TECH OFFER

Efficient & Sustainable Method For Algae-Based Carotenoid

KEY INFORMATION

TECHNOLOGY CATEGORY:
Foods - Ingredients
Healthcare - Pharmaceuticals & Therapeutics
Personal Care - Nutrition & Health Supplements

TECHNOLOGY READINESS LEVEL (TRL): TRL7
COUNTRY: JAPAN
ID NUMBER: TO174638

OVERVIEW

Yellow, orange and red carotenoids are valued not just for their colour and aesthetics but mostly for their antioxidant properties and preventive roles in human health and diseases. Lutein, for example, is well known for preventing age-related eye diseases. As humans do not synthesize carotenoids, we need to include these carotenoids in our diet and lifestyle regimes. Currently, carotenoids are derived synthetically, resulting in substantial waste being generated thus making it detrimental to the environment. Finding sustainable means to provide commercially natural carotenoids is hence, still a challenge.

This clean-tech owner in Japan is currently growing carotenoid-rich algae biomass in a sustainable cultivation platform. This can be used in supplements, cosmetics, food and as natural pigment alternatives. Several partners have invested in the start-up to work on producing carotenoid-rich biomass for potential anti-stress supplements and natural food coloring.

The technology owner is seeking more partners who would be interested in joint R&D collaboration by applying the technology

in order to develop a novel product or solution, or partners who would be interested in licensing-in the technology such as strain or cultivation technologies.

TECHNOLOGY FEATURES & SPECIFICATIONS

Focusing on the functionality of algae, this start-up has successfully screened certain algae species. Together with a sustainable cultivation method, the technology owner's algae strains achieve higher productivities that can potentially surpass other carotenoid sources. Using this approach, the partner can obtain either carotenoid-rich biomass or carotenoid extract, depending on the preference.

Aside from being 100% naturally-sourced from algae, the technology owner's in-house carotenoids show stability and usability that can rival synthetic carotenoids. The technology uses closed -bioreactors for the cultivation of algae. It is sustainable in terms of the rapid growth of algae compared to other carotenoid sources such as plants which require land and longer periods for harvesting thus larger inputs. The algae used in general has higher productivity and can be harvested for many cycles compared to land plants.

The yield of carotenoids using this technology is 4-5x higher compared to natural sources such as flowers and recombinant yeast strains.

POTENTIAL APPLICATIONS

Potential applications include (but are not limited to):

- Dietary Supplements (i.e., eye health, antioxidants, anti-stress)
- Cosmetics
- Animal/Aquaculture Feed (nutrition, color, product quality)
- Foods (nutritional benefit; food coloring)
- Natural pigments

UNIQUE VALUE PROPOSITION

- Sustainable
- Cost-efficient development using algae
- Do not compete for land use
- Grows faster than conventional plants
- CO2 mitigation by algae which can lessen environmental burden