

## Ethanol Extracts from the Roots of Reed Prevent Skin Hyperpigmentation, Wrinkle Formation and Dryness

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The roots of reed (*Phragmites australis*) were used in traditional medicine to treat respiratory problems, including symptoms such as high fever and cough. In this study, we identified the active ingredient from 70% EtOH reed root extract, and evaluated the whitening, wrinkle improvement and moisturizing effects. The content of *p*-coumaric acid, the active ingredient of the roots of *P. australis*, was slightly lower in 70% EtOH extract than in 100% EtOH extract. However, 70% EtOH reed root extract showed similar or higher effect in reducing power, DPPH, hydrogen peroxide scavenging, and nitric oxide scavenging activity compared to 100% EtOH extract. Moreover, 70% EtOH reed root extract markedly inhibited melanogenesis in B16F10 cells treated with  $\alpha$ -melanocyte-stimulating hormone. 70% EtOH reed root extract significantly inhibited the mRNA expression of matrix metalloproteinase-1 (MMP-1) and reduced elastase activity in HDF human dermal fibroblasts. In addition, 70% EtOH reed root extract ameliorated hyaluronic acid synthase-2 (HAS-2) expression induced by ultraviolet B (UVB) stimulation in HaCaT keratinocytes. The results of this study suggest that 70% EtOH reed root extract has potential as a functional cosmetic material related to whitening, wrinkle improvement, and moisturizing.

**Key words:** Moisturizing, *Phragmites australis*, Skin whitening, Wrinkle improvement

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