Effect of Pulutan (Urena lobata) Leaves Extract on Glucosa Level and Body Growth of Zebrafish (Denio rerio) Exposed by Malathion

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Background
• Malathion is one of organophosphate pesticides suspected as endocrine disruptor.
• Pulutan (Urena lobata) is medicinal plant used to treat some diseases empirically and pre-clinical study has already proven its efficacy as anti-diabetic and anti-hyperlipidemic.
• However, the study of U.lobata to reduce negative effect of malathion have not been reported.

Objective
To evaluate the effect of Urena lobata (U. lobata) leaf extract on blood glucose level and growth in the juvenile and adult of zebra fish (Danio rerio) exposed by malathion chronically.

Methods
• The study using juvenile and adult of zebra fish (Danio rerio) which divided into five group (n=5).
• The leaf of U. lobata was extracted by decoction methods therefore it was diluted into 125 mg/L, 250 mg/L and 500 mg/L., therefore animal test was exposed by herbs for 40 days concomitant with malathion 2,5-5 mg/L.
• Blood glucose level were measured using a commercially available glucometer, meanwhile body weight and length using balance scale and rule respectively.
• All data are expressed as the mean ± SD and analyzed with one way anova and then continued with LSD (p<0.05).

Results
• The study using juvenile and adult of zebrafish (Danio rerio) which divided into five group (n=5).
• The leaf of U. lobata was extracted by decoction methods therefore it was diluted into 125 mg/L, 250 mg/L and 500 mg/L., therefore animal test was exposed by herbs for 40 days concomitant with malathion 2,5-5 mg/L.
• Blood glucose level were measured using a commercially available glucometer, meanwhile body weight and length using balance scale and rule respectively.
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Discussion
• Beside as an acetylcholinesterase inhibitor, malathion could impairs secretion of natural hormone in the body responsible for growth.
• Free radical which is resulted by malathion metabolism cause oxidative stress and its damages.
• U. lobata contain mangiferin and gossypetin are predicted as antioxidant which scavanges free radical and also prevent endocrine disruptor.
• Meanwhile stigmasterol and sitosterol showed anti diabetes through inhibition DPP-4.

Conclusion
U. lobata leaf extract is able to inhibit the increase of blood glucose level and prevent the decrease of growth both of on juvenile and adult of zebra fish (Danio rerio).

References

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