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## Chemical and Biological Studies of the Ascidians, Lissoclinum timorense and Diplosoma spp. and their Symbionts

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**PS-3            Chemical and Biological Studies of the Ascidians, *Lissoclinum timorense* and *Diplosoma* spp. and their Symbionts**

Takayuki Ogi<sup>1,2</sup>, Wilmar Maarisit<sup>1</sup>, Inneke F. M. Rumengen<sup>3</sup> and Katsuhiko Ueda<sup>1</sup>

<sup>1</sup> *Department of Chemistry, Biology and Marine Science, University of the Ryukyus, Nishihara-cho, Okinawa, 903-0213, Japan*

<sup>2</sup> *Okinawa Industrial Technology Center, Uruma-shi, Okinawa, 904-2234, Japan*

<sup>3</sup> *Faculty of Fisheries and Marine Science, Sam Ratulangi University, Kampus UNSRAT Bahn, Manado, 95115, Indonesia*

It has been amply demonstrated that ascidians are prolific producers of novel bioactive metabolites which include a diverse array of alkaloids and a small number of acetogenins. A significant number of ascidian-derived compounds have entered into preclinical and clinical trials as antitumor agents. The biomedical potential of the ascidian metabolites has resulted in the focused interest in these primitive chordates. As part of our ongoing search for cytotoxic 'lead' compounds from Okinawan waters, we investigated the constituents of ascidians *Lissoclinum timorense* and *Diplosoma* spp., extracts of which displayed inhibition of the cell division of fertilized sea urchin eggs. So far, we have isolated many bioactive metabolites such as chlorinated macrolides (haterumalides), labdane alkaloids (haterumaimides), C<sub>11</sub> acetogenins, bromophenols and unnatural nucleosides.

The majority of bioactive compounds isolated from marine organisms (sponges, ascidians, softcorals, etc.) have been suspected to be produced by symbiotic bacteria. A major hurdle in the development many of these agents into drugs has been their supply. Therefore, marine microorganisms have become an important point of study in the search for novel biologically active metabolites and study on their supply. Ascidiaceae of the family Didemnidae, e. g. *Lissoclinum* spp. and *Diplosoma* spp., harbor obligate cyanobacterial symbionts, *Prochloron* spp., which have been proposed to biosynthesize bioactive metabolites, cyclic peptides such as patellamides A and B, etc. Despite nearly 30 years of attempts, *Prochloron* spp. have eluded cultivation. Recently, Dr. Rumengan reported on culture and isolation of *Prochloron* like microalgae from *Lissoclinum* sp. and *Diplosoma* sp..<sup>1)</sup> We are trying to culture symbiotic a microalga isolated from *Lissoclinum timorense* tissues collected from Tarama island according to Dr. Rumengan's procedure.

In this meeting, progress of chemical and biological studies on ascidians of the family Didemnidae and their symbionts will be presented.

- 1) I. F. M. Rumengen, R. Litang and D. Sumilat, "Growth performance of laboratory cultured *Prochloron* like originated from Manado Bay, North Sulawesi, Indonesia", 21st Pacific Science Congress, Okinawa, Japan, 2007, Abstract no. 1-6-4, p 44.