Researcher sees marine nutraceuticals as growth industry

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The marine nutraceutical industry is booming in Europe and Asia, and it has taken off in recent years in Canada as well. While the industry is still in its infancy in the United States, University of Rhode Island researcher Chong Lee says that with a little federal research support, it could become a growth industry.

Lee, a professor emeritus of food sciences, describes nutraceuticals as a cross between pharmaceuticals and nutrition, something that "provides health benefits above and beyond traditional nutrients. The nutraceutical market is dominated by terrestrial sources, like cranberries that provide antioxidants. Marine nutraceuticals are something new, and now it is getting a lot more attention," he said.

The URI food scientist says that the "big ticket item" among marine nutraceuticals is fish oil, which contains omega 3 fatty acids that provide cardiovascular disease risk reductions, immune function improvements, brain health, and reductions in inflammation from rheumatoid arthritis. Most fish oil products are derived from anchovies and sardines caught in the waters off Peru and Chile.

In Rhode Island, seaweed could play a role in the nutraceutical industry, as some varieties are a source of compounds beneficial to human and animal health. One species of seaweed called rockweed (*Ascopyllum nodosum*) that Lee is studying is abundant along the coast of New England and is already being used as an agricultural fertilizer and as an additive to animal feeds. Lee says it also has bioactive components that

are useful in managing weight, lowering cholesterol and slowing the digestion of sugars and carbohydrates.

Lee's former postdoctoral student, Emmanouil Apostolidis, is studying the seasonal variation of these beneficial properties to determine the best time of year to harvest the seaweed and examining its stability to determine how long it can remain on the shelf before it's potency declines."

Lee is also working with squid processors in North Kingstown and Point Judith in the development of nutraceuticals from the by-products of squid processing. A global pet food company has already been in touch with Lee about using squid by-products in its products to improve animal health.

In addition, Lee is collaborating with the Rhode Island Commercial Fisheries Research Foundation and local scallop fishermen on research to find a beneficial use for the by-products of scallop harvesting.

"We only consume the adductor muscle of scallops, and the rest – 70 percent of it – is thrown overboard," said Lee. "We're investigating its potential. One of my assistants, Bouhee Kang, is working on this project. It may stimulate digestion enzyme activity and help people who have difficulty digesting oily foods. There is a big market for digestion relief supplements, especially in Asia."

Lee believes that Rhode Island could benefit from more research into marine nutraceuticals.

"In the past, most of the funding for this kind of research in the U.S. has gone to the development of drugs from marine organisms. I hope the funding will come soon for nutraceuticals as well," said Lee, who recently organized an international symposium on global trends in

marine nutraceuticals. "It has great potential, and it could give a big boost to the Rhode Island economy."

Provided by University of Rhode Island