

July 29, 2020

Press Release

Kirin Holdings Company Limited  
Mitsui Fudosan Co., Ltd.

**Kirin and Mitsui Fudosan Launch Joint Field Research Project in  
Kashiwa-no-ha Smart City  
to Ascertain Health Benefits of Kirin-developed Matured Hop Extracts  
for Human Brain Functions**

Kirin Holdings Company Limited (headquartered in Nakano-ku, Tokyo; President and CEO: Yoshinori Isozaki) and Mitsui Fudosan Co., Ltd. (headquartered in Chuo-ku, Tokyo; President and CEO: Masanobu Komoda) launched a joint field research project this month to ascertain the health benefits that non-alcoholic beer containing Kirin's proprietary matured hop extracts provide for human brain functions. The field research is being conducted on selected residents of and commuters to Kashiwa-no-ha Smart City, a model community in Kashiwa, Chiba Prefecture.

Through this research, Kirin and Mitsui Fudosan intend to play an active role in helping the residents and commuters of Smart City stay fit and healthy. Furthermore, by using the research findings on how matured hop extracts affect people's mood states and cognitive functions, the two companies will be better able to assist people across a broad range of ages in maintaining healthy brain functions through the consumption of food and beverages containing Kirin's matured hop extracts.

**Proven health benefits of matured hop extracts developed by Kirin**

Recently, there has been growing public awareness regarding brain health, as evidenced by an increasing interest in preventing dementia and improving cognitive functions among the elderly as well as maintaining and improving memory, concentration, and mental health among broader age groups. To this end, Kirin has been conducting extensive research on food and brain health. A joint study by Kirin and the University of Tokyo in 2017 discovered that hop-derived bitter acid—the bitter component of beer—can help prevent Alzheimer's disease<sup>1</sup>. In addition, Kirin developed less-bitter matured hop extracts suitable for use in a variety of food products and found that the bitter acid derived from matured hops activates brain-gut interaction, thereby improving cognitive functions and helping mitigate depression. Furthermore, joint clinical trials conducted by Kirin and Juntendo University Faculty of Medicine found in June 2020 that bitter acid derived from matured hops can improve mood states and cognitive functions of older adults with perceived subjective cognitive decline<sup>2</sup>.



**Outline of field research project**

The purpose of the field research is to ascertain the health benefits of matured hop extracts for human brain functions by asking adult participants to drink a non-alcoholic beer containing matured hop extracts once a day for three weeks and undergo a test to evaluate how their mood states and subjective cognitive functions change before and after consumption.

- (1) Research period: From July through December 2020
- (2) Participants: 100 men and women in their 20s and older, who either live in or commute to Kashiwa-no-ha Smart City, Kashiwa, Chiba Prefecture
- (3) Participants will drink a 350-ml can of non-alcoholic beer containing matured hop extracts once a day for three weeks.
- (4) The participants' mood states and subjective cognitive functions will be checked before and after consumption and they will be asked to complete a questionnaire survey about their lifestyles.

## The Kirin Group's Health Science Initiative

As part of Kirin Group Vision 2027 (KV2027), our long-term management vision, we have set the goal of becoming “a global leader in CSV<sup>3</sup>, creating value across our world of Food & Beverages to Pharmaceuticals.” KV2027 also calls for establishing a new Health Science domain to augment the Group's existing Food & Beverages domain and Pharmaceuticals domain.

