

Tokachi Area

Development of Technology to Add Value to Tokachi Agricultural and Livestock Products Which Increases the Functionality

Project Promotion

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Major Participating Research Organizations

Industry... COSMO FOODS CO., LTD., MORI SANGYO CO., LTD., K.K. Hokkaido kaiyou bokujo, JA Obihiro Kawanishi, Frontier Institute Co., Ltd., Kyodogakusya Shintoku Farm, Tokachino Fromages, Nippon Beet Sugar Manufacturing Co., Ltd., Nihon Kanzume, Inc., OKAYASU SHOTEN CO., LTD., NIPPON FLOUR MILLS Co., Ltd., EARTH GIKEN CO., LTD., NAKATAEN. CO., LTD., SHINTOKUBUSSAN CORPORATION, EDOYA CO., LTD., Shibuya ferment food industry company, Zukosha, Inc., KAMADA SOY SAUCE Inc., Yotsuba Milk Products Co., Ltd.
 Academia... Obihiro University of Agriculture and Veterinary Medicine, Ehime University, Shizuoka University, Nayoro City University, Josai University, Tokyo University of Agriculture, Hokkaido Shihoro High school
 Government... National Agriculture and Food Research Organization - National Agricultural Research Center for Hokkaido Region, Memuro upland Farming Research Station, Hokkaido Prefectural Tokachi Agricultural Experiment Station, Hokkaido Animal Research Center, Hokkaido Prefectural Konsen Agricultural Experiment Station, Shihoro Food Products Research Centre, SHIHORO, Tokachi-Ikeda Research Institute Viticulture and Ecology, Tokachi Area Regional Food Processing Technology Center

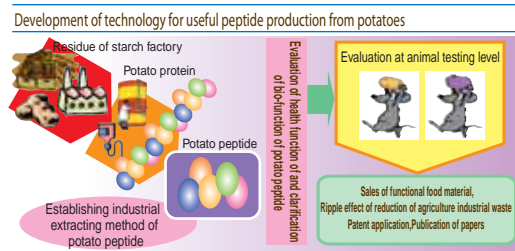


Aim of research and development

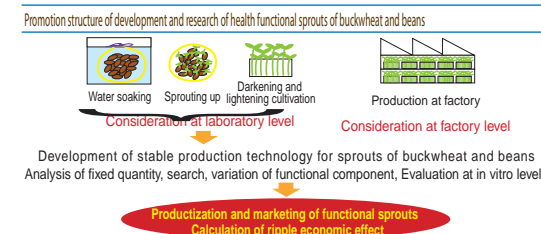
By using the highly original science and technologies in the field of the agriculture and the livestock industries in Tokachi Area, we aim at the construction of regional systems for the advanced utilization of the agricultural materials such as the extraction of functional components, as well as achieving food safety etc. The functionalities and the mechanisms of action in vivo of the special agricultural products and livestock materials in this area, e.g. potatoes, buckwheat, beans, Chinese yams and dairy products, would be clarified. These results will be applied for upgrading and adding higher value to the products, for instance, development of new healthy foods, the improvement of the quality of the products etc. Moreover, we are establishing the systems to evaluate comprehensive functionalities at a molecular level with ease promptly in the process of the clarification of action mechanism of the components of food materials in vivo. The results of these projects will promote sustainable production of high-value-added foods from agriculture and livestock products in Tokachi Area. It will lead to the creation of new industries and/or businesses in the field of foods and medicines.

Contents of research

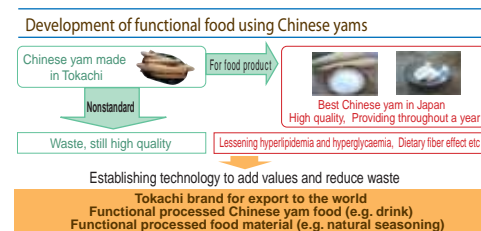
1. Production technology development of useful peptide from potato
 Development of peptide production technologies for potato as the residue from a starch factory, and animal tests for health function was conducted to identify the lipid metabolic mechanism etc. by potato peptide.



