

New study uncovers astaxanthin's antiinflammatory potential against lipopolysaccharide-induced inflammation

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Schematic diagram of the anti-inflammatory effects of AST. Credit: Wu Yahui



Recently, a research team led by Prof. Huang Qing at Hefei Institutes of Physical Science of Chinese Academy of Sciences found a new mechanism by which astaxanthin (AST) can target IL-6 and thus reduce LPS-induced adverse inflammatory response in macrophages.

The research results have been published in Food & Function.

Astaxanthin is a kind of natural substance with strong antioxidant effect. The latest research shows that it may also have a certain antiinflammatory effect, but its specific mechanism is unknown.

In this study, researchers selected human monocytic leukemia cellderived <u>macrophages</u> (THP-1) as experimental cells and lipopolysaccharide (LPS) as <u>inflammatory stimuli</u> to study the molecular mechanism of astaxanthin's anti-inflammatory effect.

They found that AST intervention significantly decreased LPS-induced <u>oxidative stress</u>, boosted cell repair, and reduced inflammatory cytokine damage by substantially inhibiting NF- κ B translocation and activation, activating p53 and inhibiting STAT3. Through further analysis and experiments, the team confirmed that AST directly binds to IL-6, disrupting the inflammatory feedback loop and potentially preventing inflammatory storms.

The results suggest that the direct binding of astaxanthin to IL-6 can inhibit the positive feedback loop of inflammatory factors, which may inhibit the inflammatory storm caused by adverse inflammatory reactions.

"Our study provides experimental and theoretical basis for astaxanthin as a <u>dietary supplement</u> with anti-inflammatory or immunomodulatory functions," said Wu Yahui, a member of the team.



More information: Yahui Wu et al, Astaxanthin targets IL-6 and alleviates the LPS-induced adverse inflammatory response of macrophages, *Food & Function* (2024). DOI: 10.1039/D4FO00610K

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