CERTIFICATE OF ATTENDANCE

The Organizing Committee verifies that

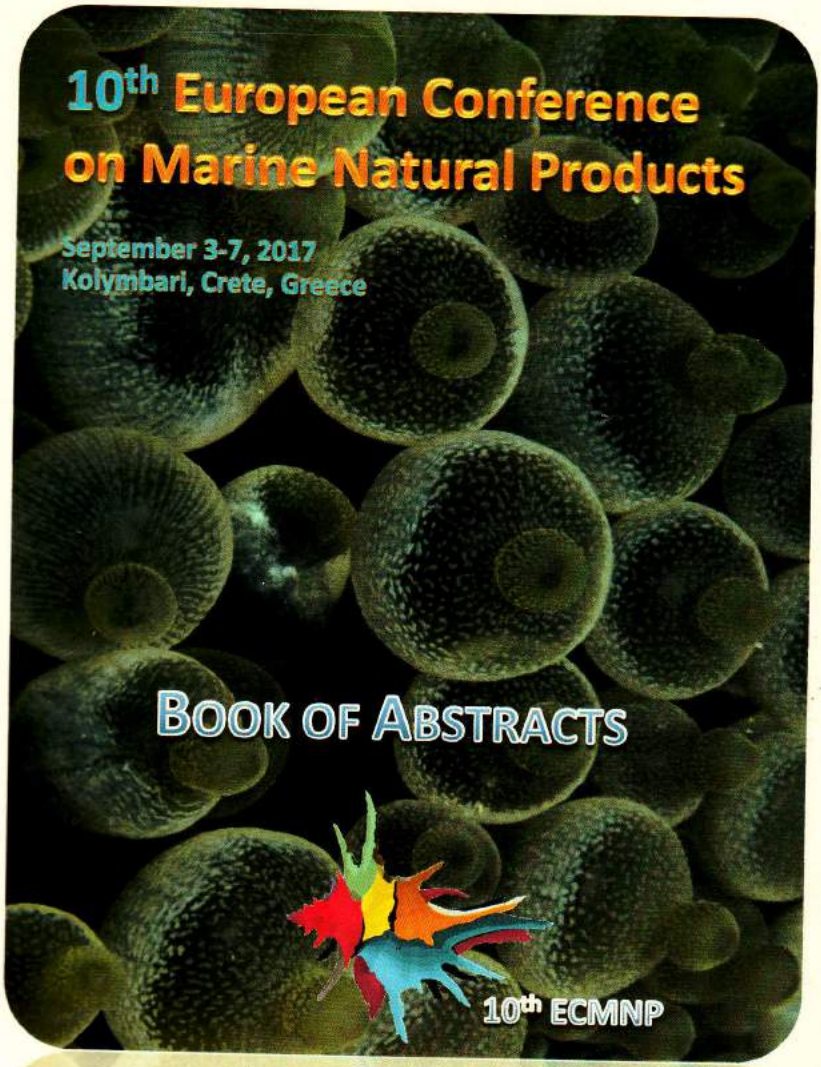
Teresa Liliana WARGASETIA

participated in the ***10th European Conference on Marine Natural Products*** that took place from September 3rd to September 7th, 2017 at the Orthodox Academy of Crete in Kolymbari, Crete (Greece).

On behalf of the Organizing Committee

Ass. Prof. Efstathia IOANNOU

Prof. Vassilios ROUSSIS



National and Kapodistrian University of Athens

THE PHYTOCHEMICAL SOCIETY OF EUROPE

10th European Conference on Marine Natural Products

NATIONAL & KAPODISTRIAN
UNIVERSITY OF ATHENS

September 3-7, 2017
Kolymbari – Crete, Greece

Edited by
Efstathia Ioannou and Vassilios Roussis

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SCIENTIFIC PROGRAM

Sunday, September 3, 2017

Arrival of participants

15:00-17:30 *Registration of participants*

17:30-18:20 **Opening Remarks**

18:20-19:00 **Opening Lecture**
Chairman: D. J. Newman (Newman Consulting llc, USA)

