

Oral presentation | B 食品機能 (Food Function)

📅 Thu. Aug 28, 2025 3:00 PM - 5:30 PM JST | Thu. Aug 28, 2025 6:00 AM - 8:30 AM UTC 🏢 Room C(2F 123)

[2Cp01-10] 食品機能 抗酸化、その他食品機能

Chair:Kazumi Osada

3:45 PM - 4:00 PM JST | 6:45 AM - 7:00 AM UTC

[2Cp04] Intervention of aggregates astaxanthin nano-delivery system on skin photoaging

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Keywords : Aggregates astaxanthin、UVA/UVB、anti photo-aging

【Purpose】 The skin is the most widely distributed and complex organ in the human body. Chronic skin damage caused by UVA/UVB-radiation, which is the main cause of skin photoaging in coastal areas. Astaxanthin, as the most powerful natural antioxidant ever discovered, demonstrates potential in mitigating UVA/UVB-induced skin-photoaging. Here, a novel astaxanthin nano-delivery system is proposed for alleviating skin photoaging **【Methods】** H/J-aggregates astaxanthin/BSA/Chitosan nanoparticles (H/J-ABC-NPs) were fabricated via a bottom-up layer-by-layer self-assembly technique. Oxidative damage was induced in L929 cells using H₂O₂ to verify the antioxidant effects of H/J-ABC-NPs. UVA/UVB irradiation-induced BALB/c mice photoaging model was constructed to explore the anti-skin photoaging ability of H/J-ABC-NPs. **【Results】** H-ABC-NPs and J-ABC-NPs were both spheres with particle size around 231±9 nm and 368±5 nm, respectively. The dominant driving forces of H/J-ABC-NPs formation mainly included electrostatic, hydrophobic interactions and hydrogen bonding. H/J-ABC-NPs showed excellent cell safety and antioxidant activity in L929 cells of H₂O₂-induced oxidative damage, which inhibited production of ROS, promoted expression of SOD and CAT. Meanwhile, H/J-ABC-NPs showed anti-photo-aging potential in UVA/UVB irradiation-induced BALB/c mice photoaging model, which reduced wrinkles of the skin and collagen fiber fractur. In addition, H/J-ABC-NPs alleviated the inflammatory response, oxidative damage and degradation of collagen by promoting expression of SOD, CAT, GSH-Px, HYP and HA, inhibiting the overexpression of MDA, IL-1α, IL-6, IL-1β and MMP-1 in mice.