東海大学創造科学技術研究機構
TOKAI UNIVERSITY INSTITUTE OF INNOVATIVE SCIENCE AND TECHNOLOGY

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Chemical biology study on Functional marine foods

Keywords: marine natural product、chemical biology、organic chemistry

Background and Motivation

I study the potential power of functional marine foods and develop a research program focused on synthesizing molecular tools from the bioactive compounds found in marine foods.

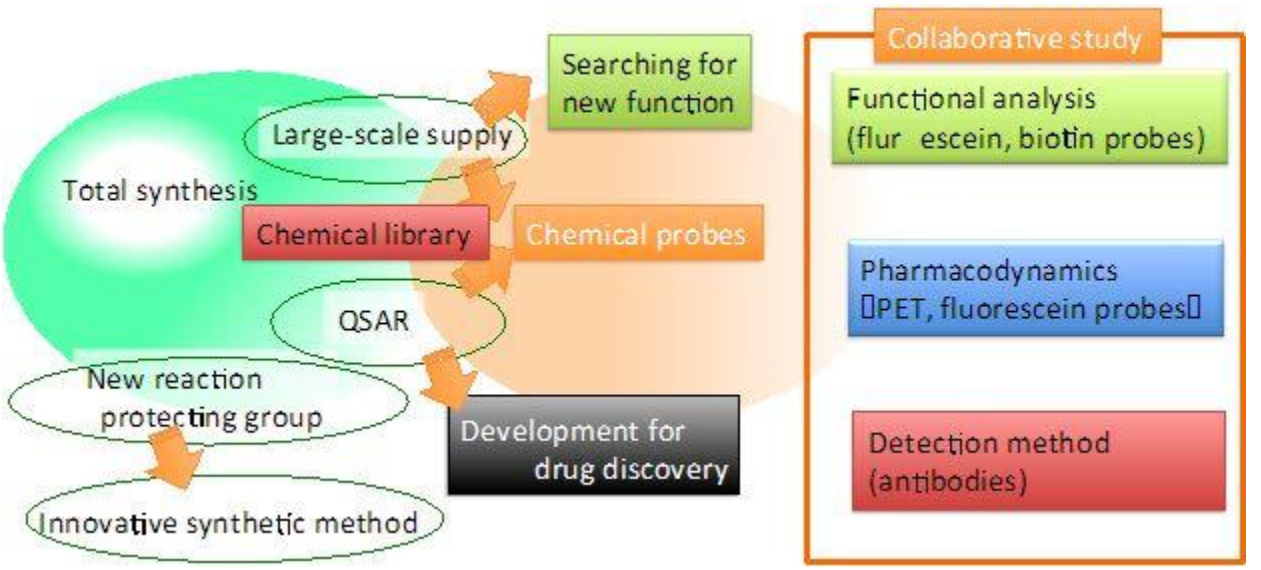
Dementia and lifestyle-related diseases, of which diabetes is a representative, are increasing problems in many developed countries, including Japan, due to changes in eating habits and the aging of the population. The growing incidence of these diseases has resulted in increasing medical expenditures, but currently there are no effective pharmaceutical treatments for these diseases. For this reason, functional foods are an attractive possibility as an approach to preventive medicine, including traditional foods that have been shown to have a variety of preventive effects. With the recent introduction of the new labeling system for ''Foods with Function Claims" by the Ministry of State for Consumer Affairs and Food Safety, we have entered a time in which scientific evidence for these food functions is becoming increasingly important.

Originality

I will perform the total synthesis of active compounds from various marine foods, based on the construction of heterocyclic rings and polyphenols using original methods. Moreover, I will develop these synthetic methods into studies of the structure-activity relationships of these compounds, and I will efficiently convert the compounds into chemical probes.

Impact and Perspective

My research will contribute to the promotion of human health and to the reduction of medical costs. It will be the foundation of new approaches to validating the efficacy of healthy foods and compounds. It is now widely recognized that the utilization of commonly-eaten healthy foods is an effective way to prevent the development of many diseases, and in recent years the discovery of new bioactive compounds in such foods has been progressing rapidly. However, for most food compounds, even for those from well-known traditional foods, the clinical evaluation of their utility for human health is still in the beginning stages of development. There are two major reasons for this. The first is the difficulty of developing large-scale supplies of such compounds, which is required for their evaluation. The second is the lack of chemical biological tools that are needed to carry out this kind of evaluation. Thus, potentially important bioactive compounds often go unevaluated and so are forgotten. My research will be a bridge between the discovery of new compounds and their evaluation by providing both a large-scale supply of these compounds and the chemical tools required to accurately evaluate them. In this way, my research will contribute to concretely demonstrating the benefits of particular foods for human health, and by extension, to the discovery of potential drug targets.



■ For more information:

www.u-tokai.ac.jp/tuiist/english/tt/announcement_okamura.html

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