ABSTRACT BOOK ABSTRACTS



PIGMENTATION

## THE BIO-FUNCTIONAL SKIN CARE INGREDIENT LOTUS EXTRACT INHIBITING MELANIN SYNTHESIS AND INDUCING AUTOPHAGY IN HUMAN MELANOCYTES

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Background: Hyperpigmentation disorders such as age spots, melasma etc. are the big concern especially for women. Skin lightening agents are the common approaches to improve those issues. Recently some bio-functional skin care ingredients, such as lotus extract, were reported to be effective for hyperpigmentation disorders treatment. However, whether and how lotus extract would influence melanogenesis of human epidermal melanocytes (HEMs) is unknown.

Objective: To evaluate the effects of Lotus extract on melanogenesis in HEMs.

Methods: HEMs were treated with the nature derived bio-functional ingredient lotus extract. After 50ppm, 100ppm and 200ppm treatment, cell viability was analyzed by CCK-8 assay, and apoptosis was assessed by Annexin V APC assay. Melanin content and tyrosinase activity were measured by spectrophotometer. Melanosome stage and autophagosomes were determined under TEM. The formation of autophagic punctate structures was observed under confocal microscope. RT-PCR and western blotting were used to assess the expression of relative mRNA and protein levels.

Results: Lotus extract treatment in 100ppm had no effects on HEMs cell viability and apoptosis. Treatment with lotus extract in 100ppm inhibited melanosome maturation, decreased melanin content and tyrosinase activity. Inhibition was accompanied by the decreased expression of tyrosinase (TYR), tyrosinase-related protein-1 (TRP-1) and microphthalmia-associated transcription factor (MITF) on both mRNA and protein levels. Autophagosomes were observed under TEM. Autophagic punctate structures of microtubule-associated protein light chain 3 (LC3) proteins were induced by lotus 100ppm treatment. The configuration change of LC3 from LC3-I to LC3-II, and the degradation of p62 protein were observed after lotus 100ppm treatment.

Conclusions: Our finding demonstrated that the nature derived bio-functional ingredient lotus extract suppressed melanin content in HEMs, and the effect was caused by its











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inhibition on melanogenesis and the induction of HEMs autophagy. This may provide new insights into the efficacy of lotus extract in the treatment of hyperpigmentation disorders.



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