

***Prunus mume* extract exerts antimelanogenic and antioxidant effects and induces differential protein expression in B16-F10 melanoma cells**

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Prunus mume has been traditionally used as a medicinal food in Korea, Japan, and China. However, its ability to promote skin whitening remains unclear. This study examines the antioxidant and skin whitening properties of *P. mume* extract (PME). We investigated the ability of PME to scavenging 2,2-diphenyl-1-picrylhydrazyl (DPPH) radicals in vitro. At 1000 µg/mL, PME neutralized over 45% of free radical activity. Cell viability assessment by the MTT assay revealed that at concentrations below 1.5 µl/mL, PME does not exert cytotoxic effects in murine B16 melanoma (B16) cells. A morphological analysis revealed that melanin production was inhibited in B16 cells treated with 250 nM α -MSH and PME. Further, 2-D PAGE and MALDI-TOF MS/MS were used to examine the proteomic profiles of control and PME-treated B16 cells. Twenty-four differentially expressed proteins, including 11 up-regulated proteins and 13 down-regulated proteins, were identified. To examine the mechanisms underlying PME-induced inhibition of melanogenesis, we performed western blotting for studying products of melanogenesis-related genes, such as microphthalmia associated transcription factor (MITF), tyrosinase, tyrosinase-related protein-1 (TRP-1), TRP-2, mitogen-activated protein kinase (MEK), extracellular signal-regulated kinase (ERK), Akt, glycogen synthase kinase-3 β (GSK3 β), and β -catenin. PME strongly inhibited the expression of MITF, tyrosinase, TRP-1, and TRP-2, while up-regulation the activity of MEK, ERK, Akt, and GSK3 β . In contrast, the activity of β -catenin was down-regulated. These results suggest that fruit extracts containing *P. mume* may exert a skin whitening effect via inhibition of melanin production, by regulating protein expression in melanocytes.

Biography

KyungBae Pi has completed his M.S. at the age of 29 years. He completed his master degree from KyungHee University in 2005. He is the senior researcher and project leader of Incheon Technopark. He has published more than 13 papers in reputed journals.

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