

## Boosting Your Brain: Expansion of Citicoline production facilities at Kyowa Hakko Bio

- Pumping up production of high-performance brain health ingredient to meet increasing demand -

**TOKYO, February 16, 2021** – Kirin Holdings Company, Limited (Kirin Holdings) and its subsidiary Kyowa Hakko Bio Co., Ltd. (Kyowa Hakko Bio) announced the expansion of citicoline manufacturing facilities at Kyowa Hakko Bio’s Yamaguchi Production Center (Hofu City, Yamaguchi Prefecture, Japan) based on expectations of increased global demand. Manufacturing at the new production facilities is scheduled to start in summer of 2023.

Citicoline is a substance<sup>\*1</sup> that has long been used around the world to treat brain diseases. It is also used in health foods to support improved cognitive function. As the world’s population continues to age, demand for this high-performance raw material is rapidly increasing. In addition, the global e-sports market is forecast to grow at an annual rate of 15% between 2018 and 2023<sup>\*2</sup>, and there are an increasing number of occasions in which better concentration and enhanced cognitive performance is desired. Given these trends, demand for citicoline is growing particularly in the United States for use in energy drinks.

<sup>\*1</sup> In Japan, citicoline is not permitted for use in food and beverages.

<sup>\*2</sup> Newzoo: [2020 Global Esports Market Report](#).

Through this expansion of production capability, Kyowa Hakko Bio will establish a stable global supply network of citicoline to pharmaceutical and health food manufacturers. In addition, efforts will be made to use citicoline in the Kirin Group’s future product development.

Through the stable supply of citicoline, which supports healthy brain function, Kyowa Hakko Bio will help to address the social issue of health and well-being and in particular the need to support overall cognitive health and promote focus and attention<sup>\*3</sup>. Leveraging its cutting-edge fermentation technology accumulated over many years, Kyowa Hakko Bio aims to be a “global specialty fermentation manufacturer” with multiple cost-competitive product pipelines.

<sup>\*3</sup> These statements have not been evaluated by the United States’ Food and Drug Administration

### ● Facility Expansion Outline

1. Start of operations: Summer of 2023 (planned)
2. Location:  
Kyowa Hakko Bio Co., Ltd. Yamaguchi Production Center  
Hofu City, Yamaguchi Prefecture, Japan
3. Products to be manufactured: Citicoline
4. Investment amount: Approximately 7.7 billion yen



Yamaguchi Production Center

### ● Background: Big Business and Cognizin

Kyowa Hakko Bio offers citicoline around the world as a health food additive or active pharmaceutical ingredient in accordance with the regulations in each country, and has about a 50% global market share<sup>\*4</sup>. Particularly in the United States, Kyowa Hakko Bio is selling citicoline under the brand name *Cognizin*.



The Kirin Group believes it is necessary to increase the production capacity of citicoline, which is experiencing growing demand as a functional raw material. Kyowa Hakko Bio has the necessary nucleic acid fermentation technology to stably supply citicoline, and expansion of citicoline production capacity is a pillar of Kyowa Hakko Bio’s medium- to long-term growth strategy. In addition, expanding production at the company’s main Yamaguchi Production Center is expected to increase the company’s competitive position in terms of both quality and cost.

<sup>\*4</sup> Volume basis, as of 2018.

### ● What is Citicoline?

Citicoline is a naturally-occurring substance in the body that helps maintain cell membranes in brain and nerve cells. There are two forms of citicoline: citicoline sodium used as a pharmaceutical and citicoline free-base used in health foods in addition to pharmaceuticals\*5. Citicoline sodium is used to treat cerebral infarctions and strokes, as well as impairments to brain function caused by traumatic injury and glaucoma. Citicoline free-base is used in supplements that support increased cognitive function.

\*5 Uses of citicoline are designated by the laws and regulations in each country; so the use of citicoline free-base in pharmaceuticals or food products varies in each country or region.

The *Kirin Group Vision 2027* long-term management vision statement sets out the broad goals of “creating shared value (CSV) across our world of Food & Beverages to Pharmaceuticals” and becoming “a global leader in CSV\*6.” In addition to the Kirin Group’s existing Food & Beverages domain, and Pharmaceuticals domain, the Group has launched a new Health Science domain to help people stay fit and healthy by leveraging the advanced fermentation technology and biotechnology which the Group has amassed over the years.

\*6 Creating Shared Value. The combination of added value for consumers as well as for society at large.

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