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Dalbergia parviflora extracts mediate tyrosinase expression and melanogenesis in mouse B16F10 and human MNT1 melanoma cells

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Hypopigmentation is a condition of low melanin production occurring in eye, skin and hair. Until now, there has been no recommended remedies with high efficacy and human safety profile for hypopigmentation treatment. The flavonoid containing extracts from Dalbergia parviflora was shown to stimulate melanin production in B16F10 mouse melanoma cells. However, the regulatory mechanisms of the extracts on melanogenesis has not been thoroughly investigated. Here in, the inducing effect of D. parviflora extracts on the expression level of tyrosinase in mouse B16F10 & human MNT1melanoma cells was firstly revealed. The cells were treated with 0-50 µg/ml of D. parviflora extracts for 24-72 h for evaluation of cytotoxicity, mode of cell death and proliferative effect. Melanin production and tyrosinase activity were observed at non-toxic concentration of D. parviflora extracts. Determination of mRNA and expression level of melanin regulating proteins were performed by real-time RT-PCR and western blotting, respectively. Tyrosinase activity and melanin content were significantly increased in both B16F10 & MNT1 cells treated with D. parviflora at 0.1-10 µg/ml for 72 h. Despite of the up-regulation of tyrosinase mRNA at 48 h in mouse B16F10 cells, there was no alteration on mRNA of MITF, a transcription factor mediating tyrosinase expression in melanoma cells after incubation with 10 µg/ml of the extracts for 24-72 h. Interestingly, in mouse cells the translocation of MITF from cytoplasm into nuclease were presented in early at 24 h of D. parviflora extracts treatment. These results indicated that D. parviflora extracts stimulated the melanin production and up-regulated tyrosinase expression through modulation on MITF translocation in melanin generating cells. The information obtained from this study strengthen the potential development of D. parviflora extracts as an effective treatment with high human safety for hypopigmented disorders.

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