

# Use of Science and Technology Innovation

## Aiming to reconstruct from the Great East Japan Earthquake disaster

### Reduce the risk for metabolic syndrome by drinking it every day! Tasty brown rice Amazake

**Project name** : Research and development of fermented food for anti-metabolic syndrome utilizing functional components in brown rice

**Company** : Aizu Tenpo Jozo Co.,Ltd (Aizuwakamatsu-city , Fukushima)

**Principal investigator** : Kenji Suzuki (Fukushima Technology Center)

**Research institute** : University of the Ryukyus Okinawa, Fukushima Technology Center

#### Research summary

The Amazake, non- alcoholic sweet fermented rice drink, is highly nutritious and it is useful for the sick and those who have trouble in swallowing. Tenpo Jozo Co.,Ltd. and Fukushima Technology Center are currently working together to produce tasty and mass-producible brown rice Amazake. Also, the Study on Brown Rice from the University of the Ryukyus, which showed  $\gamma$ -oryzanol in brown rice is effective for preventing metabolic syndrome, made Aizu Tenpo Jozo Co.,Ltd . think brown

rice Amazake also has the same effect, which led them to verify the required intake under the cooperation of the university. As a result, they confirmed the efficacy in a clinical trial at Second Department of Internal Medicine, Faculty of Medicine, University of the Ryukyus. They have established a standard of the taste of brown rice Amazake, registered the trademark of the beverage product name, and started selling it in the health foods market in August 2015.

#### Expected benefits

This project draws attention in the food and health perspective since it uses the clinical study results from University of the Ryukyus and develops and proposes a functional food effective for a national concern, metabolic syndrome. A company in Fukushima works with a local research institute and has developed tasty and easy-to-drink brown rice Amazake using Aizu Hitomebore and tries to expand their product' s distribution, while ensuring the safety of the food in Fukushima. It is also expected that it will largely contribute to reducing the harmful rumors concerning the Nuclear Power Plant.



### Developing Hot Pressing Technology for Molding Powdered Amber from Kuji, Iwate

**Project name** : Application of new high quality, efficient technology for molding Kuji amber powder

**Company** : Kuji Kohaku Co., Ltd. (Kuji-city, Iwate)/ Porite Corporation (Saitama)

**Principal investigator** : Tomoharu Shimizu (Iwate University)

**Research institute** : Iwate University

#### Research summary

Amber from Kuji City is created from fossilized tree resin from about 80 million years ago (Mesozoic Cretaceous era) which is significantly older than amber from Baltic region. Due to age, the amber is hard and brittle, with much of it excavated in fragments, creating many limitations for processing.

Our research aims to draw on the potential of Kuji amber, and establish production methods that will allow new product developments.

Research has led to establishment of high quality, prestigious amber product forming methods and hot pressing technology that solves quality inconsistencies, exceeding initial expectations. This technology has made it possible to use amber fragments that were previously discarded, enabling effective utilization of amber resources.

## Expected benefits

One of the main products made using amber is amber ballpoint pens. With quantity limited by current hand production methods, market demand could not be met. Technology established through our research will make meeting this demand possible. As a result, a large increase in sales can be expected.

Furthermore, pressing technology can also be used for creating complicated shapes, enabling the development of a wide variety of new products containing amber. This will provide a foothold for new business development in a new market.



▲Rock containing Kuji amber



▲Small fragment of Kuji amber (after refined)

New heat  
press modeling



▲Products using pressed Kuji amber

## Development of terminal stage patient-, family- and healthcare provider- friendly monitoring system

**Project name** : Development of a small and lightweight, electric power saving wireless ECG monitoring system for terminal stage patients under home medical care  
**Company** : Real Design Corporation (Sendai-city, Miyagi), ImageONE Co., Ltd. (Tokyo)  
**Principal investigator** : Makoto Yoshizawa (Tohoku University)  
**Research institute** : Tohoku University

## Research summary

Enhancing home medical and nursing care services without relying on medical institutes is one of the most effective options for the future trend of medical care. This study has developed a monitoring system that allows doctors or family members to monitor electrocardiograms (ECGs) sent from a wireless ECG sensor. The system is available for seven consecutive days without requiring battery changes, and the waveform of ECGs can be checked online by mobile phones anytime, anywhere on real time. The system can display an alarm on the window or send a warning email to doctors in the case of abnormal heart rate. Sample products were distributed to

medical institutes across Japan for verification tests and the feedback was reflected to the final product.

Based on the gathered data, the product obtained approval for medical devices in October 2014 and was put on the market under a product name *duranta*® in December the same year. In addition, in November the same year ImageONE Co., LTD. has concluded a business partner contract with a medical device distributor in Finland, which is aging fast as with Japan, and started expanding their business to European countries via the partner.

## Expected benefits

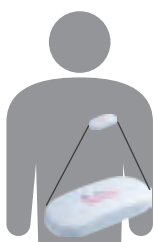
The demand on home medical care is increasing in areas that are short of medical institutes and doctors. To satisfy this demand, *duranta*® becomes a new communication tool among a patient, family and healthcare provider to check the patient's ECG, and

enhances medical infrastructure in medical institutes and nursing homes. Moreover, *duranta*® can also monitor workers' hearts on duty, which is expected to become a comprehensive preventive medical tool by integrating with waveform analysis software.

### Use of the Duranta system

#### Patient

Hang the system with an electrode pad on the chest



Bluetooth

#### Family

Receive and transmit ECG waves on a smartphone



Smartphone

WIFI/3G/4G



duranta server



Medical personnel A

Medical personnel B

Family



Tablet computers with *duranta* viewer application downloaded from the web