

Clinical trial on participants with subjective cognitive decline demonstrates that matured hops bitter acids in beer can improve cognitive function and mood state — Joint study with Juntendo University —

A joint study with Juntendo University Faculty of Medicine (Dean: Nobutaka Hattori), the Kirin Central Research Institute (General Manager: Keiji Deuchi), part of Kirin Holdings Company, Limited (President and CEO: Yoshinori Isozaki), involving clinical trials on older adults with subjective cognitive decline (SCD), found that bitter acids derived from hops—the bitter component of beer—can improve cognitive function and mood state. The findings were published in the *Journal of Alzheimer’s Disease*^{*1}, an international academic journal, on Tuesday May 26, 2020.

Background

With the steady aging of the Japanese population, the rising incidence of dementia and decline in cognitive function has become a major issue. Stress levels throughout society have also prompted an increasing focus on mental health. In the absence of effective post-diagnosis therapeutic treatments for dementia, the focus is shifting towards everyday preventative measures. A joint study between Kirin Holdings and the University of Tokyo in 2017 demonstrated for the first time that hops-based bitter acids—the bitter component of beer—can help prevent Alzheimer’s disease in a rodent model^{*2}. This prompted the Company to develop a unique low-bitter matured hops extract suitable for use in a range of food products. The bitter acid components from matured hops, has been shown to activate brain-gut interaction, thereby boosting cognitive functioning and helping to mitigate depression. These findings prompted the Company to set up a joint venture called INHOP Company, Limited in 2019 in partnership with Japanese advertising giant Dentsu Company, Limited as a vehicle for promoting the health benefits of hops in general and matured hops in particular.

About the research

The research was a joint initiative involving Kirin Holdings and the Juntendo University Faculty of Medicine. A randomized comparative trial was performed to evaluate the effects of matured hops bitter acid on cognitive function and mood state. The participants comprised healthy older adults with subjective cognitive decline (SCD), randomly divided into two groups. The group given matured hops showed significantly higher score of selective attention and lower level of stress marker compared with the placebo group.



Method

A randomized placebo controlled double-blind trial was performed. Hundred healthy participants aged between 45 and 69 with subjective cognitive decline (SCD) were randomly allocated to two groups: one was given a supplement containing matured hops bitter acid for 12 weeks while the other was given a placebo over the same period. Cognitive functioning of all participants was evaluated via neuropsychological testing at zero and 12 weeks of the intervention, while stress levels were determined via analysis of stress markers in saliva.

Results

The score of SDMT (Symbol Digit Modalities Test) evaluating selective attention^{*4}, which is a part of the Clinical Assessment for Attention (CAT)^{*3} at 12 weeks of the intervention showed statistically significant increase in the matured hop group than in the placebo group ($p = 0.045$). (Figure 1).

Beta-endorphin as a stress marker in saliva after neuropsychological testing at 12 weeks of the intervention showed statistically significant reduction relative to the placebo group. In addition, in the subcategory analysis based on the SCD questionnaire, the matured hops group showed statistically significant better in both attention and memory performance.

The results showed that supplementations with matured hops bitter acid can improve cognitive function (particularly the attention function) and improve stress levels and mood state in older adults.

Future outlook

Kirin Group Vision 2027 (KV2027), the Long-Term Management Vision from the Kirin group, sets out the broad aims of creating value across our world of Food & Beverages to Pharmaceuticals and becoming a global leader in CSV^{*5}. KV2027 also calls for the establishment of a new Health Science domain to augment the existing business Food & Beverages domain and Pharmaceuticals domain. Based on these results, the Kirin group aim to contribute to the improvement of cognitive function and mood state by utilizing matured hops extract.

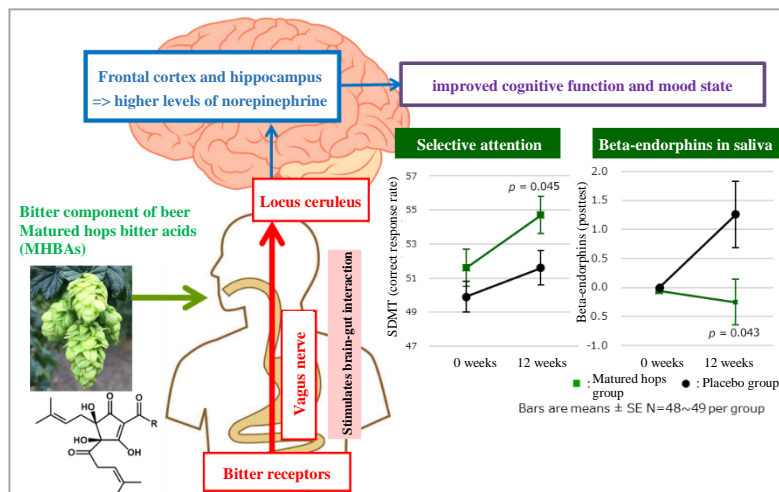


Figure 1 Test results showing that matured hops bitter acid can boost cognitive performance and lift mood

- *1 Title: Administration of supplement with matured hop bitter acids (the bitter component of beer) improves cognitive performance and mood state in healthy older adults with subjective cognitive decline—a randomized double-blind study
Authors: Takabumi Fukuda¹), Toru Onuma²), Kuniaka Obara¹), Sumio Kondo³), Hei-i Arai²) and Yasuhisa Ano¹)
From: ¹) Kirin ²) Juntendo University Faculty of Medicine ³) Kenshokai
DOI No. 10.3233/JAD-200229
- *2 Title: Iso- α -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
Publication: Journal of Biological Chemistry
DOI No. 10.1074/jbc.M116.763813.
- *3 Language memory assessment test developed by the Japan Society for Higher Brain Dysfunction (JSHBD).
- *4 Cognitive function of identifying and directing attention to specific pieces of information within a larger set.
- *5 Creating Shared Value = generating value to be shared with our customers and society in general.

KIRIN brings joy to society by crafting food and healthcare products inspired by the blessings of nature and the insights of our customers.