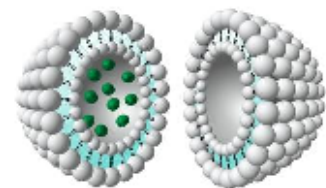

TANAKA Establishes Liposome Mass Production System to Commence Accepting Business from September 9

Sterilization filters used to expand applications to pharmaceuticals with low heat tolerance - Controlling particle diameter enables provision to a wide range of medical, pharmaceutical and cosmetic areas

Tanaka Holdings Co., Ltd. (a company of Tanaka Precious Metals; Head office: Marunouchi, Chiyoda-ku, Tokyo; President & CEO: Akira Tanae) announced today that Tanaka Kikinzoku Kogyo K.K. (Head office: Marunouchi, Chiyoda-ku, Tokyo; President & CEO: President Akira Tanae), which operates the Tanaka Precious Metals Group's manufacturing business, has established a mass production system for liposomes that are nanocapsules encapsulated in a lipid bilayer. On September 9, 2014, Tanaka Kikinzoku Kogyo will commence mass production commissioned by pharmaceutical companies and experimental drug manufacturers, and the supply of capsules used for reagent development.

■ Introduction of liposome mass production equipment and utilization of GMP learned in the bulk manufacturing of platinum anticancer drugs

Liposomes enable their contents to act at the correct site (affected area) by injecting drug solutions encapsulated in a lipid bilayer into the body. Research and development is currently underway with the aim of application in a wide range of areas spanning from drug discovery of pharmaceuticals such as contrast agents to regenerative medicine and quasi-drugs such as cosmetics. Although pharmaceutical companies and cosmetics companies have widely conducted experimental drug development in the past within Japan, there has not been a sufficient mass production system aimed at commercialization.



Liposome image

Tanaka Kikinzoku Kogyo is engaged in research on precious metal and platinum compounds which serve as components in pharmaceutical products, as well as OEM manufacturing of diagnostic agents using colloidal precious metals. It has obtained the Standards for Manufacturing Control and Quality Control for Drugs and Quasi-drugs (Good Manufacturing Practice, GMP) quality control standard certification specified by the Ministry of Health, Labor and Welfare in relation to the mass production of pharmaceuticals and cosmetics. In the process of research and development of anticancer agents using precious metal compounds that has been conducting since 1991, Tanaka Kikinzoku Kogyo invested 100 million yen in 2011 to establish a liposome mass production system on a scale of 20-30 kilograms per lot. The liposome content and the ingredients that make up the lipid can be optimized to match a variety of applications, and are expected to be generally applicable in all areas. From here on, the technology will be used to provide experimental drug manufacturers and pharmaceutical manufacturers with lipid formation and content optimized for each application, encapsulation of specific antibodies, and the provision of the cell membrane that forms the capsule to expand into areas such as preventative, diagnostic and curative medicine, pharmaceuticals and cosmetics.

■ Characteristics of the mass production facilities

These mass production facilities enable the manufacturing of sterile bulk on a mass production scale using sterilization filters. Thermal treatment is conventionally used for sterilization, leading to limitations on the material contained in liposomes. Meanwhile, because a sterilization filter enables sterilization to be carried out by passing through a filter without applying heat, it allows liposomization of pharmaceuticals with low heat tolerance. Furthermore, by utilizing technology for controlling the particle diameter suited to each product, the areas of application of liposomization technology are expected to expand in the future.

<Examples of areas of technology targeted for application>

- Application to cosmetics aimed at preventing skin cancer, etc.
- Application to contrast agents used in diagnosis
- Application to regenerative medicine
- Application to drug discovery through the drug delivery system (DDS)
- Application to making preventative, diagnostic and curative medicine soluble

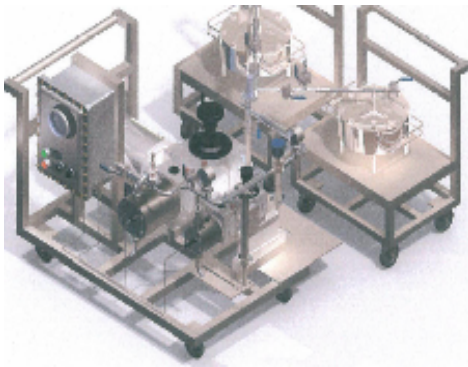


Image of liposome mass production facilities

■ Tanaka Kikinzoku Kogyo's efforts with liposome technology

Over the past two decades, Tanaka Kikinzoku Kogyo has continued to develop and manufacture oxaliplatin bulk, which is an anticancer agent using platinum. Based on these experiences, the company is engaged in the development of manufacturing technology utilizing the liposome drug delivery system.

