

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

Journal of Biological Research

Bollettino della Società Italiana di Biologia Sperimentale

eISSN 2284-0230

EDITOR IN CHIEF

Marco Giammanco (*University of Palermo, Italy*)

ASSOCIATE EDITORS

Renzo Antolini (*University of Trento, Italy*)

Massimo Cocchi (*Alma Mater Studiorum-University of Bologna, Italy*)

Proto Gavino Pippia (*University of Sassari, Italy*)

Luigi Pane (*University of Genova, Italy*)

Emma Rabino Massa (*University of Turin, Italy*)

EDITORIAL BOARD

James Anthony (*Michigan State University, USA*)

Maria Grazia Bridelli (*University of Parma, Italy*)

Dario Cantino (*University of Turin, Italy*)

David Caramelli (*University of Florence, Italy*)

Giuseppe Caramia (*G. Salesi Ancona Hospital, Italy*)

Emilio Carbone (*University of Turin, Italy*)

Brunetto Chiarelli (*University of Florence, Italy*)

Amelia De Lucia (*University of Bari, Italy*)

Andrea Drusini (*University of Padua, Italy*)

Luciano Fadiga (*University of Ferrara, Italy*)

Vittorio Farina (*University of Sassari, Italy*)

William Galanter (*University of Illinois, USA*)

Millie Hughes-Fulford (*University of San Francisco, USA*)

Gaetano Leto (*University of Palermo, Italy*)

Gianni Losano (*University of Turin, Italy*)

Mansoor A. Malik (*Howard University Hospital, USA*)

Gian Luigi Mariottini (*University of Genova, Italy*)

Neville A. Marsh (*Queensland University of Technology, Australia*)

Bruno Masala (*University of Sassari, Italy*)

Alejandro M.S. Mayer (*Midwestern University, USA*)

Vincenzo Mitolo (*University of Bari, Italy*)

Werner E.G. Muller (*Johannes Gutenberg University, Germany*)

Kary B. Mullis (*Oakland Research Institute, USA*)

Giuseppe Murdaca (*University of Genova, Italy*)

Giuseppe Palumbo (*University of Naples Federico II, Italy*)

Gian Luigi Panattoni (*University of Turin, Italy*)

Massimo Pregolato (*University of Pavia, Italy*)

Mark R. Rasenick (*University of Illinois, USA*)

Angela Maria Rizzo (*University of Milan, Italy*)

Giacomo Rizzolatti (*University of Parma, Italy*)

Aldo Rustioni (*University of North Carolina, USA*)

Salvatore Sapienza (*University of Catania, Italy*)

Pietro Scotto Di Vettimo (*University of Naples, Italy*)

Vinicio Serino (*University of Siena, Italy*)

Lynne Christine Weaver (*University of Western Ontario, Canada*)

Mario Wiesendanger (*University of Friburg, Germany*)

Editorial Staff

Lucia Zoppi, Managing Editor

Claudia Castellano, Production Editor

Tiziano Taccini, Technical Support

Publisher

PAGEPress Publications

via A. Cavagna Sangiuliani, 5

27100 Pavia, Italy

Tel. +39.0382.464340 – Fax. +39.0382.34872

info@pagepress.org – www.pagepress.org

MULTIPLE BIOASSAYS TO EVALUATE ECOTOXICITY OF POLLUTED SUBSTRATES

E. Roccotiello^{1*}, A. Amaroli^{2§}, E. Giacco^{3§}, S. Rosatto¹, D. Dozza¹, L. Pane³, M.G. Mariotti¹

¹Laboratory of Plant Biology; ²Laboratory of Protozoology;

³Laboratory of Ecotoxicology and Planctology, DISTAV, Department of Earth, Environment and Life Sciences, University of Genoa, Genoa, Italy

§These authors equally contributed to the research

*E-mail: enrica.roccotiello@unige.it

Potential ecotoxicity of three tunnel excavation materials conditioned with two different foaming conditioners (P and F, respectively) and lubricant were screened using a multi-end-point bioassay approach. A modified OECD artificial soil was used as control soil (C) to screen only the effect of each conditioner. Acute toxicity bioassays were conducted with a selected set of test species (*Dictyostelium discoideum*, *Daphnia magna*, *Hordeum vulgare* and *Lactuca sativa*). Tests were done immediately after adding conditioners (t_0), and after one (t_1) and two weeks (t_{14}) from P and F addition. Although substrates showed no toxic effect, the sensitivity of the test species and the toxicity endpoints varied. The *D. discoideum* were not affected by F exposure, showing morphology and fission rate rhythm (FRR) similar to that of C. Conversely, at t_0 P inhibits the FRR, while t_1 and t_{14} were comparable with C for cell division and morphology. The *D. magna* values of immobilization percentage (%) were always lower than 10% (i.e., comparable with C), with the exception of one substrate+P in which I=10%. The germination index of *L. sativa* and *H. vulgare* ranged around 80% (i.e., no phytotoxicity) and the same trend was observed for mean root length. No significant time-effect (i.e., increasing conditioner biodegradation) were recorded with the exception of one substrates, with values that turned high at t_{14} . Thus, substrates+conditioners were not toxic but with different sensitivity showed by multiple bioassays that revealed that this approach is suitable to be applied for a quick and exhaustive screening of soil toxicity.

