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# Development of High-Purity and High-Bioavailability Lycopene, and Launch of Sample Distribution

HARIMA CHEMICALS GROUP, INC.

Harima Chemicals Group, Inc. has successfully established a mass production process for lycopene—a carotenoid known for its antioxidant properties—through a bioprocess jointly developed with the Research Institute of Innovative Technology for the Earth (RITE). With commercial-scale fermentation trials completed, sample distribution will begin in April 2026. Product launch is planned within fiscal 2026, with a sales target of JPY 2 billion by fiscal 2030. Partner selection in the pharmaceutical, cosmetics, and food industries is also underway.

This development was supported by the New Energy and Industrial Technology Development Organization (NEDO) under the program “Development of Production Technologies for Bio-based Products to Accelerate Carbon Recycling,” within the project “Development of an Industrial-Scale Bioproduction System for Highly Bioavailable Carotenoids” (FY2022–FY2024).


Lycopene, a major carotenoid found in tomatoes and other vegetables, is valued for its antioxidant activity and for reported benefits in areas such as skin health, weight management, and blood flow. Although global demand continues to rise, supply from plant extraction remains limited, highlighting the need for alternative production methods.

To address this, Harima and RITE developed a smart-cell–based bioprocess (engineered cells designed for efficient target production) for large-scale lycopene production. Commercial-scale demonstrations were conducted in collaboration with a biofoundry in the Kanto area operated by NEDO project participant Green Earth Institute Co., Ltd.

Compared with plant extraction or petroleum-based synthesis, this bioprocess avoids competition with food resources and can contribute to reductions in $CO_2$ emissions. Two product types have been developed: High-Purity Lycopene (powder), characterized by exceptionally low impurity levels, and High-Bioavailability Lycopene (oil-soluble) which exhibits up to 7.4 times higher bioavailability than conventional plant-derived products. Both product types have passed safety tests required for cosmetic applications.

Expansion into food and pharmaceutical-grade applications is planned. In addition, industrial-scale production technology for rare, highly bioavailable natural carotenoids is under development, with process establishment expected in fiscal 2026. Harima will continue to pursue growth fields through functional and sustainable product offerings.

**■ Reference Data**

・Please see the NEDO release here:
https://www.nedo.go.jp/english/news/AA5en_100481.html

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