18:20-19:00 **PL1: W. Fenical** (University of California San Diego, USA)
Marine microbes, new tools and targets for cancer drug discovery

19:00-20:30 *Welcome Reception*

20:30- *Dinner*

Monday, September 4, 2017

09:00-11:00 **Session I** – Isolation and structure elucidation of natural products from marine macro- and microorganisms
Chairman: R. J. Quinn (Griffith University, Australia)

09:00-09:30 **IL1: A. Hernández Daranas** (Universidad de La Laguna, Spain)
Three-dimensional structure of complex polyoxygenated bioactive compounds: NMR and computational chemistry tools applied to prorocentroic acid

09:30-09:50 **OP1: M. Köck** (Alfred-Wegener-Institut, Germany)
COCON – Twenty years after (COCON in Mnova 12)

09:50-10:10 **OP2: A. Mangoni** (Università degli Studi di Napoli "Federico II", Italy)
Quantum mechanical and other computational techniques as an aid for structure elucidation of natural products: benefits and caveats

10:10-10:30 **OP3: S. Urban** (RMIT University, Australia)
Application of the crystalline sponge method for natural

	product studies
10:30-10:50	**OP4: T. F. Molinski** (University of California San Diego, USA) Absolute stereoassignment of marine natural products: Novel tools and structures
11:00-11:30	*Coffee/Tea Break*
11:30-13:00	**Session II** – Isolation and structure elucidation of natural products from marine macro- and microorganisms ***Chairman:*** M. H. G. Munro (University of Canterbury, New Zealand)
11:30-11:50	**OP5: C. Schleissner** (PharmaMar S.A., Spain) Bacterial production of a pederin analog by a free living marine alphaproteobacterium
11:50-12:10	**OP6: D. Silva** (São Paulo State University, Brazil) *Coniothyrium* sp., an endophyte from the marine red alga *Pyropia spiralis*, as a source of sulphated diketopiperazines and novel macrolides
12:10-12:30	**OP7: S. Soldatou** (National University of Ireland Galway, Ireland) An epigenetically modified endophytic fungus as source of new anti-MRSA natural products
12:30-12:50	**OP8: W. W. May Zin** (Universidade do Porto, Portugal) Bioactive secondary metabolites from the culture of the mangrove-derived endophytic fungus *Eurotium chevalieri* KUFA 0006
13:00-14:00	*Lunch*
15:00-17:00	**Session III** – Marine -omics ***Chairman:*** R. Edrada-Ebel (University of Strathclyde, UK)
15:00-15:30	**IL2: P. Y. Qian** (Hong Kong University of Science and Technology, Hong Kong SAR) Genome-mining coupled with biosynthesis pathways manipulation as a power tool to reveal novel compounds and novel biosynthesis
15:30-15:50	**OP9: G. Genta-Jouve** (Université Paris Descartes, France) Deep metabolome annotation and the necessity of a thought experiment: *Parazoanthus axinellae* as a case

	study
15:50-16:10	**OP10: N. P. Lopes** (University of São Paulo, Brazil) Geographic and taxonomic influences on soft coral metabolomic fingerprints
16:10-16:30	**OP11: M. Reverter** (National University of Ireland Galway, Ireland) Inter- and intra-specific variations of two *Haliclona* sp. metabolomes and the potential use of metabolomics in sponge chemosystematics
16:30-16:50	**OP12: K. R. Duncan** (University of Strathclyde, UK) Comparative metabolomics of Antarctic and sub-Arctic actinobacteria
17:00-17:30	*Coffee/Tea Break*
17:30-19:00	**Session IV** – Evaluation of biological and pharmacological activities of marine natural products ***Chairman:*** A. Fontana (CNR- Istituto di Chimica Biomolecolare, Italy)
17:30-17:50	**OP13: S. A. Dyshlovoy** (University Medical Center Hamburg-Eppendorf, Germany) Anticancer and autophagy modulatory properties of monanchocidin A, rhizochalinin and frondoside A
17:50-18:10	**OP14: P. C. Jimenez** (Universidade Federal de São Paulo, Brazil) Further insights on the mode of action of seriniquinone
18:10-18:30	**OP15: J. Svenson** (RISE Research Institutes of Sweden, Sweden) AChE inhibitors isolated from Arctic benthic marine invertebrates
18:30-18:50	**OP16: B. Konuklugil** (Ankara University, Turkey) Bioactive compounds from some marine macroorganisms and marine-derived fungi from the coastlines of Turkey
19:00-20:30	**Poster Presentations Session A** (PP1-PP37)
20:30-	*Dinner*

