DEVELOPING FUNCTIONAL FOODS FOR THE NEXT GENERATION

A national research program focusing on THE HEALTH OF JAPAN’S AGEING POPULATION is working with academia to develop new functional food research.

“Longevity is increasing dramatically in Japan and it is vital that we maintain good quality of life for our ageing population,” says Professor Keiko Abe (sub-program director) of the Department of Applied Biological Chemistry at the University of Tokyo.

A Japanese national research and development project aimed at promoting healthy longevity in a society with ever-increasing life expectancy has been formed to address this need. ‘Functional and Agricultural Food Products for the Next Generation’ is a sub-program of the Japanese Cross-ministerial Strategic Innovation Promotion Program (SIP) ‘Next Generation Agriculture, Forestry and Fishery Creation Technologies’. The key approach to achieving this goal is the development of functional foods — foods that deliver specific health benefits in addition to their contribution to basic nutrition.

Professor Abe notes that the term ‘functional foods’ was coined in Japan around 30 years ago, following research on the health benefits of novel and traditional foods in the Japanese diet. It has since become a commonplace term used across the global food science community. In addition to ‘foods for specified health uses’ (FOSHU), approved since 1991, a new policy — ‘foods with function claims’ — has started to make us recognize the importance of basic research on food functionality.

This new project spreads its research much wider, to investigate the role of specific food components and supplements in a wide range of health concerns, including metabolic disorders, cognition, memory, psychological stress, muscle impairment and bone disease.

The project is divided into four research areas: improved brain function (cognition), locomotion, sports-related nutrition and the evaluation of homeostasis.

Many functional foods already on the market target existing health problems. Professor Abe emphasizes that the current project aims to ensure a good quality of life through people of advanced age who are still healthy. “It is extremely important to learn more about how to maintain health as people age,” she says.

Health products

As well as promoting healthy longevity in Japan, another aim of the project, which has annual funding of about ¥0.5 billion, is to develop commercial products for export. Potential candidates are already emerging, some of which were highlighted at a symposium at the Asahi Hall in Tokyo in 2015. Associate Professor Shoko Kobayashi of the University of Tokyo discussed animal trials and early clinical studies indicating that the natural substance rosmarinic acid may delay the onset of dementia by preventing aggregation of proteineous amyloid plaques in brain cells. Professor Hiroaki Masuzaki of the University of the Ryukyus revealed that...
Since 2014, Functional and Agricultural Food Products for the Next Generation have been developed based on scientific evidence.

- 376 original papers
- 15 patents
- Around 200 presentations at international meetings

Feeding hospital patients brown rice containing gamma-oryzanol, or rice bran oil, can significantly suppress postprandial blood sugar levels. Professor Narumi Nagai of the University of Hyogo presented research linking maslinic acid, found in olives, to improved grip strength and reduced knee pain in elderly subjects.

The possibilities for better methods to evaluate body homeostasis were exemplified by a prototype system developed by Hamamatsu Photonics. This is a simple optical sensing device that uses a small blood sample to analyse biochemical markers of immune function and other cellular indicators of health. These few examples offer some insight into the wide range of approaches being researched across the four key areas of activity.

This consortium comprises 49 academic bodies with 186 workers on 28 research subjects. It is also supported by 46 food production companies with the aim of promoting basic investigations on physiologically functional factors contained in agricultural products. “It is important to accelerate the commercialization of academic research through links with industry,” Abe says.

Moreover, research on biological markers can be used to identify people at risk of developing diseases that could affect their quality of life as they age. “We want to use this research to develop foods that can prevent disease from emerging in people who are not yet aware that they are in danger of developing any specific condition”.

Abe says the project’s success will be marked by a happy elderly society with significantly improved quality of life relative to that which many elderly people experience at present.

Given that a long-term goal is to bring new functional food products to the commercial market, the project includes strong links with many food production companies.

The program, which is coordinated by the Ministry of Agriculture, Forestry and Fisheries, began in October 2014 and will end in March 2019.