

Journal of Biological Research

Bollettino della Società Italiana di Biologia Sperimentale



**89th SIBS National Congress
on Climate and Life**

Ozzano dell'Emilia (BO), Italy, 1-2 December 2016

ABSTRACT BOOK

www.jbiolres.org

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Journal of Biological Research

Bollettino della Società Italiana di Biologia Sperimentale

eISSN 2284-0230

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Thanks to:

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for its contribution

SESSION 1: CLIMATE CHANGES AND AQUATIC POPULATIONS

ORAL COMMUNICATIONS

INDIVIDUATION OF BIOMARKERS AND SECONDARY METABOLITES, RELATED TO ENVIRONMENTAL CHANGE, IN MARINE ORGANISMS

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In response to environmental changes, it is increasingly necessary to detect early responses in exposed marine organisms, in order to implement corrective and predictive measures that could prevent or limit the damage to the upper levels of ecological organization (population, community, ecosystem). In this regard, secondary metabolites and molecular markers can reveal, if properly selected and evaluated in a species-specific approach, excellent early warning sensors. In our study we evaluated, in different marine model systems (extremophile bacteria, micro-algae, molluscs, fish and primary cell cultures), the responses of some biochemical nutritional markers and secondary metabolites to different environmental changes (temperature, salinity, UV exposure, nutrients availability). The preliminary results showed that, among the most sensitive indicators, some lipids, polyphenols, carotenoids and molecular markers, reveal a close correlation with the intracellular redox status which, as is well known, is directly affected by chemical-physical variations of cellular environment. This finding therefore suggests that, some of these, could potentially be elected as biomarkers of early warning for environmental change.

THE IMPORTANCE OF RESEARCH IN ECONOMIC AND ENVIRONMENTAL EXPLOITATION OF A FRAGILE TRANSITIONAL ECOSYSTEM: THE GANZIRRI LAGOON (NE SICILY)

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Coastal lagoons support a range of natural services that are highly valued by society, including fisheries productivity, storm protection, tourism, and others. In some cases, those environments suffer urbanization processes. In the case of Ganzirri lagoon: in fact, a demographic increase in the last 50 years led to a worsening of water variables. For this reason, shellfish farming (mussels and clams) has been prohibited from 1981. In 2001 this zone has become Natural Oriented Reserve, and the impact of urbanization on lagoon waters

begin to decrease. Our research focused attention on water parameters in order to assess both the good environmental quality and the possibilities to restore clam culture practices. Our studies involved the monitoring of main water variables. All these variables are fundamental to assess many features, such as: aquatic pollution, eutrophication, ecosystem "health" status, production capacity. The results obtained during the years, shows that physic and chemical variables follow seasonal trends, and despite some peaks of temperature (32°C), do not influence the living organisms. pH trend is between 7.98 (winter) and 8.5 (spring). Organic carbon comes mainly from phytoplankton elements (autotrophic), very abundant in the lake of Ganzirri. This result and the amount of TC (28-32 mg/l) suggest the potential of organic carbon reserves for the "sustainability" of this biotope. The microbial indices do not exceed the law limits, and the other variables showed a good production capacity of this environment. Thanks to this and other studies (conducted by ARPA and ASL), in July 2016 the water of Ganzirri lagoon has been characterized as suitable for shellfish culture.

CYTOTOXICITY OF VENOM FROM HETEROTRICHOUS MICROBASIC EURYTELE NEMATOCYSTS OF PELAGIA NOCTILUCA (CNIDARIA: SCYPHOZOA) TO L929 MOUSE LUNG FIBROBLASTS. PRELIMINARY RESULTS

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During last decades many studies highlighted cnidarian relevance in worldwide trophic chains, as well as the considerable frequency and size of outbreaks over the years. A high inter-specific variability, survival ability and harsh conditions resistance built a clear path for these animals to the top of trophic chains, with a corresponding raising impact on sea-related anthropogenic activities. Indeed, cnidarians possess efficient stinging characteristics and represent a threat to bathers and fishermen. *Pelagia noctiluca* (Forsskål, 1775), the "Mauve Stinger", is a common Mediterranean scyphozoan jellyfish. It occurs mainly from March to May, but also throughout the year in South Tyrrhenian waters around Northeastern Sicily. The venomousness of this jellyfish is due to three main different kinds of nematocysts, which are known to contain toxins which at present are not exhaustively known. In this study, a first evaluation of the cytotoxic activity of heterotrichous microbasic eurytele nematocysts from *Pelagia noctiluca* is presented and discussed. Nematocysts were isolated from tentacles of *Pelagia noctiluca* and the content was extracted by sonication (aqueous extract). Cytotoxicity assays employing MTT assay and Trypan Blue dye exclusion were carried out on L929 mouse lung fibroblasts. Aqueous extracts induced cytotoxicity to L929 cells with 36.9% cell survival after 24 hours treatment with aqueous extract of 150×10^3 *P.noctiluca* nematocysts/ml, and 68.9% cell survival after treatment with extract of 75×10^3 nematocysts/ml. Further analysis, including the evaluation of the oxidative stress and considering cellular targets such as apoptotic ways, antioxidant enzymes, ion channel inhibition, ROS production, and cellular signals correlated to protein expression could be further research developments and are thought to be required in order to understand the suitability of extracts from *Pelagia noctiluca* nematocysts as valuable biopharmaceutical substances.

Acknowledgements: The authors wish to thank Dr. Guido Bonello (DISTAV, University of Genova) for his help in the experimental phase of this work.