DPP-4 both of *in vitro* and *in vivo*. *In vitro* test using *Gly-pro-p-nitroanilide* (GPPN) as substrate of DPP-4 and the reactions product of them was observed by microplate reader at $\lambda=405$ nm furthermore the IC_{50} value was determined. *In vivo* study utilize an animal model of diabetes with 2 control groups and 6 test groups (n=4), in which DPP-4 level, GLP-1 level and AUC of blood glucose were examined after extract administration. The *in vitro* DPP-4 inhibitory activity of ethanolic extract of *U. lobata* is higher than water extract with the IC_{50} value of 1654, 64 and 6489, 88 $\mu\text{g/ml}$ respectively. However, the water extract of *U. lobata* exhibits stronger decrease DPP-4 level (60–70%) compared to ethanolic extract (40–60%) *in vivo* study as well as the AUC of blood glucose were reduced by 50–60% and 20–50%, respectively. Meanwhile, GLP-1 level could be retained more by the water extract of *U. lobata* administration (3–7 fold) compared to ethanolic extract (25 fold) due to the reducing of DPP-4 activity.

Keyword: DPP-4, *in vitro*, *in vivo*, *Urena lobata*, *Gly-pro-p-nitroanilide* (GPPN).