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Notes to Editor

Marine Biotechnology: An untapped research area in Sri Lanka.

The oceans comprise more than 70% of the earth's surface. Life began in the ocean and diversity of sea creatures is enormous and has been estimated as more than 230 000 species (Census of Marine Life 2010). A large portion of the ocean still has to be explored and many species, life cycles and other mysteries are waiting to be discovered.

Marine biotechnology can be expressed as application of scientific and engineering principles that that are capable of using to process materials of marine biological agents to provide good and services (Thakur and Thakur 2006). Historical notes indicate that human beings aware of the value of marine products such as venomous nature of some sea creatures, extractions of drugs and supplementary nutrient compounds like cod liver oil. During last few decades more than hundreds of new compounds have been isolated from marine organisms (Proksch et.al. 2002) and still are being discovered every year. There are different marine molecules have been discovered such as enzymes (bio – catalysts), proteins and peptides, secondary metabolites, polysaccharides (from bacteria, archaea, algae, marine plants), fatty acids and lipids (micro algae) (Querellou 2010) have been discovered and they have various applications in diverse fields such as medicine, agriculture, environmental science, bio material and bioprocessing etc.

Obtaining compounds of biological or industrial interest from various biomasses should be investigated in order to add value to natural products (Tichet et al 2010). Ocean contains enormous resources which most of them are not being touched yet but could be turned into products with monitory values. Some of the emerging areas of research in marine biotechnology are studies on active compounds for pharmaceuticals and cosmetics industry (Martins et al 2014), recovery of collagen from marine organisms for cartilage replacing and wound healing (Silva et al 2014), activity of enzymes in organisms live associate with thermal vents and deep darker zones in the ocean (Minic and Thongbam 2011) and more interestingly production of bio-fuel from algal blooms (Slade and Bauen 2013).

With the emergence of advanced science and technological methods, in particular 'omics' technology provided new tools to study marine organisms and ecosystems. Metagenomic sequencing, in particular, is now being used to study microbial ecosystems and to identify genes with new functions. Marine microbes seem to hold particular promise for marine biotechnology and are revealing new limits to biodiversity that previously imagined (Jorge et. al. 2013).

Sri Lanka is surrounded by 1,585 kilometers coastline area and majority of the population fulfill their protein requirement by the marine capture fishery industry. Except for few basic requirements, are we taking the benefit of this enormous resource? Marine biotechnology reveals vigorous and powerful applications, thus exploring these untouched areas may help to find solutions for the betterment of the society by opening avenues for new industries and job opportunities. Marine biotechnology based on extensive research and development processes which demand high-tech instruments as well as qualified scientists which both components are in a shortage in Sri Lanka. Contribution from the government by funding and implementing legislations to facilitate research are key points to be considered. Promoting private sector to link with the government organizations to explore these untapped resources may help to discover new sustainable products that will benefit to build up a green economy in the country.

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