

Herbal Remedies

The people of Okinawa have the longest life expectancy in Japan, thanks at least in small part to their use of local medicinal plants and marine resources. **Tamura Mariko** reports on joint government-industry-academia efforts in Okinawa to make better use of the islands' natural advantages to boost the regional economy.

Although Okinawa is not a concentrated industrial center, health-related industries are starting to flock to the area to make use of the medicinal plants, marine resources, deep-sea water, and other local resources provided by the natural environment in this sub-tropical region. Environment-related industries, especially those involved in the recycling of construction waste, glass bottles, and plastics, as well as the information-related and process trade industries, are also now setting up in Okinawa. In an effort to kick-start the Okinawa economy, efforts are being made to establish industry, government, and university partnership networks, and to create and foster world-class enterprises.

The Okinawa Industry Promotion Project is a project being implemented with the aim of revitalizing the Okinawa economy.

Nakamine Hideyo, head of the Development Planning and Promotion Division

of the Economy, Trade and Industry Department (METI Okinawa) within the Cabinet Office's Okinawa General Bureau explains the aim of the project. "These four areas—health, environment, information, and manufacturing-and-trading—are strategic industrial sectors and by forming broad-based personal networks between industry, university, and the government and by establishing effective measures for developing markets outside of Okinawa, we are aiming to foster 'one-and-only' enterprises that are internationally competitive."

Driving this project is the Okinawa Industry Promotion Project Network, chaired by Professor Emeritus Onaga Kenji from the University of the Ryukyus. When this organization was first formed in April 2002, it started up with around 100 companies and one university involved, and this membership base has grown today to include about 170 companies, 20 supporting organizations, and three universities.

Nakamine explains that various forms of matching are now being pursued. "To date, representatives of METI Okinawa have visited more than 400 member companies to look into ways of resolving local factory and management issues, and to introduce testing laboratories, universities, and corporate researchers to member companies."

Amidst this, the Okinawa Medicinal Herb Utilization Research Group (chaired by Shimoji Seikichi, president of Okinawa Chousei Herb Corporation), founded through a partnership between industry, academia, and the government with a view to turning Okinawa into the home of the health industry's medicinal herb industry, is actively promoting joint development projects between industry and universities.

The Group's secretariat, located within the Nansei Shoto Industrial Advancement Center, aims to promote the widespread industrial use of the multifarious varieties of medical herbs available in Okinawa in health-food products, cosmetics, pharmaceuticals, and other products.

The Group meets once a month and bases its activities mainly on studying the presentations of research outcomes and element technologies made by universities and by testing and research laboratories and on industry-university joint development project case studies.

In addition, the Group, in collaboration with the Okinawa Health Food Industry Association, is involved in sourcing new sales channels, especially for distributors and retailers, provides information on consumers and market trends, engages in industrial exchanges with other regions, and visits other facilities.

Take Turmeric

One member of this Research Group, Inafuku Naoshi, director of Ryukyu Bio-Resource Development Co., Ltd., explains that "Okinawa is called a 'treasure trove of medicinal herbs' thanks to its favorable geographical conditions, and medicinal herbs have long been eaten in Okinawa, not just for their expected medicinal properties, but as vegetables." He goes on to point out that, "With the keywords being 'healthy' and 'long-living,' Okinawa is the home of much health-food product development, including teas, drinks, and supplements made from medicinal herbs such as turmeric, *nigauri* (bitter melon), and guava."

Ryukyu Bio-Resource Development, where Inafuku is in charge of overseeing the R&D



Okinawa—a "treasure trove of medicinal herbs." From bottom left, clockwise: tropical almond, ipilipil, galingale, guava

labs, generates added value through the fermentation of local Okinawa ingredients such as ipilpil, turmeric, and tropical almond, and manufactures and sells health supplements such as fermented ipilpil tea, fermented turmeric tea, and fermented tropical almond tea.

While the head office of the company is located in Motobu-cho, in the north of Okinawa-ken prefecture, the research section is located in the Tropical Technology Center, an incubation facility, and it is here that the company's research and development is carried out. This research and development-based company develops all its products through joint projects between industry, government, and universities. It works with universities such as the University of the Ryukyus, Kyoto University, and Nagoya University.

