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Antioxidant, Anti-wrinkle, Whitening, and UV-protective Effects of *Polygonumtinctorium* Flower

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Abstract: This study was carried out ot investigate the antioxidant, anti-wrinkle, whitening, and UV-protective effects of polygonumtinctorium flower extracts (PTFE). The antioxidantive effects were determined by measuring2,2-diphenyl-1-[picrylhydrazyl (DPPH) and ABTS free radical- scavenging activities. In addition, the elastase,tyrosinase, and melanogenic inhibitory potential of PTFE were estimated. The protective effect of PTFE against UV-inducedcytotoxicity in HaCaT keratinocytes was also measured. Tesults showed that DPPH and ABTS free radical-scavenging activities of PTFE increased in a dose-dependent manner, withjalf maximal inhibitory concentration (IC_{50}) values of 40.70 and 31.59μg/mL, respectively. The capacity of PTFE to inhibit elastase and tyrosinase, key enzymes know to be involved in skin wrinkling and melanogenesis, was also investigated. PTFE showedmoderate anti-tyrosinase (IC_{50}: 444.15 μg/mL) and anti-elastaseactivities. Furthermore, PTFE reduced α –melanocyte stimulating hormone-induced melanin production in B16/F10 murine melanoma cells, indicating that it has anti-melanogenic effects. Finally, we investigated the cellular protective effects of PTFE for potential use in promoting human skin health. PTFE efficiently protected HaCaT keratinocytes against UV-induced cellular toxicity. These results suggest that PTFE possesses several biological activities that confer protection against skin aging and melanogenesis. Further investigations will focus on cell-based *in vitro*assays andidentification of the major active components mediating itsanti-aging and anti melanogenesis effects.

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