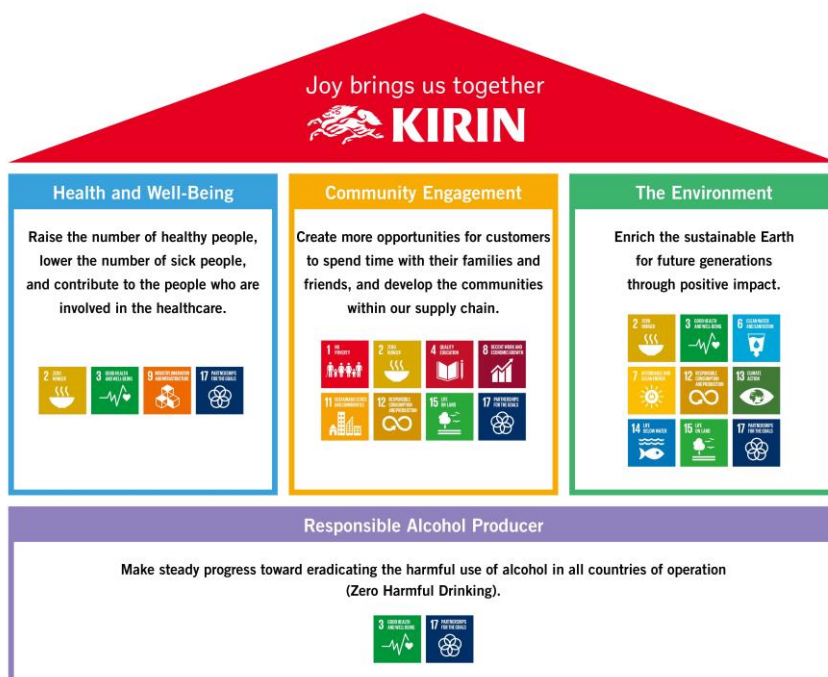
## Mitsui Fudosan's Kashiwa-no-ha Smart City Project

Mitsui Fudosan launched an urban development project in 2005 to create a smart and compact community around Kashiwa-no-ha Campus Station in Kashiwa, Chiba Prefecture, based on the three themes of: symbiosis with the environment, health and longevity, and new industry creation. The private, academic, and public sectors have been working together in applying the most advanced urban-development expertise and know-how to creating a model community that provides solutions to the diverse social issues facing many cities around the country. In the Smart City Project, a series of field tests have been conducted to validate the concept of creating a solution-oriented community, and the joint field research by Kirin and Mitsui Fudosan addresses “health and longevity,” which is one of the three community-development themes for Smart City, by ascertaining the health benefits for brain functions of matured hop extracts.



## The Kirin Group's CSV Purpose

The Kirin Group's CSV Purpose is a set of guiding principles under which the Group strives to achieve sustainable growth and create value together with people across society. Each business segment of the Group fulfills the Group's CSV Commitment, which positions Kirin as a responsible alcohol producer. The Group's efforts are within self-imposed guidelines related to such social issues as “health and well-being,” “community engagement,” and “the environment.” Going forward, the Group will remain a responsible alcohol producer and continue to address these issues with the goal of bringing joy to society in general and contributing to a joyful life of customers.



## The Mitsui Fudosan Group's contribution to SDGs

[https://www.mitsuifudosan.co.jp/english/corporate/esg\\_csr/](https://www.mitsuifudosan.co.jp/english/corporate/esg_csr/)

The Mitsui Fudosan Group aims for a society that enriches both people and the planet under the principles of coexist in harmony with society, link diverse values and achieve a sustainable society, and advances business with an awareness of the environment (E), society (S) and governance (G), thus promoting ESG management. By further accelerating its ESG management, the Group will realize Society 5.0, which the Japanese government has been advocating, and contribute significantly to achieving the SDGs.

The initiatives covered in this press release are contributing to two of the UN's SDGs.:

Goal 3: Good health and well-being

Goal 17: Partnerships for the goals



1. Title of research paper: Iso- $\alpha$ -acids, Bitter Components of Beer, Prevent Inflammation and Cognitive Decline Induced in a Mouse Model of Alzheimer's Disease.

Authors: Yasuhisa Ano, Atsushi Dohata, Yoshimasa Taniguchi, Ayaka Hoshi, Kazuyuki Uchida, Akihiko Takashima and Hiroyuki Nakayama

Published in: Journal of Biological Chemistry

DOI name: 10.1074/jbc.M116.763813

2. Title of research paper: Supplementation with matured hop bitter acids improves cognitive performance and mood state in healthy older adults with subjective cognitive decline

Authors: Takafumi Fukuda, Tohru Ohnuma, Kuniaki Obara, Sumio Kondo, Heii Arai, and Yasuhisa Ano

DOI name: 10.3233/JAD-200229

3. Creating Shared Value: Generating value to be shared with customers and society in general