

## Sesamol Decreases Melanin Biosynthesis via Melanogenesis-Related Gene Expressions in Melan-a Cells

**Authors :** Seung-Hwa Baek, In-Jung Nam, Sang-Han Lee

**Abstract :** The development of anti-melanogenic agents is important for the prevention of serious esthetic problem like a melasma, freckle, age spots, and chloasma. The aim of this study was to investigate the anti-melanogenic effect of sesamol, an active lignan isolated from sesame seed, by mushroom and cellular tyrosinase assay, melanin content and the analysis of melanogenesis-related mRNA expressions in melan-a cells. Sesamol showed strong inhibitory activity against the mushroom tyrosinase in a dose-dependent manner. Intracellular tyrosinase inhibition activity was also confirmed by zymography. At a concentration of 50  $\mu$ M, sesamol inhibited melanin production in melan-a cells with no cytotoxicity while those of phenylthiourea (PTU) as a positive control were the same condition. Sesamol significantly inhibited the expression of melanogenesis-related genes, such as tyrosinase, tyrosinase-related protein-1 (TRP-1), dopachrome tautomerase (Dct), microphthalmia-associated transcription factor (MITF) and melanocortin 1 receptor (MC1R). These findings indicate that sesamol could reduce melanin biosynthesis via the downregulation of tyrosinase activity and melanin production via subsequent gene expression of melanogenesis-related proteins. Together, these results suggest that the sesamol have strong potential in inhibiting melanin biosynthesis, in that the substance may be used as a new skin-whitening agent of cosmetic materials.

**Keywords :** sesamol, sesame seed, melanin biosynthesis, melanogenesis-related gene, skin-whitening agent

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