

Ficus deltoidea (mas cotek) extract exerted anti-melanogenic activity by preventing tyrosinase activity in vitro and by suppressing tyrosinase gene expression in B16F1 melanoma cells

#### Abstract

Ficus deltoidea (Mas cotek) water extract has been widely used for woman health in Malaysia. Our investigation focused to identify anti-melanogenic efficacy of F. deltoidea since it has been known to have strong antioxidant activities. Anti-melanogenic effect of F. deltoidea extract was analyzed using cultured B16F1 melanoma cells. Cytotoxicity of the extract was measured using 3-(4, 5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay and determined the highest concentration of the extract that did not affect cell viability as 0.1% (w/v).  $\alpha$ -MSH-induced melanin synthesis was significantly inhibited with dose-dependent manner by treatment of F. deltoidea leave extract, which was comparable to that of kojic acid. The extract directly inhibited mushroom tyrosinase activity and intracellular tyrosinase activity of B16F1 as well. The inhibition of intracellular tyrosinase activity was found to be exerted at the protein expression level when analyzed by immunoblot and tyrosinase zymography. The expression of microphthalmia-associated transcription factor (MITF) was also reduced by the F. deltoidea extract. In conclusion, F. deltoidea extract has strong anti-melanogenic activity that is exerted by direct inhibition of tyrosinase enzyme activity and by down-regulation of the expression of genes involved in the melanogenesis pathways. Collectively, data shown in this study strongly suggest that F. deltoidea extract has potential to be used as a novel depigmenting agent for cosmetics.