News Release
Kao Corporation

Kao
Kirei–Making Life Beautiful

14-10, Nihonbashi Kayabacho 1-chome, Chuo-ku, Tokyo 103-8210 Japan www.kao.com/global/en

FOR IMMEDIATE RELEASE

June 21, 2023

Kao to Provide Saccharification Enzymes to the Research Association of Biomass Innovation for Next Generation Automobile Fuels for Research into Producing Bioethanol Fuel for Automobiles

Kao Corporation has concluded a memorandum of understanding with the Research Association of Biomass Innovation for Next Generation Automobile Fuels regarding the use of saccharification enzymes in a research facility for bioethanol production. The parties will work together on using saccharification enzymes at a facility researching production of second-generation bioethanol[*1] using non-edible biomass as raw material.

*1 NSE Starts Construction of a Second-generation Bioethanol Production Facility which has been Commissioned by the Research Association of Biomass Innovation for Next Generation Automobile Fuels

The Research Association of Biomass Innovation for Next Generation Automobile Fuels

Members of the Association are ENEOS Corporation, Suzuki Motor Corporation, Subaru Corporation, Daihatsu Motor Co., Ltd., Toyota Motor Corporation, Toyota Tsusho Corporation and Mazda Motor Corporation. With the goal of creating a carbon neutral society, these companies are working together on technological research into the use of biomass and efficient production methods for producing bioethanol fuel for automobiles.

Kao's Saccharification Enzyme Technology, Contributing to a Sustainable Future

Bioethanol utilizing biomass as a renewable plant-based resource is in focus today from the viewpoint of achieving carbon neutrality. But biomass must be broken down to ready it for use, and enzymes are essential for this process. While non-edible biomass[*2] generally cannot be broken down easily, Kao, with over 30 years' experience in developing detergent enzymes, has conducted research into enzymes capable of efficiently breaking down non-edible biomass because this raw material, which does not compete with edible foodstuffs and is gentle to the environment, is generally seen as a valuable, sustainable resource.

Recognizing Kao's expertise in enzyme technology, the Association will be using Kao's saccharification enzyme for breaking down non-edible biomass into sugars in its research on bioethanol production.

*2 Non-edible biomass refers to plants not grown for food use, agricultural residue and other natural materials, as opposed to edible biomass such as corn, sugarcane and others.

Utilizing Kao's Saccharification Enzymes at the Association's Bioethanol Production Facility

The Association plans to build a production research facility in Okuma, Fukushima Prefecture to research utilizing non-edible plant-based resources as a raw material for bioethanol[*3]. A four-step process is developed to produce bioethanol: pre-treating of biomass; using saccharification enzymes to break down the biomass into sugars; fermenting the sugars by adding yeast[*4] to produce ethanol; and distilling and refining the fermented ethanol (Figure 1). In the second step, saccharification enzymes developed by Kao will be used to break the biomass down into sugars.

*3 The Town of Okuma and the Research Association of Biomass Innovation for Next Generation Automobile Fuels Sign an Agreement to Locate a Facility in Okuma (Japanese)

*4 Yeast (Toyota XyloAce™) developed by Toyota Motor Corporation

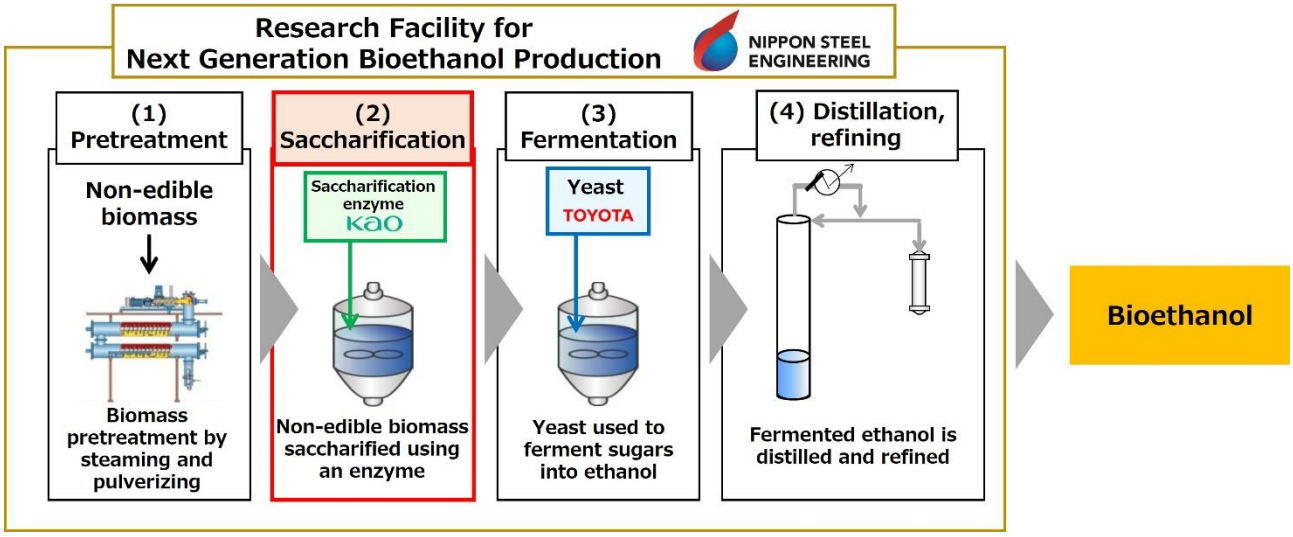

Figure 1. Process for producing ethanol from biomass

Summary

Kao has conducted research and development into developing and manufacturing its distinctive enzymes and used those enzymes in its own products. Given the increasing use of biomass and the growing need for high-performance saccharification enzymes, Kao plans to produce saccharification enzymes necessary for bioethanol fuel production to meet the needs of customers in Japan and abroad, in the expectation that this will help reduce industry CO_2 emissions and contribute to creating a sustainable future.

Related Information

The Research Association of Biomass Innovation for Next Generation Automobile Fuels website (Japanese)

Kao Chemicals

Inquiry (Chemical Products) (site.com)

About the Kirei Lifestyle Plan

Over the past 130 years, Kao has worked to improve people's lives and help them realize more sustainable lifestyles—a Kirei Lifestyle. The Japanese word 'kirei' describes something that is clean, well-ordered and beautiful, all at the same time. The Kao Group established its ESG strategy, the Kirei Lifestyle Plan in April 2019, which is designed to deliver the vision of a gentler and more sustainable way of living. By 2030, Kao aims to empower at least 1 billion people, to enjoy more beautiful lives and have 100% of its products leave a full lifecycle environmental footprint that science says our natural world can safely absorb. For more information, please click here.

About Kao

Kao creates high-value-added products and services that provide care and enrichment for the life of all people and the planet. Through its portfolio of over 20 leading brands such as *Attack*, *Bioré*, *Goldwell*, *Jergens*, *John Frieda*, *Kanebo*, *Laurier*, *Merries*, and *Molton Brown*, Kao is part of the everyday lives of people in Asia, Oceania, North America, and Europe. Combined with its chemical business, which contributes to a wide range of industries, Kao generates about 1,550 billion yen in annual sales. Kao employs about 35,400 people worldwide and has 136 years of history in innovation. Please visit the Kao Group website for updated information.