

New facility in Thailand to supply Human Milk Oligosaccharides worldwide
 Vital step to become “global specialty fermentation manufacturer”
 with its pioneering HMO technology

TOKYO, Wednesday November 4, 2020 – KYOWA HAKKO BIO CO. LTD. (Kyowa Hakko Bio), a subsidiary of Kirin Holdings Company, Limited (Kirin Holdings), has announced that it will establish a new facility to manufacture human milk oligosaccharides (HMOs) in Thailand. Kyowa Hakko Bio decided on the move with expectations of a future increase in global demand for HMOs. This move further expands its global footprint to consolidate its position as a global specialty fermentation manufacturer. The new facility is to be established at Kyowa Hakko Bio’s subsidiary Thai Kyowa Biotechnologies Co., Ltd. (Thai Kyowa) in Rayong Province, Thailand. The new facility is scheduled to open operations in the summer of 2022.

Kyowa Hakko Bio was the first company in the world to establish an industrial-scale HMO production system*1, and the actual application of this system will be the core of the company's medium- to long-term growth strategy. After the establishment of this production system, Kyowa Hakko Bio plans to supply HMOs to other companies as well as utilize it for its own and the Kirin Group's product development.

*1: Tetsuo Endo et. al., Appl. Microbiol. Biotechnol. 53, 257-261 (2000)

Under Kirin Holdings’ medium-term business plan, Kyowa Hakko Bio will continue to make fundamental improvements to its quality assurance system and other operations. In addition, Kyowa Hakko Bio aims to grow into a global-scale specialty fermentation manufacturer featuring a large number of highly profitable product pipelines in the future. Kyowa Hakko Bio plans to accomplish this by leveraging the strength of its fermentation technology that it has cultivated over 60 years.

● **Outline of the new HMOs production facility**

1. Start of operation: Summer in 2022 (planned)
2. Production site to be introduced at:
THAI KYOWA BIOTECHNOLOGIES CO., LTD.
3. Location: Rayong Province, Thailand
4. Production capacity: approximately 300 metric tons per year
5. Products to be manufactured: Three products among HMOs (2FL, 3SL, 6SL)^{*2}

*2: 2FL (2'-fucosyllactose), 3SL (3'-sialyllactose), 6SL (6'-sialyllactose)



Thai Kyowa facility

● **Background – Global Scale**

Kyowa Hakko Bio has already established manufacturing processes for three of its HMOs (2FL, 3SL and 6SL). In particular, 3SL and 6SL, for which Kyowa Hakko Bio holds several registered patents, however have never yet been supplied on an industrial scale.

Kyowa Hakko Bio will be able to secure a competitive advantage through its strain development and manufacturing process development capabilities.

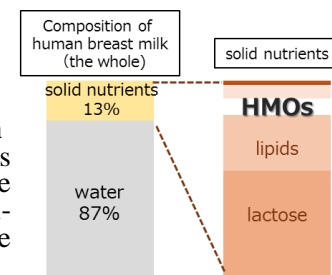
Future growth in demand is expected in China and Southeast Asian markets; so locating a manufacturing base in Thailand will provide Kyowa Hakko Bio with a secure supply capacity and cost competitiveness close to large consumption areas.

● **What are human milk oligosaccharides (HMOs) ?**

Particular oligosaccharides*3 found in human breast milk. HMOs are the third most common solid component in human breast milk, after lactose and lipids, and are particularly abundant in human colostrum. It is rarely found in milk derived from other mammals, such as cow's milk.

In addition to 2FL, 3SL and 6SL, more than 250 HMOs have now been identified in human breast milk. Recent studies have shown that HMOs promote brain development in newborns, act on the development of the immune system, increase resistance to infection, and have anti-inflammatory effect. It has also been reported that HMOs can increase the number of bifidobacteria and improve the intestinal environment.

*3: A carbohydrate whose molecules are composed of a relatively small number of simple sugars (monosaccharides).



<Press Contact>

Corporate Communication Department
 Kirin Holdings Company, Limited
 Nakano Central Park South, 4-10-2 Nakano, Nakano-ku, Tokyo
 Tel +81-3-6837-7028 email address : kirin-cc@kirin.co.jp
 Kirin Holdings Homepage: www.kirinholdings.co.jp/english/

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