

## **Regional Research Center supported by the Ministry of Science and Technology and Korea Science Engineering Foundations**

Sam-Pin Lee

*Traditional Microorganism Resources Center, Keimyung University, Daegu, Korea*

### **Purpose of RRC**

The Regional Research Center(RRC) of Keimyung University sponsored by the Ministry of Science and Technology(MOST) and Korea Science Engineering Foundations(KOSEF) launched since 2000. The purpose of RRC is to construct the mutual cooperation between industry, university, and self-governing body for the development and commercialization of traditional microorganism resource. To complete the ultimate purpose, the production of high value ingredient, development of new bio-product, and construction and utilization of pilot-plant facilities have been achieved through the research, education and cooperation with company. As a training program, project & target educational program allows to supplying the specialist who is required in the food and bio-industry and is able to manage the field service well. For the 1<sup>st</sup> stage the overall projects of RRC have been carried out by total 340 researchers including professor (48) and full-time researcher (20) etc. Total research grant of 5.2 billion won was supported by Keimyung University (2.7 billion), Daegu city (0.6 billion won) and the government (1.4 billion won), and company (0.5 billion won).

#### **Purpose of RRC in each stage**

1<sup>st</sup> stage (2001-2004): construction of fundamental infra-structure

- ▷ Fundamental construction of bio-technology for industrialization
- ▷ Fundamental construction of between university, industry, and Daegu city
- ▷ Construction of operational system of RRC

2<sup>nd</sup> stage (2004-2007): the growth phase of RRC

- ▷ Formation of consortium for the development of essential bio-technology
- ▷ Enforcement of relationship between industry, University and government

3<sup>rd</sup> stage (2007-2010): construction of self-supporting foundation

- ▷ Activation of cooperative research system between industry and university
- ▷ Commercialization of research and developed items
- ▷ Settlement of self-supporting foundation of Center after 3<sup>rd</sup> stage

### **Development of fundamental and high technology**

- ▷ Construction of Consortium composed of company and University
- ▷ Supply of research specialist, high-priced equipments and production facilities
- ▷ Supply of bio-pilot for application of commercial microorganisms
- ▷ Local economic growth according to research, education, production and industrialization

### **Major Research Field of RRC**

- ▷ Development of new biomaterial by exploiting indigenous microorganisms and its commercialization
- ▷ Improvement of functional properties of indigenous microorganism and its commercialization
- ▷ Industrialization of traditional microorganism resource (special program)

### **Major achievement of RRC for the 1<sup>st</sup> stage (2000-2003)**

During the 1<sup>st</sup> stage of RRC, the purpose is to construct the infra structure necessary for operation of RRC as well as to improve the traditional technology and develop new technology in the field of food and biotechnology.

Two representative research fields are focused on the development of both new food functional ingredient and new functional biomaterial. In addition, the special program includes the commercialization of traditional microorganism resources. The research fields of each representative project are below: 1) development and commercialization of new bio-material by utilizing indigenous microorganisms in fermented foods, 2) enhancement of functional properties of indigenous microorganism and its application in bio-industry. In the special research program, there are the development of functional Kimchi and its commercialization, screening of natural ingredient for preventing liver, development of functional traditional rice wine and bio-film, and their commercialization.

Overall achievement for the 1<sup>st</sup> stage is below: research papers (152), patent application (33), patent enrolment (5), educational-industrial lecture and technology guideline, (309), commercialization items (25), technology transfer items (5).

In particular, a venture enterprise (KeimyungFoodex) was established. The technology transfer was performed in the field below: 1) manufacture of red wine using red mold, 2) production technology of probiotics for animal feed, 3) production and commercialization of health food containing fibrinolytic enzyme from alkaline fermentation. The representative commercialization items are a hangover beverage and a cholesterol inhibiting supplement. In particular, the Institution of food sanitation and inspection was established by the Ministry of the Institution of food sanitation and inspection, and has been carried out the main works. At the same time, CEO in food and bio-Company participated to establish cooperative organization for creating the new food and bio-technology necessary in a market and enforcing the relationship between various companies. Now, fifty of company are enrolled in our cooperative organization and have been work together. We expect that cooperative organization will play an important role as a driving force for operating RRC.

### **Future plan for 2<sup>nd</sup> stage (2004-2007)**

To carry out both basic and special research programs successfully, a cooperative company will be participated for the development and commercialization of new bio-product. We will focus on the commercialization as output of the most research program with more than 70%. To establish the financial foundation after the RRC program finished, the financial revenue continuously will be built up by the income of loyalty and technology transfer, and cost for utilization of analytical equipments. In particular, the Institute of food sanitation and inspection in RRC plays an important role for reinforcing self-supporting foundation, and we expect the one hundred million won per a year through an active operation of the Institute of food sanitation and inspection. At least we expect the total financial gain of three hundred million won each year to establish the self-supporting fundamental of RRC in the future. In particular, the main building for supporting industrialization of high technology is constructing near building of RRC, and most parts of a new building will be occupied by RRC for the efficient operation in research, co-work and commercialization in food and bio-technology. Conclusively, the RRC of Keimyung University will play a principal role in development and activation of biotechnology in Daegu, and will affect the many bio-industries located in the Kyugnam and Kyungbuk provinces, Korea.