Anti-Inflammatory Effect of *Ixora coccinea* Linn on Stem Cells of Human Exfoliated Deciduous Teeth (SHED) cells

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**ABSTRACT**

*Ixora coccinea* Linn (*I. coccinea*) also known as Pokok Jejarum in Malay is a flowering shrub in Rubiaceae family and has been used since ancient time to treat variety of diseases such as dysentery, diarrhea, wound healing and inflammation. Inflammation is a physiological response involving the immune system to fight pathogens that invading the body or due to injury. In the present study, the roots of *I. coccinea* was extracted in methanol. MTT assay was carried out to determine the viability of cells after treated with different concentrations of the extracts. The result showed that highest viability of cells was 78.3 % at the concentration of 1.56 mg/ml. It was found that *I. coccinea* root extracts showed good anti-inflammatory activity at the concentration of 1.56 mg/ml. Hen’s egg test-chorioallantoic membrane (HET-CAM) assay is in vivo model for chronic inflammation. It was used to evaluate anti-inflammatory activity through the inhibition of membrane irritation on chorioallantoic membrane in which irritation was induced by sodium dodecyl sulphate (SDS). In this study, *I. coccinea* root extracts showed good anti-inflammatory activity with 80% of inhibition on chorioallantoic membrane as compared with NSAIDs, indomethacin whereby 85% inhibition. *I. coccinea* root extracts showed potential anti-inflammatory effects by enhanced immune response through upregulation of inflammatory cytokines including IL-1β, IL-6, IL-8, and TGF-β by using Multiplex PCR. However, the *I. coccinea* root extracts had no effect to TNF-α and GM-CSF. In conclusion, *I. coccinea* root extracts possesses anti-inflammatory effects through immunomodulatory mechanisms.

**INTRODUCTION**

*Ixora coccinea* Linn is belong to Rubiaceae family, also known as 'Pokok Jejarum' in Malay. It is a small shrub plant that has been identified to possess several medicinal properties (Yasmeen et al., 2010). The previous study presented that *I. coccinea* was traditionally found to be useful for many ailments like hepatoprotective, chemoprotective, antimicrobial, antioxidant, antiinociceptive and anti-inflammatory activities (Vadivu, 2010).

**MATERIALS & METHODS**

| Collection of plants material and preparation of extracts | Hen’s egg test-chorioallantoic membrane (HET-CAM) assay |
| Preparation of Stem cells of human exfoliated deciduous teeth (SHED) cells culture | Immunoassay of inflammation |
| Cell viability assay (MTT assay) | Incubation of eggs |
| Total RNA isolation | Canding of eggs |
| cDNA synthesis | Windowing the eggs and dropping the CAM |
| Multiplex PCR | Preparation & implantation of pellets |
| Interpretation of the experiment |

**RESULTS**

A. Cell viability and assessment

**B. Detection of expression levels of inflammatory cytokines**

**C. HET-CAM assay**

**DISCUSSION**

The decreased in cell viability reflect the cytotoxic effects of the *Leccocinea* root extracts. Anti-inflammatory activity of *Leccocinea* root extracts showed a dose-dependent manner which allowed the topical administration on chorioallantoic membrane. Its consistent with the previous study that demonstrated anti-inflammatory activity of *Leccocinea* roots extracts showed inhibition in carrageeene induced paw edema (acute inflammatory model) and pellet granuloma test (chronic inflammatory model) (Rajendra et al., 2013). *Leccocinea* root extracts showed higher level expression of IL-6 in SHED cells compared to untreated cells. This finding suggested that upregulation of inflammatory cytokine such as IL-6 by medicinal plant may promote immune response, prevent pathogen-associated symptoms and inhibit the chomic disease (Astin, 1998).

**REFERENCES**