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Marine Bioactive Compounds : Future Medicine-Review

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ABSTRACT: Marine bioactive compounds display varied potential applications, namely as molecular tools, in cosmetics. The most promising marine bioactive compounds isolated from cnidarians in the first decade of the 21st century, which may have applications in the therapy of human diseases. Marine natural products have attracted the attention to biologists and chemists all over the world for the last five decades. Approximately 16,000 marine natural products have been isolated from marine organisms and reported in approximately 6,800 publications as of date

KEY WORDS:- Bioactive compounds, Marine natural products, Marine organisms and 21st century

I.INTRODUCTION

Marine bioactive compounds display varied potential applications, namely as molecular tools, in cosmetics, as fine chemicals, as nutraceuticals and in agrochemical industries (Fusetani N., 2010). Although only a few marine-derived products are currently on the market (e.g., Prialt[®] and Yondelis[®]), several new compounds are now in the clinical pipeline and several more are in clinical development. The few approvals so far for the commercialization of drugs from the sea have not been due to a lack of discovery of novel marine bioactive compounds, but because of the complexity of issues raised upon the development of these products (Glaser KB, Mayer AMS(2009). (Mayer A, Hamann M., 2010) have provided extensive reviews on the total number of marine natural products (MNPs) discovered over the last 25 years, the most promising ones being produced by marine invertebrates. Sponges (phylum Porifera) have long been recognized as the most interesting group of marine invertebrates for the discovery of new drugs. However, with growing bioprospecting efforts and the screening of previously unexplored marine habitats, the biotechnological potential of other groups of marine invertebrates has also started to attract the attention of researchers. The ability of cnidarians (such as jellyfish, sea anemones and corals) to produce powerful toxins and venoms (Turk T, Kem WR., 2009) has been well documented. However, further research has demonstrated that MNPs produced by cnidarians are more than toxins and venoms. The phylum Cnidaria is a large, diverse and ecologically important group of marine invertebrates that includes over 11,000 extant species (Newman DJ, Cragg GM., 2004) Over 3000 MNPs have been described from this phylum alone, mostly in the last decade.

The most promising marine bioactive compounds isolated from cnidarians in the first decade of the 21st century, which may have applications in the therapy of human diseases. The present study also discusses future perspectives for the bioprospecting of new MNPs produced by this speciose group of marine invertebrates.

Marine natural products have attracted the attention to biologists and chemists all over the world for the last five decades. Approximately 16,000 marine natural products have been isolated from marine organisms and reported in approximately 6,800 publications as of date. In addition to these publications there are approximately another 9,000 reports, which cover syntheses, reviews, biological activity studies, ecological studies etc. on the subject of marine natural products.

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ILFURUTRE MEDICINE

These practices provides comprehensive medical care. This issue will incorporate new high-quality scientific evidence as the basis of rational treatment and emerging developments in new approaches to patient management, reflecting recent trends in medicinal practice of novel therapeutics (natural or synthetic compounds). Potential topics include but are not limited to:

- Functional dyspepsia
- Irritable bowel syndrome
- Inflammatory bowel disease
- Diarrhea and constipation
- Liver disease
- Gastrointestinal malignancies
- Gastroesophageal reflux disease
- Food-borne infectious enteritis

TABLE:-1 ,COMPOUNDS PRODUCING BY MARINE ACTINOMYCETES

Compound	Structural type	Organism
1-hydroxy-1-norresistomycin	Polyketide	<i>Streptomyces chinaensis</i> AUBN ₁ /7 <i>Streptomyces</i> sp. B8005
1,6-phenazinediol	Phenazine	<i>Actinomadura</i> sp. M048
1,8-dihydroxy-2-ethyl-3- methylanthraquinone	Polyketide	<i>Streptomyces</i> sp. FX-58
3,6-disubstituted indoles	Indole	<i>Streptomyces</i> sp. BL-49-58-005
4a,8a-dimethyl-6-(2-methyl-propenyloxy)-3,4,4a,4b,5,6,8a,9-octahydro-1H-phenanthren-2-one	Isoprenoid	<i>Actinobacterium</i> sp. MS1/7
Actinofuranones	Polyketide	<i>Streptomyces</i> sp. CNQ766
Altemicidin	Isoprenoid	<i>Streptomyces sioyaensis</i>
Ammosamides	Pyrroloiminoquinone	<i>Streptomyces</i> sp. CNR-698
Arcyriaflavin A	Indolocarbazole	Actinomycete sp. Z ₂ 039-2
Arenamides	Non-ribosomal peptide	<i>Salinispora arenicola</i> CNT-088
Arenicolides	Polyketide	<i>Salinispora arenicola</i> CNR-005
Aureoverticillactam	Polyketide	<i>Streptomyces aureoverticillatus</i> NPS001583
Bohemamines	Pyrrolizidine	<i>Streptomyces</i> sp. CNQ-583
Butenolides	Butenolide	<i>Streptoverticillium</i>

