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Anti-melanogenesis Effect of Dehydroglyasperin C through the downregulation of MITF via the reduction of intracellular cAMP and acceleration of ERK activation in B16F1 melanoma Cells

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Highlight

- Dehydroglyasperin C suppressed the protein expression levels of tyrosinase and TRP-1
- Dehydroglyasperin C decreased intracellular tyrosinase activity.
- Dehydroglyasperin C downregulated MITF level trough cAMP-CREB pathway
- Dehydroglyasperin C degraded MITF trough the phosphorylation of ERK

Abstract:
Background
In mammals, UV radiation induces melanin synthesis in melanocyte for protecting their skin through the stimulation of α-melanocyte stimulating hormone (α-MSH) from keratinocytes. In this study, the inhibitory effects of dehydroglyasperin C (DGC), an useful component of *Glycyrrhiza uralensis* (*G. uralensis*), was investigated on melanogenesis induced by α-melanocyte stimulating hormone (α-MSH) and its mechanisms.

Methods
Melanogenesis suppression effect of DGC on α-MSH induced B16F1 melanoma cells. The cell viability was measured by MTT assay. Expression and phosphorylation of melanogeic protein were conducted using western blot. cAMP acceleration was measured by cAMP immunoassay kit. To investigate whitening mechanism, we used ERK inhibitor (PD98059).

Results
DGC decreased intra cellular tyrosinase (TYR) activity and expression of melanin synthesis related proteins (TYR and TRP-1) in a dose-dependent manner on α-MSH induced melanogenesis. In addition, DGC induced the downregulation of MITF (melanocyte-specific transcription factor) through suppression of cAMP-CREB pathway. Also, phosphorylation of extracellular signal regulated kinase (ERK) decreased MITF by DGC treatment.