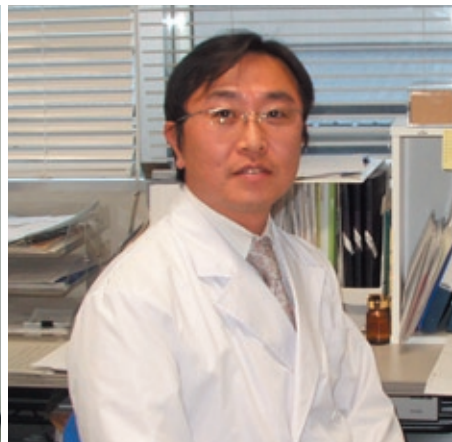
"Our company motto is to protect our own research and development outcomes ourselves. We have obtained two patents for our basic fermentation technology and make use of local ingredients to come up with our fermentation technique," explains Inafuku, pointing out that local companies have research and development systems that are comparable with those of large companies for expanding business.

With research staff accounting for one third of all employees, the company is dedicated to their cause. "We have our researchers apply for national or prefectural grants, and so they come up with their own research budgets themselves. We have also been able to lease and borrow very expensive equipment used in joint R&D projects, which also smoothes the process of commercialization," says Inafuku of the advantages of being actively involved in industry and university joint research and development.

The company manufactures and sells a drink made from turmeric extract mixed with fruit and vegetable juices, too, as well as tea made from local Okinawa *gettou* (galingale) leaves. Both of these products have been developed using a proprietary lactic fermentation technique as a joint research and development project involving Okinawa industry, academia, and the government.

Extracting Value

In this way, there are also member companies of the Okinawa Medicinal Herb Utilization Research Group that stand out for their active promotion of industry, university, and government joint research projects. DNA Information Service Inc. (DIS) (president: Takeuchi Koji) is one such company. DIS is a venture company that was started up in 2000 by the Yokohama City University and that uses as its core technology a low-cost method of extracting glycolipids such as gangliosides and ceramides.



BOTH PHOTOS: TAMURA MARIKO

Ryukyu Bio-Resource Development Co. Director Inafuku Naoshi holding the company's fermented turmeric tea drink (left); DIS President Takeuchi Koji (right)

"We have focused on turning the extraction of active ingredients out of Okinawa agricultural products into a business," explains Takeuchi. The company originally had its headquarters in Tokyo, which it later relocated to the Okinawa Health Biotechnology R&D Center, an incubation facility, in 2003. Currently, DIS is involved in joint research with the University of the Ryukyus and other universities as part of Okinawa-ken's Okinawa industry-university-government joint research promotion.

President of the company, Takeuchi, describes the company's business as "utilizing various technologies, such as gene preservation, gene analysis, and glycolipid research to come up with new products and services." This company has discovered ingredients that have therapeutic benefits in the treatment of atopic dermatitis and that act to inhibit the growth of cancer cells from amongst the various naturally occurring plants in Okinawa.

Takeuchi explains that amongst those ingredients that the company has discovered are ceramides that moisturize skin and act as a barrier against ultraviolet rays, and gangliosides that act to promote recovery from cell death (apoptosis) and recovery of memory functions of the brain. He also asserts that the effects of these ingredients have been confirmed through clinical trials carried out on patients and animal subjects.

In addition to this, DIS has been working together with the University of the Ryukyus Faculty of Medicine, the Okinawa Industrial Technology Center, and Orion Breweries Co. on joint R&D projects for the commercialization of glycolipids. The company has also developed a DNA education kit for the easy sampling of DNA, based on Takeuchi's hope that this product will be put to use in the field of molecular biology.

Takeuchi points out that "there is strong potential for the development of Okinawa-produced foods for specified

health use and pharmaceutical products," also explaining that "there is potential for these to be made into high-value, high-priced commercial products that are exceptionally competitive."

Inafuku also gives his take on the issue, commenting, "While on the one hand we will look into the potential for functional processed products and pharmaceutical products made from medicinal herbs in Okinawa, we should also continue to identify the problems associated with current health food products, such as the need for the establishment of quality standards and for component analyses."

According to a study carried out by the Okinawa Health Food Industry Association, health-industry turnover in the prefecture stands at around 17 billion yen (157 million dollars) overall and is growing at a steady pace, but the situation remains tough in terms of the average sales turnover by company.

While Takeuchi says that health-related products will sell well in the future, pointing to the promise of Okinawa ingredients, he also says that in many cases Okinawa manufacturers often don't end up moving forward, emphasizing the need for strategies aimed at developing sales channels.

Moving ahead, the industry in Okinawa will surely need to have appropriate coordination and advice provided by specialists on those issues and needs that are difficult to address independently—the collection of market information, product development, and manufacturing, and sales channel development and expansion.

We hope to see the establishment of an "Okinawa brand" built on the strengths of the Okinawa region, and the emergence of companies that will be successful on a global level. ■

TAMURA Mariko is a bureau chief of the Japan Academic Society for Ventures and Entrepreneurs.