

Department of Oriental Medicine Biotechnology

Tel : +82 31 201 3837 | Fax : +82 31 202 2687 | Email : ommp@khu.ac.kr | URL : ommp.khu.ac.kr

The goal of Oriental medicine biotechnology of the graduate school of Kyung Hee University is to investigate novel potential candidates based on natural products including microorganism as known as microbiome for developments medicine against various disease(viral, incurable, and chronic disease) as well functional food/cosmetic. Screening of new drug candidates for development various diseases. And Study of efficacy validation of new materials, toxicological protection by Oriental medicine. Research groups in our department conducts all procedure of identification and development of medicine, functional food/cosmetic based on natural materials, respectively. Our department is researching the development of prevention/treatment drugs for cancer, herpes zoster, tinnitus, and hearing loss without treatment, and chronic diseases such as diabetes, obesity, and high blood pressure.

| Degree Requirements |

- To graduate in Oriental medicine biotechnology, at least 24 and 36 credits are required for the master and doctor course students, respectively.
- Doctoral student must pass examinations for qualifying ability of english and major subjects, respectively.
- Students of master's degree must be submitted thesis publication deliberation on KCI(candidate) or as coauthor on SCI(E)-level thesis. And students of PhD's degree must be submitted thesis publication at SCI(E) level as the lead author.

| Courses |

Functional Food/Cosmetic Development, Molecular Structure Analysis Theory, Plant Physiology, Natural Products Organic Chemistry, Oriental Microbiological Engineering, Herbal Microbiological Materials, Herbal Material Pharmacology, Herbal Applied Microorganism, Herbal Materials Pharmacology Experiment, Active Substance Separation, Hair And Skin Science, Standardization Of Natural Drug Substance Development, Standardization Of Development Of Natural Food Pharmaceutical Materials, Natural Materials Effectiveness Evaluation Method, Skin Herbal Pharmacology, Toxicology Seminar, Oriental Medicine Knowledge System Theory, etc.

| Faculty |

- ___ Se Chan Kang, Ph.D. SungKyunKwan University, 2006, Professor, Biological Pharmacy, sckang@khu.ac.kr (Department chair)
- ___ Nam-In Baek, Ph.D. Osaka University, 1989, Professor, Natural Products Chemistry, nibaek@khu.ac.kr
- ___ Tae-Hoo Yi, Ph.D. Kyung Hee University, 2005, Professor, Oriental Medicine, drhoo@khu.ac.kr

___ Tong-Ho Kang, Ph.D. Kyung Hee University, 2006, Professor, Herbal Pharmacology, panjae@khu.ac.kr

___ Yeon Ju Kim, Ph.D. KyungPook National University, 2000, Professor, Applied Biochemistry, yeonjukim@khu.ac.kr

| Laboratories |

▪ Lab. of Natural Medicine & Natural Plant Resources

Director : Professor Se Chan Kang(sckang@khu.ac.kr)

Research Overview

Research in our laboratory explores the cause of disease and prevention/treatment by identifying life phenomena, and based on this, develops food, pharmaceutical, and cosmetic materials from natural materials. Our main field of research focuses on the in vitro/vivo study of metabolism related diseases such as obesity, diabetes and endocrine related cancer. We have over 2,000-library(traditional medicine, natural plant resources of South Korea) for screening novel drug. Based on this various food and medicine materials were developed, and clinical trials are in progress as the materials for hepatitis C treatment, herpes zoster, and COVID-19 treatments developed based on natural products have been completed. Through our research, our laboratory will develop functional foods and/or natural new drugs with pharmaceutical/food companies. In addition, by discovering health functional food materials, We are developing food and drug cosmetics materials by exploring/evaluating microbiome-based pro/postbiotic materials that show efficacy in various disease. We secure 1000 species of microorganism derived from marine and intestinal tract, research treatments(pancreatic and lung cancer, obesity, diabetes, Crohn's disease) using them.

Ongoing Projects

- Screening of new drug candidates for development various diseases
- Development of new medicine for COVID-19, herpes zoster, Type C hepatitis, obesity, Type II diabetics, lung cancer, breast cancer, prostate cancer etc.
- Study of arthritis in the animal model
- Study of novel mechanism and development of screening system for new generation target medicine
- Study of Post, Probiotics

▪ Natural Products Chemistry Laboratory

Director : Professor, Nam-In Baek(nibaek@khu.ac.kr)

Research Overview

Our research at the Natural Products Chemistry Laboratory focuses on the study of isolation and structure elucidation of active components from natural sources. Structure of bioactive components were identified using various spectroscopical methods such as IR, MS, CD, and NMR. Also our laboratory conducts HPLC, GC/MS, and NMR for establishment of methods for instrumental analysis for validation.

Ongoing Projects

Development of platform construction for functional metabolites using the herbal crops

▪ Quality Standardization Based Botanical Drug Development Center QBDC

Director : Professor Tae-Hoo Yi(drhoo@khu.ac.kr)

Research Overview

Our Quality Standardization Based Botanical Drug Development Center is a specialized support center for the licensing of products applied to natural pharmaceutical materials for obtaining licenses from the Korea Food and Drug Administration(MFDS), the United States(FDA), and Europe(EMEA). In addition, the provision of one-stop service to support the efficacy test/safety test and standardization(CMC) at the level of the KFDA license, support the efficacy

evaluation technology and safety evaluation technology at the level of the KFDA license, and strict quality control in accordance with the KFDA license standard. It supports the establishment of met standards and test methods, supports the establishment of manufacturing standard standards that can standardize the entire manufacturing process at the same time as pilot production, and supports microbial evaluation and antibacterial activity evaluation in accordance with the Ministry of Food and Drug Safety Notice.

Ongoing Projects

- Providing One-stop service for Botanical Drug Development
- Efficacy Validation of New Materials
- Standardization of Analysis and Quality Validation
- Standardization of Manufacturing and pilot production of Raw Materials
- Management of Microbiological Safety

■ Herbal Pharmacology Laboratory

Director : Professor Tong-Ho Kang(panjae@khu.ac.kr)

Research Overview

Our laboratory mainly focuses on the study of diabetes, diabetic complications, auditory impairments, tinnitus, sleep disturbance, and immune enhancement. We are investigating new leading products from Oriental medicine and natural products for the protection of chronic diseases. Through our research, our laboratory will develop functional foods and/or natural new drugs with pharmaceutical/food companies.

Ongoing Projects

- Screening of potent compounds for Nerve Growth Factor(NGF) induction
- Study of toxicological protection by Oriental medicine
- Study of diabetic neuropathy
- Study of noise induced hearing loss protection
- Study of immunomodulating activity
- Study of tinnitus
- Study of sleep disturbance

■ Applied Microbiology and bioresources.

Director : Professor, Yeon-Ju Kim(yeonjukim@khu.ac.kr)

Research Overview

Our lab focus on the microbial bioconversion of natural compounds and its cellular mechanism. How and why the fermented process can affect on the biomedical activity and its viability for the cellular absorption. Using the probiotics, parabiotics and postbiotics, the biological activity was evaluated in cell based assay using nanotechnology.

Ongoing Projects

- Study on the interaction beneficial bacteria and host such as Plant growth promoting rhizosphere(PGPR) and probiotics.
- Enhance the biological medicinal efficacy of the natural compounds by using nano-drug delivery system
- Mass production of useful protein after gene cloning and its over expression
- Microbial bioconversion of medicinal plant extract and its immuno-regulatory effect