



ALGAEUROPE

04-06 DEC 2018 | AMSTERDAM

WWW.ALGAEUROPE.ORG

5th

ABSTRACT BOOK

ALGAEUROPE CONFERENCE

December
4-6, 2018

Park Plaza
Amsterdam Airport
the Netherlands



ANTINFLAMMATORY EFFECTS OF TISOCHRYSIS LUTEA F&M-M36 AND ARTHROSPIRA PLATENSIS F&M-C256 EXTRACTS

Elisabetta Bigagli¹, Lorenzo Cinci¹, Alberto Niccolai², Mario R. Tredici², Natascia Biondi²,
Liliana Rodolfi^{2,3}, Mario D'Ambrosio¹, Cristina Luceri¹

¹ Department of NEUROFARBA, section of Pharmacology and Toxicology, University of Florence, Viale Pieraccini
6, 50139 Florence, Italy

² Department of Agrifood Production and Environmental Sciences (DISPAA), University of Florence, Piazzale delle
Cascine 24, 50144 Florence, Italy

³ Fotosintetica & Microbiologica S.r.l., Via dei Della Robbia 54, 50132 Florence, Italy

Presenting author:



Alberto Niccolai
Postdoctoral researcher
University of Florence
Italy
alberto.niccolai@unifi.it

About the author:

Msc degree in 2013 in Agricultural Sciences and Technologies. PhD in 2017 in Agriculture and Environmental Sciences, with a thesis on "Microalgae as source of innovative foods and nutraceuticals". Post-Doc Researcher at the Department of Agrifood Production and Environmental Sciences (DISPAA) of the University of Florence, in the group led by Prof. Mario Tredici. He is working on the use of microalgae for the production of new food products, on bioactive molecules from microalgae and cyanobacteria for agro-industry and for cosmetic and pharmaceutical applications.

Company info:

Department of Agrifood Production and Environmental Sciences (DISPAA), University of Florence,
Piazzale delle Cascine, 18, 50144, Florence, Italy

Phone: +39 0554574005

Website: <https://www.dispaa.unifi.it/>

Abstract:

Functional foods offer, in addition to their high nutritional value, a health advantage due to the beneficial activities of their natural bioactive components. Several microalgae have been proposed as substrate for functional foods. In this study we evaluated the anti-inflammatory effects of the methanolic extract of *Tisochrysis lutea* F&M-M36 and the aqueous extract of *Arthrospira platensis* F&M-C256 by determining their inhibitory effects on pro-inflammatory mediators in lipopolysaccharide (LPS)-stimulated murine macrophage RAW cells. Their effects were compared to those of pure fucoxanthin (FX) and phycocyanin (PC). The expression of COX2, iNOs and heme oxygenase-1 (HO-1) genes was measured by RT-PCR in the cellular lysate and PGE2 concentration was quantified in the culture medium by using a competitive enzyme immunoassay. The methanolic extract from *T. lutea* F&M-M36 was able to reduce the LPS-stimulated production of PGE2, dose-dependently, exhibiting a higher effect compared to that of FX at a concentration comparable to that present in the microalgal biomass. On the contrary, only the water-soluble phycobiliprotein PC, modulated

significantly the expression of the pro-inflammatory genes COX2 and iNOs. However, both extracts and single compounds up-regulated the expression of HO-1 in the presence of LPS, suggesting the involvement of the Nrf2/ARE signaling pathway that plays an important role in inhibiting the production of pro-inflammatory cytokines.

In conclusion, these preliminary data indicate that *T. lutea* F&M-M36 and *A. platensis* F&M-C256 extracts inhibit inflammatory responses via the up-regulation of Nrf2/HO-1 pathway. These two microalgae have potential for the control of inflammatory chronic diseases.

Keywords

Antiinflammatory effects; *Tisochrysis lutea* F&M-M36; *Arthrospira platensis* F&M-C256; bioactive compounds



ALGAEUROPE

03-05 DECEMBER 2019 | PARIS

WWW.ALGAEUROPE.ORG

ALGAEUROPE