The drug delivery system is a technology enabling pinpoint transportation by having “hooks” on the exterior of the capsule structure. Biopolymers such as antibodies, sugars and the nucleobases contained in DNA and RNA are used as “hooks” to capture the capsule on the targeted site (affected area). Because the liposomes that are caught in the affected area dissolve and enable the contained solution to react, the drug system is utilized for reducing the adverse effects of anticancer agents. Furthermore, because cancer cells form new blood vessels within the body, the liposomization of anticancer agents needs to be designed to specifically act on these blood vessels. Since the blood vessels formed by cancer cells have larger diameters than normal capillaries, it is possible to prevent capillary damage by designing the liposome particle diameter to be larger than the diameter of capillaries and smaller than the diameter of vessels formed by cancer cells.

■**Tanaka Holdings Co., Ltd. (Holding company of Tanaka Precious Metals)**

Headquarters: 22F, Tokyo Building, 2-7-3 Marunouchi, Chiyoda-ku, Tokyo

Representative: Akira Tanae, President & CEO

Founded: 1885

Incorporated: 1918

Capital: 500 million yen

Employees in consolidated group: 3,562 (FY2013)

Net sales of consolidated group: 967.6 billion yen (FY2013)

Main businesses of the group:

Manufacture, sales, import and export of precious metals (platinum, gold, silver, and others) and various types of industrial precious metals products. Recycling and refining of precious metals.

Website: <http://www.tanaka.co.jp/english> (Tanaka Precious Metals),

<http://pro.tanaka.co.jp/en> (Industrial products)

■**Tanaka Kikinzoku Kogyo K.K.**

Headquarters: 22F, Tokyo Building, 2-7-3 Marunouchi, Chiyoda-ku, Tokyo

Representative: Akira Tanae, President & CEO

Founded: 1885

Incorporated: 1918

Capital: 500 million yen

Employees: 1,430 (FY2013)

Sales: 929 billion 60 million yen (FY2013)

Main businesses:

Manufacture, sales, import and export of precious metals (platinum, gold, silver, and others) and various types of industrial precious metals products. Recycling and refining of precious metals.

Website: <http://pro.tanaka.co.jp/en>

<About the Tanaka Precious Metals>

Established in 1885, the Tanaka Precious Metals has built a diversified range of business activities focused on the use of precious metals. On April 1, 2010, the group was reorganized with Tanaka Holdings Co., Ltd. as the holding company (parent company) of the Tanaka Precious Metals. In addition to strengthening corporate governance, the company aims to improve overall service to customers by ensuring efficient management and dynamic execution of operations. Tanaka Precious Metals is committed, as a specialist corporate entity, to providing a diverse range of products through cooperation among group companies.

Tanaka Precious Metals is in the top class in Japan in terms of the volume of precious metal handled, and for many years the group has developed and stably supplied industrial precious metals, in addition to providing accessories and savings commodities utilizing precious metals. As precious metal professionals, the Group will continue to contribute to enriching people's lives in the future.

The eight core companies in the Tanaka Precious Metals are as follows.

- Tanaka Holdings Co., Ltd. (pure holding company)
- Tanaka Kikinzoku Hanbai K.K.
- Tanaka Denshi Kogyo K.K.
- Tanaka Kikinzoku Jewelry K.K.
- Tanaka Kikinzoku Kogyo K.K.
- Tanaka Kikinzoku International K.K.
- Electroplating Engineers of Japan, Limited
- Tanaka Kikinzoku Business Service K.K.