

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION No. 3488
TO BE ANSWERED ON WEDNESDAY, MARCH 18, 2015**

DRUGS FROM SEA

3488. Dr. KIRIT P. SOLANKI

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) the salient features of the 'Drugs from Sea' research programme;**
- (b) the funds allocation and utilization for the programme under the 12th plan year wise; and**
- (c) the details of the research projects currently being funded under this programme?**

ANSWER

**MINISTER OF STATE FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND
MINISTRY OF EARTH SCIENCES
(SHRI Y.S. CHOWDARY)**

- (a) The following major objectives are envisaged under the National Programme on "Development of Potential Drugs from Sea" during 12th plan period (2012-2017).**
 - To identify bio active substances (leads) from marine biota (in coordination with multiple labs, from national research institutes and universities), synthesis of new scaffolds and their modifications for the new drug development**
 - Identification of active principles from marine flora, fauna, and microbial biota, their chemical synthesis, SAR for the new drugs development**
 - Optimization of hits/leads from previous plan**
 - Synthesis of new analogs of marine leads and their bio-evaluation (against inflammation, bacterial/fungal and GPCRs)**
 - Setting up new in vitro and in vivo screens (Inflammation, bacterial/fungal and GPCRs)**
 - Development of new hits/leads for various disorders.**
 - *In vitro* screening of ~300 marine extracts / fractions / single molecule.**
 - Confirmation of the *in vivo* efficacy.**
 - Pharmacokinetics, Pharmaceutical, Safety Pharmacology and Toxicity studies (preclinical studies with active samples/compounds)**
 - Filing of IND of active samples identified for drug development.**
 - Clinical trial of phase I of samples/compounds identified for drug development.**

- **Clinical trial of phase II of samples/compounds identified for drug development.**
- **Collection and preservation of samples from deep sea.**
- **Extraction of bioactive compounds and initial screening.**
- **Transfer of potential candidates to the core group of Drugs from the Sea programme for further screening and testing.**
- **To address related issues.**

(b) **Total funds allocated for the Drugs from Sea research programme under 12th plan period is ` 9623.646 lakhs. Year-wise allocation and utilization as detailed below.**

(Rupees in Lakhs)

Financial Year	Funds Allocation	Funds Released & Utilized
2012-13	1488.276	521.344
2013-14	2086.16	136.500
2014-15	2361.044	513.411
2015-16	1922.284	---
2016-17	1765.882	---
Total	9623.646	1171.255

(c) **THE DETAILS OF THE RESERACH PROJECTS COURRENTLY BEING FUNDED UNDER THIS PROGRAMME ARE AS BELOW:**

S.No.	Project Title (Science Component)	Participating Organization
1.	Synthesis of marine natural products: Iriomoteolide-3a, Cladospolide-D, Barrenazine A & B and their analogues	Indian Institute of Chemical Technology, Hyderabad
2.	Marine natural products aspergillide B and C and their synthetic analogues as new chemical entities for human health care	Indian Institute of Chemical Technology, Hyderabad
3.	Total Synthesis of solomonamide and analogue synthesis of azumamaide E: The marine originated cyclic peptides for human health care	Indian Institute of Chemical Technology, Hyderabad
4.	Synthesis of marine bioactive peptides/biomolecules and their analogs	Indian Institute of Technology Kanpur, Kanpur
5.	Accessing liphagal and its analogues through polyene cyclization	National Chemical Laboratory, Pune
6.	Design and synthesis of 2H-azirine containing marine	Indian Institute of Chemical Technology, Tarnaka, Hyderabad

	natural products and their analogs for antimicrobial and antifungal activity	
7.	Amphidinolactone A and its synthetic analogues as new chemical entities for human health	Indian Institute of Chemical Technology, Tarnaka, Hyderabad
8.	Identification of novel anti-cancer agents based on marine illudalanes alcyopterosins	National Chemical Laboratory, Pune
9.	Design and Synthesis of Novel Dolastatins, Azumamides and Microsporin A Analog: a Quest for Anticancer Drugs.	Central Drugs Research Institute, Lucknow
10.	Synthesis and bioactivity Screening of Marine Indole Alkaloids and related analogues	National Institute of Science Education and Research, Bhubaneswar
11.	Synthesis of Marine Natural Product- Based Compounds of Potential Biological Significances	Institute of Life Sciences, Hyderabad
12.	Development of Potential Drugs from Ocean “Collection and fractionation of the identified leads such as NIO-905-A002 (F003, 4) and NIO-968 (CNS) NIO-970”,	Central Drugs Research Institute, Lucknow
13	“Chemical & pharmacological evaluation of some Indian mangrove lichens”	College of Pharmaceutical Sciences, Andhra University, Visakhapatnam
14	“Marine anaerobic bacterial diversity for the production of antimicrobials”	Centre for Environment, Institute of Science & Technology, JNT University Hyderabad
15	“Development of antimicrobial, anti-inflammatory and anticancer agents from the marine-organisms and micro-organisms”	Central Drug Research Institute, Lucknow-226001, Uttar Pradesh Central Marine Fisheries Research Institute, Cochin
16	“Search for Novel Antimicrobial and Anticancer Metabolites from Marine”	Central Drug Research Institute, Lucknow. CFTRI, Mysore
17	“Bioprospecting and taxonomic studies of marine microorganisms in search of novel anti-infectives”	National Institute of Interdisciplinary Science and Technology, Thiruvananthapuram, Kerala

		IMTECH, Chandigarh
18	“Identification of eight obligately halophilic cyanobacteria of the Sundarbans and molecular characterization of antimicrobial compounds there from”	School of Environmental Studies, Jadavpur University, Kolkata Indian Institute of Chemical Biology, Jadavpur, Kolkata
19	“Isolation and characterization of bioactive compounds from marine endophytic fungi of Nellore coast in Andhra Pradesh”	Sri Venkateswara University, Tirupati
20	“Comparative assessment of marine macroalgae, Ulva, Graciliaria and Saragassum from Indian region for anticancer natural products.	Centre for Biosciences, Central University of Punjab, Mansa Road, Bathinda,
21	“Discovery of Antimicrobial and Anti-inflammatory compounds from marine actinomycetes and halophilic bacteria.	Biocontrol and Microbial Metabolites Lab, Centre for Advanced Studies in Botany, University of Madras, Marainalai Campus, Guindy, Chennai
22	Design and Synthesis of Chemical Library Based on Anti-Cancer Marine Natural Product Diazonamide A.	Dr. Reddy’s Institute of Life Sciences, University of Hyderabad Campus, Gachibowli, Hyderabad.
23	“Synthesis and Bioevaluation of Chemical Libraries of B-Carboline Based Mimics of Marine Natural Products.	CSIR-Central Drug Research Institute, BS-10/1, Sector 10, Jankipuram extension, Lucknow
24	“Synthesis of Fascaplysin Analogues as Possible Anticancer Agents.	Medicinal and Process Chemistry Division, CSIR- Central Drug Research Institute, Sitapur Road, Lucknow
25	“Generation of Compound Library Based on Bicyclical Acetal Scaffold in Search of Potential Anti-Cancer Agents.	School of Chemistry, University of Hyderabad, Central University, Gachibowli, Hyderabad.
26	“Design and Synthesis of Indole Based Marine Natural Product Like Lead Compounds: Quest for Anti-cancer, Anti-bacterial, Anti-fungal and Anti-inflammatory Agents.	Department of Chemistry, Indian Institute of Science Education and Research (IISER) Bhopal, Bhauri, Bhopal-462066