Young Scholars and International sessions (Poster presentation) | 若手の会ポスター発表

Thu. Aug 28, 2025 9:00 AM - 6:00 PM JST | Thu. Aug 28, 2025 12:00 AM - 9:00 AM UTC Poster room 4F(4F)

[P107-P159] Poster Presentation Awards / International Poster Award for Young Researcher

8月28日（木）9:00～18:00　（17:30撤収）
8月28日（木）13:15～14:00　討論タイム（ポスター番号偶数番号）
8月28日（木）14:00～14:45　討論タイム（ポスター番号奇数番号）

[P145] Astaxanthin mediates the regulation of FFAs-induced lipid accumulation in HepG2 cells

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Keywords：Aggregates astaxanthin、Nano delivery system、lipid metabolism、clock gene

【Purpose】NAFLD is a common disorder characterized by the accumulation of triglycerides in hepatocytes without excessive alcohol intake. In recent years, with the change of people's dietary structure and lifestyle, the incidence of NAFLD has gradually had a youthful trend. Astaxanthin was a potentially promising therapeutic agent for NAFLD due to its role in attenuating lipid accumulation.**【Methods】**H/J aggregates astaxanthin/BSA/chitosan nanoparticles (H/J-ABC-NPs) were prepared using protein-polysaccharide nanocarriers in order to improve the water dispersibility and stability of astaxanthin. The Caco-2 cell model was used to explore the cellular uptake, transmembrane absorption, and uptake mechanism of the used H/J-ABC-NPs. Lipid accumulation was induced in HepG2 cells using oleic acid (OA) and palmitic acid (PA) to validate the ameliorative effects of H/J-ABC-NPs on lipid accumulation.**【Results】**Caco-2 cells showed great uptake efficiency of both H-ABC-NPs and J-ABC-NPs. H-ABC-NPs and J-ABC-NPs entered the cells mainly by passive transport. H/J-ABC-NPs significantly reduced OA- and PA-induced lipid accumulation and lowered TC, TG, ALT, and AST in HepG2 cells. H/J-ABC-NPs considerably lowered the mRNA expression level of FAS, SREBP-1c, and ACC and increased the mRNA expression of AMPK in OA and PA-induced HepG2 cells. Meanwhile, H/J-ABC-NPs considerably lowered the mRNA expression level of Bmal-1 and increased the mRNA expression of Clock. The above results suggest that H-ABC-NPs have the potential to ameliorate temporal rhythm disorders. In conclusion, H/J-ABC-NPs inhibited the SREBP-1c, FAS, and ACC signaling pathways, and activated the AMPK signaling pathways, which mitigated lipid accumulation.

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