SPONGE-ASSOCIATED ANTARCTIC BACTERIA: DIVERSITY AND BIOTECHNOLOGICAL POTENTIAL

S. Savoca¹, M. Papale^{1,2}, A. Conte¹, C. Rizzo^{1,2}, N. Spanò¹, S. Mangano¹, C. Caruso¹, A.C. Rappazzo¹, L. Michaud¹, A. Lo Giudice^{1,3*}

¹Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, Messina, Italy; ²Consorzio Nazionale Interuniversitario per le Scienze del Mare (CoNISMA), Palermo, Italy; ³Institute for the Coastal Marine Environment, National Research Council (IAMC-CNR), Messina, Italy

*E-mail: angelina.logiudice@iamc.cnr.it

Sponges provide important habitat for a community of associated organisms with bacteria that frequently colonize outer surfaces as well as the interstices of ostia and oscula, constituting over 40% of the host mesohyl biomass, even in Antarctica where sponges dominate vast areas of the Antarctic shelves. Among extremophiles, cold-adapted bacteria from Polar habitats could represent a potential source of novel biomolecules with unusual functional activities. Despite this, their biotechnological potential remains relatively unexplored. In this context, a total of 884 cold-adapted bacterial strains from 12 Antarctic sponge species were identified and screened for potential biotechnological applications. Isolates were clustered in 45

Operational Taxonomic Units (OTUs) which were phylogenetic affiliated to five main taxa, as follows: Gammaproteobacteria (57.6%), Actinobacteria (19.5%), CF group of Bacteroidetes (16.9%), Alphaproteobacteria (4.8%) and Firmicutes (1.2%). The genera *Pseudoalteromonas* (342 isolates), *Arthrobacter* (124 isolates) and *Gillisia* (115 isolates) were particularly abundant among isolates. The Alphaproteobacteria and Firmicutes were mainly represented by members in the genera *Roseovarius* and *Oceanobacillus*, respectively. The OTUs *Pseudoalteromonas* SER45, *Arthrobacter* SER44 and *Psychrobacter* SER48 were generally shared among sponge species. The cluster analysis carried out on bacterial isolates highlighted similarities/differences among the bacterial community associated with the analyzed Antarctic sponges, also in relation to the sampling site. Antibacterial activity and production of exopolysaccharides (EPS) were showed by 119 and 110 isolates, respectively, mainly affiliated to the genus *Pseudoalteromonas*. Further in depth analyses were carried out for EPS iper-producing isolates belonging to the genera *Shewanella*, *Colwellia*, *Psychroserpens* and *Winogradskyella*.

MOLECULAR EPIDEMIOLOGY OF PATHOGENIC CANDIDA SPECIES IN HOSPITAL ENVIRONMENTS

F. Scordino^{1*}, D. Giosa¹, G. Barberi¹, O. Romeo^{1,2}

¹IRCCS-Centro Neurolesi Bonino-Pulejo, Messina, Italy;

²Dipartimento di Scienze Chimiche, Biologiche, Farmaceutiche ed Ambientali, Università di Messina, Messina, Italy

*E-mail: fabio.scordino@irccsme.it

The rise of *Candida* bloodstream infections (BSI) among hospitalized patients is a fact widely confirmed by many studies worldwide. In Italy *C. albicans* and non-albicans species cause around 50% of BSIs each and *C. parapsilosis* has emerged as an important cause of candidemia especially in southern Italian hospitals. The aim of this study was to describe the pattern of fungi associated with hospital environments (air, medical equipment and various surfaces) in one of the most important structures of South Italy in the treatment of patients with neurological diseases. A total of 271 yeasts were recovered and identified using phenotypic and molecular methods. Most of them (58%) belonged to *Candida* species and *C. parapsilosis* was the most encountered species followed by *C. glabrata*, *C. albicans*, *C. tropicalis* and *C. krusei*. The remaining 42% of the yeast isolates belonged to different fungal Genera (*Rhodotorula*, *Aureobasidium*, *Saccharomyces* e *Blastoschizomyces*). This study confirms that *C. parapsilosis* is particularly prevalent in Italian hospitals where contaminates various surfaces including air and medical devices. Therefore, the implementation of surveillance and control measures is imperative to prevent the spread of nosocomial fungal infections among hospitalized patients.

This work was funded by the Italian Ministry of Health (project code: GR-2011-02347606).

IN VITRO ACUTE TOXICITY OF CADMIUM AND ZINC IN HAEMOLYMPH AND DIGESTIVE CELLS OF MYTILUS GALLOPROVINCIALIS

S. Silvestro, M. Pagano, C. Porcino, M. Briglia, E. Fiorino, M. Vazzana, C. Faggio*

Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, S. Agata, ME, Italy

*E-mail: cfaggio@unime.it