PP27 **S. Pinteus**
The invasive seaweed *Sargassum muticum* as a rich source of antimicrobial compounds for human and animal therapeutics

PP28 **C. Prata**
Sulfated polysaccharides from the marine algae *Hypnea musciformis* induces anxiolytic-like effect in zebrafish

PP29 **J. M. Sánchez López**
Isolation of a new plant growth regulator metabolite from a marine-derived fungus (*Talaromyces flavus*)

PP30 **J. Silva**
Invasive seaweeds *Asparagopsis armata* and *Sargassum muticum* bioactivities for cost-effective and sustainable industrial uses

PP31 **J. Silva**
Bifurcaria bifurcata enriched fraction induced antitumoral activity through apoptosis

PP32 **H. Solanki**
A new allene from the Pacific cyanobacterium *Pseudanabaena lonchoides*

PP33 **A. L. Valverde**
Chemical prospection and cytotoxic activity of the octocoral *Phyllogorgia dilatata*

PP34 **J. Viskupicova**
Effects of quercetin-iron complex and quercetin mono-sodium salt on calcium regulation

PP35 **T. L. Wargasetia**
Marine compounds screening for mortalin-p53 binding inhibitor with potential as anti-cancer

PP36 **R. M. Young**
Searching the Irish deep for bioactive marine metabolites

PP37 **P. Abal**
Ultrastructural alterations in mice cells after oral administration of okadaic acid and dinophysistoxin-1

PP38 **V. Alexandri**
C_{15} Acetogenins from *Laurencia microcladia* and *Laurencia glandulifera* from the Ionian Sea

PP39 **R. Alvariño**
New compounds from *Streptomyces* spp. act as anti-neuroinflammatory agents

PP35

Marine compounds screening for mortalin-p53 binding inhibitor with potential as anti-cancer

Teresa Liliana Wargasetia[1] and Nashi Widodo[2]

[1]Faculty of Medicine, Universitas Kristen Maranatha (Maranatha Christian University), Jl. Prof. Drg. Suria Sumantri MPH No. 65 Bandung 40164 Indonesia, [2]Biology Department, Faculty of Mathematics and Natural Sciences, The University of Brawijaya, Jl. Veteran Malang 65145 Indonesia
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Cancer is the second leading cause of death worldwide. High toxicity and side-effects of some cancer chemotherapy drugs increase the demand for new anti-cancer drugs from natural products. In recent years, attention has been devoted to searching for anti-cancer agents from marine natural products. Mortalin/mtHsp70, a stress response protein, has been reported to contribute to the process of carcinogenesis by several ways including inhibition of the transcriptional activation of p53.[1] In this study, we used computational molecular docking as a tool to find compounds that have potential as anti-cancer by inhibiting the binding between mortalin and p53.

Marine compounds data was taken from the nuBBE database.[2] To know the anti-cancer potential of the compounds from the database, docking mortalin to the p53 binding domain of the compounds were performed using the Vinaautodock algorithm with pyrx software. The potential inhibition of the binding of mortalin with p53 by the active compounds were analyzed by affinity binding between mortalin and the p53 binding domain of active compound ligands, also by a similarity between the position of mortalin-active compound ligand bindings with mortalin-withanone binding as a positive control. Proteins were visualized with discorystudio software.

