LEPTOLYNGBYA SPECIES ISOLATED FROM THE SPONGE *PETROSIA FICIFORMIS* AS POTENTIAL SOURCE OF NOVEL COMPOUNDS

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Abstract
A cyanobacterial species belonging to *Leptolyngbya*genus has been isolated from the marine sponge *Petrosia ficiformis* and cultured in laboratory conditions. Aqueous extracts from this *Leptolyngbya* strainshowed a biological activity, influencing *Artemia salina* vitality, being cytotoxic with human erythrocytes and interfering with the sea urchin development.
Keywords: Cyanobacteria, Biotechnologies, Porifera

Introduction
Cyanobacteria are important primary producers of the marine and freshwater environments. But they have also been identified as one of the most promising groups of organisms producing novel, bioactive, natural compounds [1, 2]. Indeed, many investigations in this field indicated that marine microorganisms are substantially involved in the biosynthesis of marine natural products isolated from macroorganisms such as invertebrates. [3, 4]. The chemical structures of over 13,000 novel compounds from marine organisms has been already determined and their potential use in pharmaceutics widely considered [5]. Antibacterial, antiviral, antifungal, algicide and cytotoxic activities have been reported by many authors [6, 7, 8, 9].

Material and Methods
One strain of *Leptolyngbya* wasisolated from *Petrosia ficiformis* and cultured in laboratory conditions.The extracts were obtained after sonication and centrifugation of cyanobacterial cells. *Artemia* nauplii, human red blood cells and sea urchin gametes and embryos were exposed to the cyanobacterial extracts under controlled conditions, then examined for lethal (mortality) and sub-lethal effects.

Results and discussions
Aqueous extracts from *Leptolyngbya* sp. isolated from the Mediterranean sponge *Petrosia ficiformis* were able to exert a biological activity. The extracts influenced the vitality of *Artemia salina* nauplii, induced the human erythrocytes lysis and interfered with the normal development of sea urchin. In particular, the presence of the extract induced a 90% of nauplii mortality after 24hrs of contact at the concentration of 15 mg/ml (w/v) and 100% of mortality at the concentration of up 0.9 mg/ml (w/v) after 48 hrs of contact. The ability to disrupt the integrity of erythrocytes was weak, inducing only 10% of haemolysis, but a strong activity was detectable against sea urchin embryos. In particular, the segmentation process was inhibited after treatment of eggs and embryos with *Leptolyngbya* sp. extract. While male and female gametes were able to perform the fertilization process, the resulting embryos were unable to correctly develop to the pluteus larva. In conclusion, this cyanobacterial species may be regarded as good candidate for drug discovery, with applications especially in pharmaceuticals as inhibitor of cell division, also if further investigations will be necessary to better clarify its biological activity.

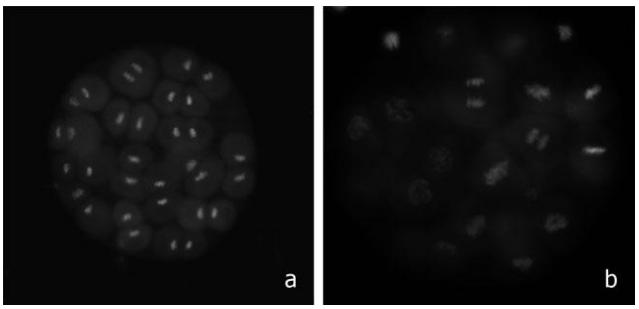

Fig. 1. Sea urchin embryos: a) control and b) embryo developed in presence of the *Leptolyngbya* sp. extract: note the asynchronous cells division

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