Accelerating Development of Technology for CO_2-derived Aromatic Compounds
-Towards Future Independence from Fossil Resources-

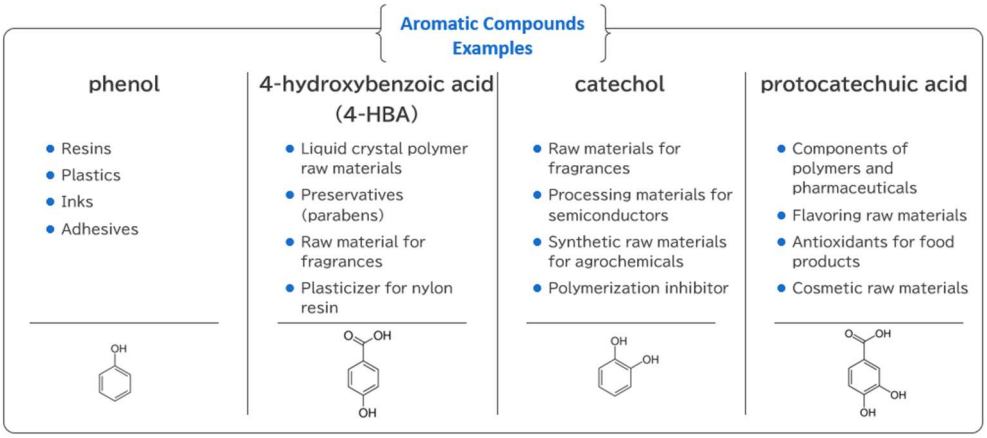
Utilization of Carbon Dioxide Institute Co., Ltd. (UCDI) is pleased to announce a newly developed technology for generating aromatic compounds such as phenol, 4-hydroxybenzoic acid (4-HBA), catechol, and protocatechuic acid from carbon dioxide (CO_2). A patent application has been filed for this new technology as the company explores modalities for its practical application.

Aromatic compounds are essential ingredients of widely used everyday products such as plastics, resins, pharmaceuticals, fragrances, and dyes. Most aromatic compounds are currently produced via petrochemical processes, thereby exposing them to all the downsides of adverse environmental impacts of CO_2 emissions, fluctuations in crude oil prices, and geopolitical risks. In recent years, a growing demand to establish sustainable production methods divorced from fossil resources has been driven by the pursuit of carbon neutrality.

- Technical Overview -

UCDI® Hydrogen Bacteria have a high inherent potential to produce organic compounds from CO_2 and hydrogen. By successfully implementing the company's proprietary enzyme catalyst technology in the Bacteria, UCDI has pioneered a biosynthetic pathway for aromatic compounds, a pathway upon which new technology for producing aromatic compounds from CO_2 will be based. With the new technology, CO_2 emissions can be significantly suppressed compared to those attendant to conventional fossil resources. Moreover, the new technology offers obvious advantages over production of aromatic compounds from biomass resources where securing raw materials and logistics costs are issues. The new technology utilizes a universal resource, CO_2, and thus affords stable and sustainableproduction.

Aromatic compounds produced by UCDI® Hydrogen Bacteria involve an innovative technology that can contribute to the sustainability of the entire chemical industry from the perspective of economic security. This new approach to both reducing environmental impact and ensuring a stable supply of resources avoids dependence on fossil or agricultural resources.



Since its establishment in 2015, UCDI has collaborated with the public as well as private sectors to advance research on and commercialization of CO_2 as a resource. Centered on its proprietary UCDI® Hydrogen Bacteria, the company's mission calls for "using innovative biotechnology to realize CO_2 as an energy resource that contributes towards addressing food shortages and global warming.

The company has made steady progress in research and commercialization of CO_2 resources with UCDI® Hydrogen Bacteria at the core. It continues to pursue technological innovations towards practical application of its nascent technology and strengthen efforts toward the realization of a carbon-recycling society.

Utilization of Carbon Dioxide Institute Co., Ltd.

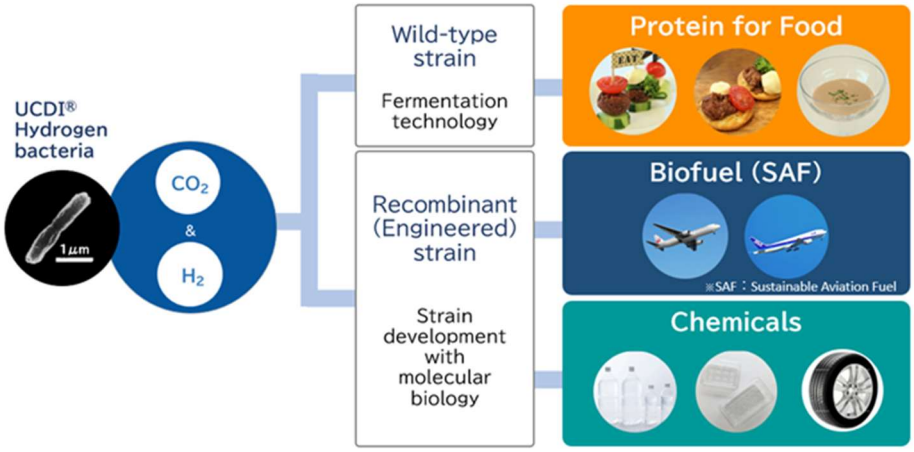
＜Company Profile＞

Head Office/ Research Institute	14F, Tradepia Odaiba, 2-3-1 Daiba, Minato-ku, Tokyo, Japan
Representative	Dr. Hideaki Yukawa（CEO/CSO）
Established	August 12, 2015
Paid-in Capital	¥247 million
HP	https://www.co2.co.jp/en/top

＜Business Fields＞

UCDI pursues research, development, and commercialization of innovative biotechnologies based on the capacity of UCDI® Hydrogen Bacteria to utilize CO_2 as a nutrient. 1 cell can multiply to 16 million individuals in 24 hours (1 gram of cells grows 16 tonnes of cell mass in 24 hours).

Within the three business fields of Protein (for human consumption), Bioenergy and SAF, and Chemicals (various chemical products), the company aims to contribute solutions that address problems of food shortage and dependence on fossil resources.



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