

Whitening effect and active components of fermented persimmon extract

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The whitening effect and its molecular mechanisms on melanogenesis of fermented persimmon extracts (FPS) were investigated using various cell models. The major active ingredients in the fermented persimmon extracts were also identified with fractioning the fermented sample with various solvents. FPS dose dependently and significantly reduced forskolin-stimulated tyrosinase activity and melanin contents without cytotoxicity in human melanoma cell. FPS significantly inhibited pigmentation in 3D human epidermal model. In molecular mechanisms study on melanogenesis, FPS effectively down regulated TRP-1 and TRP-2 expression through inhibiting phosphorylation of melanogenic markers such as Raf-1, ERK and CREB which are key transcription factor for tyrosinase expression in pigmentation, which indicating that FPS interrupted melanogenesis via inhibition of an upstream pathway involved in ET plus SCF-induced CREB activation and MITF upregulation both in human melanoma and human melanocytes. These results indicated whitening effect of fermented persimmon extracts were confirmed to be an inhibitory effect on the over expression of tyrosinase instead of direct inhibition against tyrosinase without side effects which causes vitiligo. The FPS was fractionated using different solvents and had total 8 fractions. Fraction 4 and 7 among the fractions showed significant tyrosinase inhibition activity, further studies are needed to understand what the correct active molecule is. This is the first report suggesting that fermented persimmon extract have remarkable whitening effect through down-regulating melanogenesis induced by exterior stimulation such as UV in melanocytes.

Biography

Gi Dong Han has his expertise in research and development for improving bioactivities of natural materials using fermentation techniques. He developed various bioactive substances from agricultural by-product using fermentation techniques. Recently he has been interested in tannin degradation or decomposition using microbes derived from nature.

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