# DEPIGMENTING AND TOXICITY EFFECT OF CHALCONE DERIVATIVES ON POST-INFLAMMATORY HYPERPIGMENTATION

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***Abstract:*** Post-inflammatory hyperpigmentation (PIH) have been increasingly reported over past few decades is a skin disorder that produce excess melanin and leaves a brown patches on skin's surface. The presence of histamine during inflammation process would lead to the excessive pigmentation production. Topical whitening and bleaching agent are among the therapeutic choices in treating PIH. However, some of these whitening agents such as hydroquinone and kojic acid were claimed to have negative side effects. Thus, alternative therapeutics preferences were derived from natural products in effort to provide safe and reliable depigmenting agents. Chalcone derivatives, a chemically synthesized compound has been proven to be a good compound as a skin-whitening agent for treatment of PIH. In this research project, two chalcone derivative, Flavokawain A (FL-A) and Flavokawain B (FL-B) was evaluated on its depigmenting activity and also their toxicity effect on histamine-induced B16-F10 Melanoma Cell and zebrafish embryo. Both of these compounds were evaluated on their cellular melanin production and their tyrosinase activity. Accordingly, toxicity effects of these compounds were evaluated on histamine-induced B16 cells using MTT assay whereby both compound shows no toxicity effect with the highest concentration that exceeds 50 % of cell viability. Reducing effects towards melanin content and tyrosinase activity in histamine-induced B16-F10 cells indicated that FL-A reduced the specific melanin content by 2-fold and FL-B by 5-fold when compared to control. Besides, tyrosinase activity was inhibited by FL-A and FL-B by 2-fold for both compounds. On the other hand, when using zebrafish as a depigmenting assay system, FL-A and FL-B could inhibit both melanogenesis and tyrosinase activity in the in vivo model. From the present study, it could be conclude both FL-A and FL-B wasproven to be a good compound as a skin-whitening agent for treatment of post-inflammatory hyperpigmentation.

**Keywords:** chalcone, histamine, melanin, post-inflammatory hyperpigmentation, zebrafish