

From natural products based research, new substances for the treatment of *Candida* sp infections: the case of *spirulina platensis*

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Candidosis, caused by *Candida* spp., represents the most frequent mycosis of the oral cavity and of the vulvo-vaginal tract. Candidiasis is treated with anti-fungal agents including Nystatin, Miconazole, Itraconazole, Fluconazole and Amphotericin B. The efficacy of these drugs is limited by their side effects and antibiotics resistance. Several plants extract show antimicrobial activity and a good toxicological profile. The research based on natural products may lead to novel antifungal agents and nutraceuticals. In this work we investigated the chemical characterization of a *Spirulina platensis* water extract (SPE) and evaluated its effects towards uterine, esophageal and tracheal smooth muscle contractility, using in vitro biological assays. SPE antifungal effects were assessed against different *Candida* spp strains, isolated mostly from vaginal and oral swabs, by broth

microdilution assay. HeLa, HEL 299 and VK2/E6E7 cells were used to investigate SPE cytotoxicity. In SPE, phycobilins were found at the concentrations of 8.38 ± 0.89 mg/100 mg (Phycocyanin), 2.48 ± 0.60 mg/100 mg (Allo-Phycocyanin), 1.99 ± 0.62 mg/100 mg (Phycoerythrin); carotenoids and chlorophyll were detected at the concentrations of 1.97 ± 0.12 mg/g and 1.97 ± 0.12 mg/g, respectively. SPE did not affect uterine, esophageal and tracheal smooth muscle spontaneous contractility, while it exerted a concentration-dependent spasmolytic activity in KCl induced contraction, in uterus, suggesting a calcium antagonistic effect. SPE exerted antifungal properties (MIC: 0.125 ± 0.5 mg/ml), against all the *Candida* species with a fungicidal activity. Finally, in vitro cytotoxicity results of SPE on three different cell lines revealed a selectivity index between 2 and 16.

Biography

Matteo Micucci has completed his PhD at Bologna University and he carries on his research focusing on Medicinal Chemistry and Nutraceuticals. He was visiting scientist at the Research Laboratory of Medicinal Chemistry of De Montfort University, Leicester, UK. He was Visiting Scientist at University of Naples Federico II. He has published 28 papers in reputed journals and he has attended, as invited speaker and chairman national and international conferences. He won the International Awards Fides et Scientia. He is Science Adviser, in the field of Nutraceuticals, Integrative Medicines, at SEGRETERIA PARTICOLARE of a Senator of the Italian Republic.

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