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Compound	Structural type	Organism
		<i>luteoverticillatum</i> 11014
Caboxamycin	Benzoxazole	<i>Streptomyces</i> sp. NTK 937
Chalcomycin	Polyketide	<i>Streptomyces</i> sp. M491
Chalcomycin B	Polyketide	<i>Streptomyces</i> sp. B7064
		<i>Streptomyces</i> sp. M491
Chandrananimycins	Phenoxazin-3-one	<i>Actinomadura</i> sp. M048
Chartreusin	Polyketide	<i>Streptomyces</i> sp. QD518
Chinikomycins	Polyketide	<i>Streptomyces</i> sp. M045
Chlorinated dihydroquinones	Isoprenoid	Actinomycete isolate CNQ-525
Cyanosporasides	Polyketide	<i>Salinispora pacifica</i> CNS103
Daryamides	Polyketide	<i>Streptomyces</i> sp. CNQ-085
Echinosporins	Acetal-lactone	<i>Streptomyces albogriseolus</i> A2002
Fridamycin D	Polyketide	<i>Streptomyces</i> sp. B6921
Griseorhodin A	Polyketide	<i>Streptomyces</i> sp. JP95
Gutingimycin	Polyketide	<i>Streptomyces</i> sp. B8652
Himalomycins	Polyketide	<i>Streptomyces</i> sp. B6921
IB-0028	Polyketide	<i>Actinomadura</i> sp.BL-42-PO13-046
IB-96212	Polyketide	<i>Micromonospora</i> sp.L-25-ES25-008
Iodinin	Phenazine	<i>Actinomadura</i> sp. M048
K252c	Indolocarbazole	Actinomycete strain Z ₂ 039-2
Komodoquinones	Polyketide	<i>Streptomyces</i> sp. KS3
Lajollamycin	Polyketide/non-ribosomal peptide	<i>Streptomyces nodosus</i> NPS007994
Lucentamycins	Non-ribosomal peptide	<i>Nocardiopsis lucentensis</i> CNR-712
Lynamycins	Indolocarbazole	<i>Marinispora</i> sp. NPS12745
Manumycin A	Polyketide	<i>Streptomyces</i> sp. M045
Marinomycins	Polyketide	<i>Marinispora</i> sp. CNQ-140
Marinones	Isoprenoid	Actinomycete isolate CNH-099

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Compound	Structural type	Organism
Marineosins	Polypyrrole	<i>Streptomyces</i> sp. CNQ-617
Marmycins	Polyketide	<i>Streptomyces</i> sp. CNH990
Mechercharmycins	Non-ribosomal peptide	<i>Thermoactinomyces</i> sp. YM3-251
Metacycloprodigiosin	Prodigiosin	<i>Saccharopolyspora</i> sp. nov.
Nonactin	Polyketide	<i>Streptomyces</i> sp. KORDI-3238
Pacificanones	Polyketide	<i>Salinispora pacifica</i> CNS-237
Parimycin	Polyketide	<i>Streptomyces</i> sp. B8652
Piericidins	Polyketide	<i>Streptomyces</i> sp. YM14-060
Piperazimycins	Non-ribosomal peptide	<i>Streptomyces</i> sp. CNQ-593
Proximicins	Non-ribosomal peptide	<i>Verrucosispora</i> sp. MG-37 <i>Verrucosispora maris</i> AB-18-032
Questionomycins	Phenoxazin-3-one	<i>Actinomadura</i> sp. M048
Rabelomycin	Polyketide	<i>Streptomyces</i> sp. B6921
Resitoflavine	Polyketide	<i>Streptomyces</i> <i>chinaensis</i> AUBN ₁ /7 <i>Streptomyces</i> sp. B8005
Resistomycin	Polyketide	<i>Streptomyces</i> sp. B8005 <i>Streptomyces</i> sp. B4842
Saliniketals	Polyketide	<i>Salinispora arenicola</i> CNR-005
Salinipyrones	Polyketide	<i>Salinispora pacifica</i> CNS-237
Salinosporamides	Polyketide/non-ribosomal peptide	<i>Salinispora tropica</i> CNB-392 <i>Salinispora tropica</i> CNB-440 <i>Salinispora tropica</i> CNB-476 <i>Salinispora tropica</i> NPS000456
Sporolides	Polyketide	<i>Salinispora tropica</i> CNB-392
SS-228 Y	Polyketide	<i>Chainia</i> sp. SS-228
Staurosporins	Indolocarbazole	<i>Streptomyces</i> sp. KS3 <i>Micromonospora</i> sp.L-31-CLCO-002 <i>Streptomyces</i> sp. QD518
Streptochlorin	Indole	<i>Streptomyces</i> sp. 04DH110

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Compound	Structural type	Organism
Streptokordin	Methylpyridine	<i>Streptomyces</i> sp.KORDI-3238.
Streptopyrrolidine	Tetrahydropyrrole	<i>Streptomyces</i> sp.KORDI-973
Tetracenomycin D	Polyketide	<i>Streptomyces</i> sp. B8005
Thiocoraline	Non-ribosomal peptide	<i>Micromonospora</i> sp.L-13-ACM2-092
T-Muurolol	Isoprenoid	<i>Streptomyces</i> sp. M491
Trioxacarcins	Polyketide	<i>Streptomyces</i> sp.isolate B8652
Undecylprodigiosin	Prodigiosin	<i>Saccharopolyspora</i> sp. nov.
ZHD-0501	Indolocarbazole	<i>Actinomadura</i> sp. 007

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