The binding affinity between mortalin and ligand from 25 marine active compounds were between a range of -4 to -6,7 kcal/mol. Based on the high binding affinity between mortalin and p53 binding domain of active compound ligands and their binding position compared with a control, it is predicted that compounds that have potential to inhibit the

binding between p53 and mortalin are 1-(5,7-dihydroxy-2,2-dimethylchroman-6-yl)-3-(1,1,4a-trimethyl-2,3,4,4a,9a hexahydro-1H-xanthen-7-yl) propan-1-one, 20α-3-hydroxy-2-oxo-24-nor-friedela-1-10,3,5,7 tetraen -carboxylic acid-29-methylester (Pristimerin) and 5-hydroxy-N-methylseverifoline.

[1] Yun C. O., Bhargava P., Na Y., Lee J. S., Ryu J., Kaul S. C., Wadhwa R. *Sci. Rep.*, **2016**, 7, 4.
[2] Valli M., dos Santos R. N., Figueira L. D., Nakajima C. H., Castro-Gamboa I., Andricopulo A. D., Bolzani V. S. *J. Nat. Prod.*, **2013**, 76, 439–444.

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Marine Compound Screening for Mortalin-p53 Binding Inhibitor with Potential as Anti-cancer

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[2]Biology Department, Faculty of Mathematics and Natural Sciences, The University of Brawijaya Malang Indonesia

Introduction

Cancer is the second leading cause of death worldwide. High toxicity and side-effects of some cancer chemotherapy drugs increase the demand for new anti-cancer drugs from natural products. In recent years, attention has been devoted to searching for anti-cancer agents from marine natural products. Mortalin/mtHsp70, a stress response protein, has been reported to contribute to the process of carcinogenesis by several ways including inhibition of the transcriptional activation of p53.[1] In this study, we used computational molecular docking as a tool to find compounds that have potential as anti-cancer by inhibiting the binding between mortalin and p53.

Material and Methods

Marine compounds data was taken from the nuBBE database.[2] To know the anti-cancer potential of the compounds from the database, docking mortalin to the p53 binding domain of the compounds were performed using the Vinaautodock algorithm with pyrx software. The potential inhibition of the binding of mortalin with p53 by the active compounds were analyzed by affinity binding between mortalin and the p53 binding domain of active compound ligands, also by a similarity between the position of mortalin-active compound ligand bindings with mortalin-withanone binding as a positive control. Proteins were visualized with discorystudio software.

Results

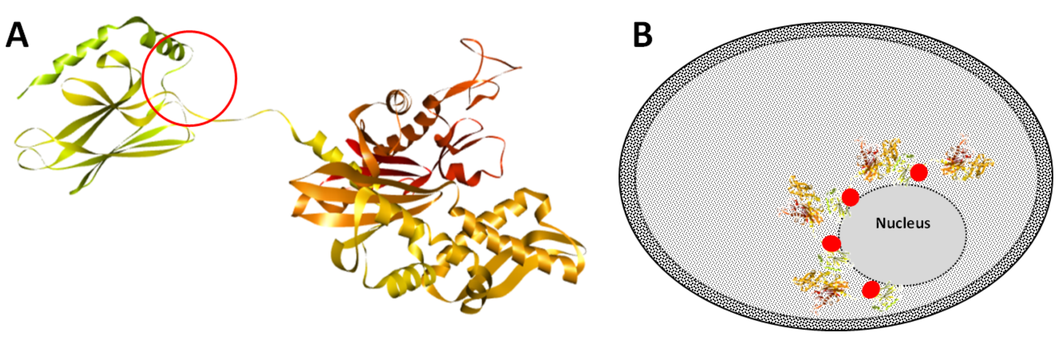


Figure 1. Mortalin structure has two domains, the small part (left) has a p53 binding domain (red circle), which is used for screening active compounds that can block the mortalin bond with p53 (A). Illustration of mortalin binds to p53 so that p53 can not enter the nucleus to activate apoptosis and cell cycle arrest (B).