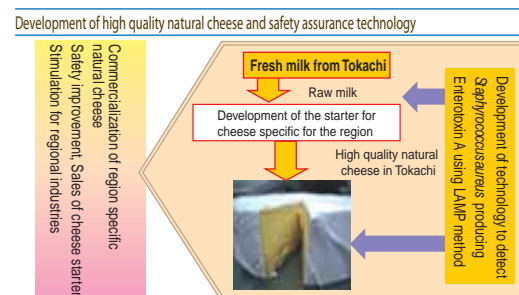
2. Research and development of healthy and functional sprouts of buckwheats and beans
 To develop the efficient and stable production of the buckwheat and beans sprouts, the optimum production condition of the sprouts is examined, and the technology for producing the sprouts stably is established for plants. In addition, the variability analysis and the changes of functional substances during the cultivation of the sprouts are analyzed and the functional evaluation of the sprouts are conducted.



3. Development of functional foods using Chinese yam
 An analysis of functional elements of Chinese yam and mechanism of the function in vivo is conducted, and functional ingredients are developed.

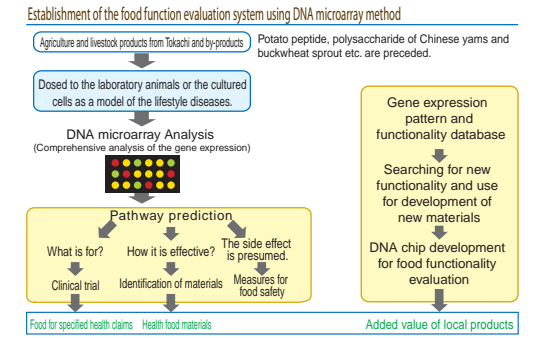


4. Improvement in the quality of regional natural cheese and development of the technology to secure the safety of dairy products
 The kit using the Lamp method is developed to detect Staphyrococcus aureus producing enterotoxin A. The development of new soft and semi-hard cheeses is performed by using yeast together with lactic acid bacteria as a starter.



5. Establishment of food functionality evaluation system using DNA microarray method

The search and the clarification of the biologically active substance contained in 1-4 and other farm products are executed. To identify the functions, a database is created with DNA chip.



The main study results

1. Production technology development of useful peptide from potato
 The extraction of the potato peptide and the peptide improved lipid metabolism in rats.



Powder of potato peptide

2. Research and development of healthy and functional sprouts of buckwheats and beans
 The technology of stable factory production is almost established. The effects of intestinal disorders and recovery of hepatic damage are also confirmed.



Sprout (vertical and curled)

3. Development of functional foods using Chinese yams
 Functional elements of Chinese yam and mechanism of the functions are confirmed for improvement of human intestines and lipid metabolism systems



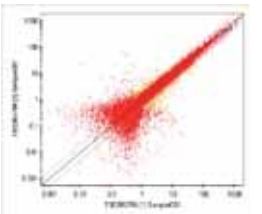
Chinese yam pickles

4. Development of high quality natural cheese and technologies to secure safety
 The primer was designed to detect only Staphyrococcus aureus producing enterotoxin A. A new camembert-type cheese was developed by adding yeast as a specific starter of the region.



Camembert sample

5. Establishment of food functionality evaluation system using DNA microarray method
 The expression of the gene cluster that was related to control measures against the lipid metabolism improvement effect and the liver disorder was confirmed in the potato peptide.



Graph to compare the amount of gene expression in the liver of a mouse with DNA microarray with sweet corns and another to contrast

Agriculture and livestock products from Tokachi

Production technology development of useful peptide from potato

Research and development of healthy and functional sprouts of buckwheats and beans

Development of functional foods using Chinese yam

Improvement in the quality of regional natural cheese and development of the technology to secure the safety of dairy products

Construction of food functionality evaluation system using DNA microarray method

Clarification of the biological action mechanism of functional materials contained in food

Development of Technology to Add Value to Tokachi Agricultural and Livestock Products Which Increases the Functionality

Creation of business and vitalization of local industries in Tokachi mainly with development of new functional foods