Seeking a basis for pharmaceutical products from algae and other organisms in the sea

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Researchers at the Faculty of Pharmacy at the University of Helsinki are co-ordinating an extensive project which aims to find biological activity from among organisms in the sea which would be suitable for use as a basis for pharmaceutical products. Interesting compounds isolated from organisms in the sea are chemically modified to be more suitable for medical purposes.

The four-year (2010-2014) MAREX project involves researchers and corporate sector representatives from 13 countries. In the project's total budget of EUR 7.9 million, EUR 6 million originates from the Seventh Framework Programme of the European Union. MAREX is co-ordinated by Heikki Vuorela, Professor at the Faculty of Pharmacy. The journey to the shelves of chemists is long, but the extensive and carefully planned project has good opportunities for interesting active compounds for the development of pharmaceuticals against cancer, microbes or pain.

The project researchers all around the world start off with sampling. Among other things, they collect micro- and macro-algae, sea anemones, tunicates and fish from the Atlantic, the Pacific, the Mediterranean and the Baltic Sea. Collecting the samples does not harm the ecosystems. Some research teams also have existing sample collections. However, the main focus of the project is on materials which have not previously been tested. The objective is to utilise organisms and populations (e.g., blue-green algae and macro algae) which are usually considered as insignificant and harmful. Already at the collecting stage, ready products are the aim.

"Right from the start, we will consider whether an algae or other raw material from the sea may be utilised on an industrial scale. It is not enough that the material has potential to be a cancer pharmaceutical. Instead, it must be available or it must be possible to produce it in sufficiently large quantities," says Päivi Tammela, researcher at the Faculty of Pharmacy.

According to Paula Kiuru, researcher at the Faculty of Pharmacy, and Jari Yli-Kauhaluoma, Professor, compounds obtained from sea organisms usually have a very complex chemical structure. The goal is to identify the most important structural parts of the most interesting compounds. With the information, it will be possible to considerably simplify the structure of a complex compound while retaining the original biological activity.

Other Finnish contributors to the project in addition to the University of Helsinki include Åbo Akademi University and the VTT Technical Research Centre of Finland. In addition to co-ordination, the task of the researchers at the University of Helsinki is to study the antimicrobial characteristics of the samples and develop synthetic

derivatives. The project kick-off seminar in Helsinki was attended by researcher and corporate sector representatives from many European countries, as well as from India, Lebanon and Turkey.

SOURCE [1]

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