Table 1. The binding affinity between mortalin & marine active compound ligands

No	Ligand	Binding Affinity (kcal/mol)	No	Ligand	Binding Affinity (kcal/mol)
01	Withanone (+ control)	-7.2	14	nubbe_423	-4.9
02	nubbe_1208	-6.7	15	nubbe_138	-4.5
03	nubbe_87	-6.7	16	nubbe_627	-4.5
04	nubbe_1485	-6.6	17	nubbe_629	-4.5
05	nubbe_1483	-6.4	18	nubbe_1690	-4.4
06	nubbe_1415	-6.2	19	nubbe_55	-4.4
07	nubbe_1484	-6.0	20	nubbe_631	-4.4
08	nubbe_152	-5.9	21	nubbe_424	-4.3
09	nubbe_514	-5.3	22	nubbe_425	-4.3
10	nubbe_149	-5.2	23	nubbe_43	-4.3
11	nubbe_1476	-5.1	24	nubbe_628	-4.3
12	nubbe_150	-5.1	25	nubbe_630	-4.2
13	nubbe_151	-5.0	26	nubbe_1691	-4.0

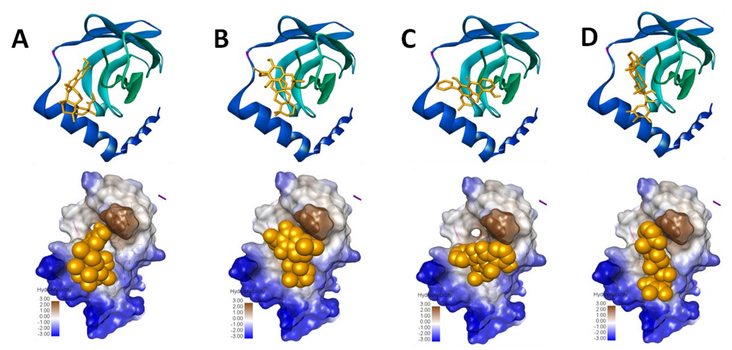
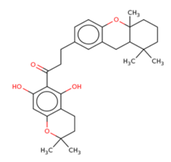
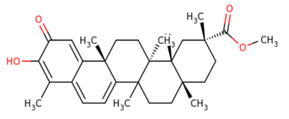
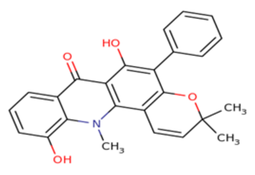


Figure 2. The binding position between mortalin & ligand of marine compound potentially inhibiting p53 binding with mortalin. Mortalin (macrostructure) binds to NuBEE 1208 (A), NuBEE 87 (B), NuBEE1485 (C), withanone (D). All marine compounds bind to the same binding site as the +control (withanone). Mortaline is visualized in cartoon (top panel) and surface (bottom panel).

Table 2. Compounds that have potential to inhibit the binding between p53 and mortalin, based on docking analysis.

No	NuBBE ID	Molecule name	Molecule structure
1	1208	1-(5,7-dihydroxy-2,2-dimethylchroman-6-yl)-3-(1,1,4a-trimethyl-2,3,4,4a,9a-hexahydro-1H-xanthen-7-yl)propan-1-one	
2	87	Pristimerin; 20α-3-hydroxy-2-oxo-24-nor-friedela-1-10,3,5,7-tetraen-carboxylic acid-29-methylester	
3	1485	5-hydroxy-N-methylseverifoline	

Conclusion

The binding affinity between mortalin and ligand from 25 marine active compounds were between a range of -4 to -6,7 kcal/mol. Based on the high binding affinity between mortalin and p53 binding domain of active compound ligands and their binding position compared with a control, it is predicted that compounds that have potential to inhibit the binding between p53 and mortalin are 1-(5,7-dihydroxy-2,2-dimethylchroman-6-yl)-3-(1,1,4a-trimethyl-2,3,4,4a,9a hexahydro-1H-xanthen-7-yl) propan-1-one, 20α-3-hydroxy-2-oxo-24-nor -friedela-1-10,3,5,7 tetraen -carboxylic acid-29-methylester (Pristimerin) and 5-hydroxy-N-methylseverifoline.

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