

# Journal of Biological Research

Bollettino della Società Italiana di Biologia Sperimentale



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ABSTRACT BOOK

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removal of NaCl from the extracellular solution and thermal treatment of venom extract. The current-inducing activity was also observed following delivery of venom to the cytosolic side of the plasma membrane, consistent with a pore-forming mechanism. This is the first study exploring in detail the ability of *P. noctiluca* venom to modify the electrophysiological properties of mammalian cells. In this light, the study i) provides essential information on a possible use of bioactive substances; ii) provides new strategies in the treatment of envenomation.

### ANTIMICROBIAL ACTIVITIES OF EXTRACTS FROM *GRACILARIA GRACILIS* (RHODOPHYTA)

Serena Savoca<sup>1\*</sup>, Gioele Capillo<sup>1</sup>, Giuseppe Panarello<sup>1</sup>, Angelina Lo Giudice<sup>2</sup>, Carmen Rizzo<sup>1</sup>, Rossana Rando<sup>3</sup>, Giovanni Bartolomeo<sup>3</sup>, Rosaria Costa<sup>3</sup>, Nunziacarla Spanò<sup>3</sup>

<sup>1</sup>Dipartimento di Scienze Chimiche, Biologiche, Farmaceutiche ed Ambientali, Università degli Studi di Messina, Messina, Italy; <sup>2</sup>Istituto per le Risorse Biologiche e le Biotecnologie Marine (IRBIM), Messina, Italy; <sup>3</sup>Department of Biomedical, Dental and Morphological and Functional Imaging, University of Messina, Messina, Italy

\*E-mail: [ssavoca@unime.it](mailto:ssavoca@unime.it)

Marine algae produce a wide variety of bioactive metabolites as antimicrobial, antifeedant, antihelminthic and cytotoxic agents. These compounds include alkaloids, polyketides, cyclic peptides, polysaccharides, phlorotannins, diterpenoids, sterols, quinones, lipids and glycerols. The antimicrobial potential differs among the different classes of seaweed, with the most promising being Rhodophyceae, followed by Chlorophyceae and Phaeophyceae. In this study, the antimicrobial potential of *Gracilaria gracilis*, from the Natural Reserve of Capo Peloro (Sicily, Italy), was evaluated. Soxhlet extractions was carried out using five different solvents (methanol, ethanol, acetone, chloroform and ethyl ether). Extracts were tested against Gram positive and Gram negative pathogens (i.e. *Vibrio cholerae*, *Pseudomonas aeruginosa*, *Salmonella* sp., *Bacillus subtilis*, *Aeromonas hydrophila*, *Vibrio fischeri*). The antimicrobial susceptibility was assessed using the "agar disk diffusion method": 20 µl of each extract (at three different concentrations) were tested. Results showed that all the extracts were active against *B. subtilis*, with the best result that was obtained using the methanolic extract (inhibition halo diameter: 19 mm). A slight activity was also observed towards *Vibrio fischeri*. Our results enlarge the existing knowledge about the antimicrobial potential of red macroalgae. Further studies will be necessary to deepen the activity of *Gracilaria gracilis* against other Gram positive bacteria. Moreover, considering that *Bacillus subtilis* is often associated with food poisoning outbreaks, it could be suggested the use of *G. gracilis* extracts in the complexation of food preservatives, useful to reduce the risks deriving from the contamination by such microorganism.

### THE EFFECTS OF ACUTE EXPOSURE OF NEONICOTINOID INSECTICIDE ON DIFFERENT SPECIES OF CRAYFISH

Alžběta Stará<sup>1,2\*</sup>, Alžběta Strouhová<sup>2</sup>, Antonín Kouba<sup>2</sup>, Josef Velišek<sup>2</sup>, Caterina Faggio<sup>1</sup>

<sup>1</sup>Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, Messina, Italy; <sup>2</sup>Faculty of Fisheries and Protection of Waters, South Bohemian Research Centre of Aquaculture and Biodiversity of

Hydrocenoses, University of South Bohemia in České Budějovice, Vodňany, Czech Republic

\*E-mail: [stara01@frov.jcu.cz](mailto:stara01@frov.jcu.cz)

Neonicotinoids are one of the newest class of pesticides, used in agriculture like insecticides from the beginning of 90 years. They have become very popular and widely used all over the world for their low toxicity to vertebrates. Together, in last years some of the active substances in the neonicotinoid group (clothianidin, imidacloprid a thiamethoxam) have been banned for their secondary impact on non-target organisms and the environment. The aim of this study was to investigate the acute toxicity 96hLC50 of Calypso 480 SC (containing 48% neonicotinoid thiacloprid) on three species of crayfish. We used two different developmental stages: marbled crayfish (*Procambarus fallax* f. *virginalis*), red swamp crayfish (*Procambarus clarkii*) and common yabby (*Cherax destructor*), which were tested separately. The Calypso 480 SC had a more toxic effect on to younger stages of crayfish, the 96hLC50 in mg/L was: 1.60 and 27.30 marbled crayfish, 1.13 and 1.94 red swamp crayfish, 0.52 and 7.65 mg/L common yabby, values are sorted consecutively younger and then older. Also changes in behaviour in crayfish exposed to insecticide were observed, as is reduced aggressiveness, slowing movement of the limbs, reduced breathing, turning the crayfish on the back, apathy of organisms and subsequent deaths. This study provides and complements other important results for evaluating the toxicity effect of thiacloprid on non-target species, respectively crayfish. *Acknowledgements:* Supported by the Ministry of Education, Youth and Sports of the Czech Republic - projects CENAKVA (No. CZ.1.05/2.1.00/01.0024) and CENAKVA II (No. LO1205 under the NPU I program), and project Development of University of South Bohemia: International Mobility MSCA IF (no. CZ.02.2.69/0.0/0.0/17\_050/0008486).

### METHADONE VERSUS BUPRENORPHINE: DATA DETECTED FROM CALTANISSETTA SER.T

Fabio Venturella<sup>1</sup>, Giulia Cancellieri<sup>2</sup>, Anastasia Valentina Liga<sup>2\*</sup>, Francesca Mortillaro<sup>2</sup>, Annamaria Di Carlo<sup>2</sup>

<sup>1</sup>Department of Biological, Chemical and Pharmaceutical Science and Technologies, University of Palermo, Palermo, Italy; <sup>2</sup>Graduated in Pharmacy, University of Palermo, Palermo, Italy

\*E-mail: [ania.liga90the@gmail.com](mailto:ania.liga90the@gmail.com)

In last years, heroin-addicted have exponentially increased: this has made it necessary to identify a pharmacological strategy as effective as possible. With this purpose, a statistical investigation was conducted in a sample of individuals, aged between 18 and 50. They were diagnosed and subjected to different treatments at Ser.T of Caltanissetta (Sicily-Italy) during the period 2013-2017. The analyzed patients were treated with three different pharmacological therapy: methadone 0.1%, methadone 0.5%, buprenorphine and suboxone. We obtained percentages of RESPONDERS, LOW RESPONDERS and NON RESPONDERS patients from data processing, based on used therapy. Considering pharmacological responses of the sample examined, it is possible to observe that the treatment with buprenorphine has led to 71.98% of RESPONDERS subjects, 23.52% of LOW RESPONDERS and 4.5% of NON RESPONDERS. Instead, the administration of methadone 0.1 % has produced 82.82% of RESPONDERS subjects, 11.08% of LOW RESPONDERS, 6.1% of NON RESPONDERS. The therapy with methadone