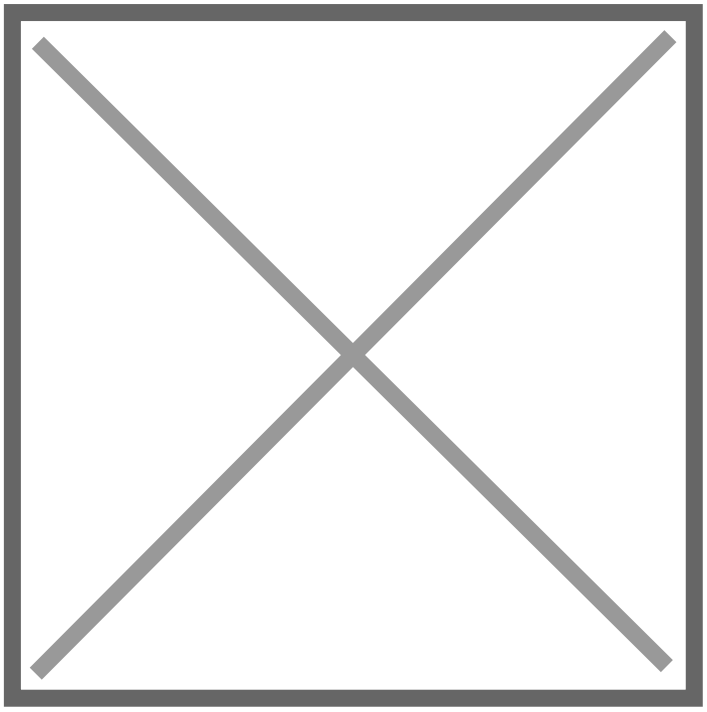
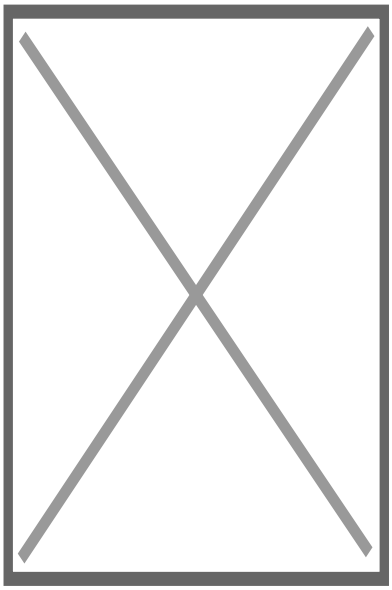
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Focus on fungal benefits

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Dr Seshagiri Raghukumar
managing director, MykoTech, Goa

Much has been attributed to the benefits of deep sea fungi. Fungi from coastal environments have been widely studied with respect to the production of secondary metabolites and biotechnologically useful lignocellulolytic enzymes. Working in this area, Dr S Raghukumar has done some innovative research that promises to deliver products.

Dr Raghukumar, after completing his master's degree in Botany from University of Madras, pursued his PhD on marine fungi under the guidance of the famous mycologist, Professor CV Subramanian, at the Center for Advanced Studies in Botany, University of Madras, from 1967 to 1972. He worked as a scientist at the Institute for Marine Research, Bremerhaven, Germany, between 1976 and 1981, during which he was groomed by Dr Alwin Gaertner in taxonomy and ecology of the marine fungi, belonging to thraustochytrids. In 1982, Dr Raghukumar joined the National Institute of Oceanography (NIO), Goa, and worked there on major marine biotechnological areas until 2004.

His major research interests were biology of the marine protists, thraustochytrids, biomass of fungi and thraustochytrids in marine samples, the ecology and taxonomy of marine wood-degrading fungi, microbiology of marine detritus, microbiology of the Arabian Sea and marine biotechnology. In addition, he taught several courses in marine microbiology, biodiversity and biotechnology. Dr Raghukumar has published more than 60 original research papers on these topics in numerous

international and national journals. He is a holder of several Indian and US patents in the area of marine biotechnology.

After working for 22 years at the NIO, Dr Raghukumar felt the need to move on and establish a marine biotech company. He set up MykoTech in the year 2004.

The company is now a proud possessor of a culture collection of more than 1,000 fungi and several bacteria. The primary task of the company is the establishment of a unique microbial culture collection. Presently, rare and novel fungi are being isolated from a variety of terrestrial and marine ecosystems. In microbial metabolites research, MykoTech carries out screening of its microbial cultures for omega-3 polyunsaturated fatty acids (PUFA), biofuel, industrial intermediates, cosmetics, biormediation, nutraceutical compounds, pharmaceutical compounds and industrial enzymes.

One major technology that MykoTech has developed is that of extracellular melanin production by a fungus, for which a patent has been filed. The compound has tremendous potential for use in cosmetics as a gamma-radiation protectant and also in research. Ã¢â?¬Å?Anticancer and antidiabetic assays are in progress. Clearly, more research needs to be carried out before the usefulness of these biotransformed compounds can be confirmed. However, we believe that this would be a useful process even at this stage of research,Ã¢â?¬? says Dr Raghukumar.

The leadership of Dr Raghukumar has led MykoTech into developing many technologies, such as water soluble melanin from a fungus for application in cosmetics, optics, offering protection against UV and gamma radiation and by other industrial applications. The company has also developed technologies for production of enzymes alpha-amylase, alpha-galactosidase and tyrosinase; a process to improve active principles from medicinal plants using biotransformation; and production of omega-3 polyunsaturated fatty acid and docosahexaenoic acid (DHA). The company plans to license out or sell some of its technologies to interested parties.

Dr Raghukumar cites the lack of access to analytical facilities and the absence of biotechnology incubators as one of the major factors that hamper research. However, being a firm believer in innovation, he says, Ã¢â?¬Å?It is the most important aspect that will help new companies to overcome the intense competition that exists in biotechnology industries.Ã¢â?¬?