

algae4a-b

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Algae for Aquaculture and Beauty

Newsletter 4 – December 2017

Consortium



Project Coordinator
CNRS, CERMAV
France



Fitoplancton Marino, S.L.
Spain



Agricultural University Of
Athens
Greece



Instituto Andaluz De
Investigacion y Formacion
Agraria Pesquera
Alimentaria
Spain



Apivita SA
Greece



Centro De Ciencias Do Mar
Do Algarve
Portugal



Lifesequencing, SL
Spain

The project

Microalgae were always an exciting target for Aquaculture, Cosmetology and Biotechnology, as they represent a largely untapped reservoir of novel and valuable bioactive compounds.

The ALGAE4A-B (Algae For Aquaculture and Beauty) project seeks to exploit microalgae diversity, as a source for state-of-the-art high-added-value biomolecules in aquaculture and cosmetics.

ALGAE4A-B aspires to foster both European capacity building and the strategic objectives of EU Blue Growth and Marine Biotechnology to harness the untapped potential of European seas and coasts for training and sustainable growth.

Microalgae Biomass Production

The diversification of microalgae biomass production towards two independent applications will give the microalgae industry access to alternative markets in an uncertain, highly competitive and fast changing commercial environment.

Basic and applied research

The project will combine both basic and applied multidisciplinary research in the fields of -omics technologies, biochemistry and applied biotechnology in order to:

- Develop and optimize low-input and application-based microalgae culture systems
- Develop “-omic” resources for both microalgae and fishes
- Develop downstream processing of high added value products from microalgae, with an emphasis on polysaccharides, proteins, enzymes and antioxidants
- Develop, formulate and evaluate in vitro a new range of cosmetic and nutraceutical products for aquaculture

Key figures

972 000 € EC funding
7 partners
4 years (2016-2019)

More information on www.algae4ab.eu

Summer school – Athens, Greece – October 9th-12th 2017

“In vitro testing platforms for natural cosmeceuticals”

Summer school schedule

MONDAY 9th OCT.		APIVITA Experience store	
Opening and topic introduction			
9.30-11.00	Welcome & Registration		
Morning session			
11.00-11.30	Algae4A-B Project Overview		Carlos Infante
11.30-12.15	Microalgae in cosmetics		Panagiota Dragani
12.15-12.45	Current extraction and chemical analysis techniques		Vana Boka
12.45-13.00	Coffee break		
13.00-13.45	EU regulatory framework for marine raw materials		Sofia Papispirou
13.45-15.15	Lunch break		
Afternoon session			
15.15-16.00	Biological interaction of microalgae extracts with human skin		Sophia Letsiou
16.00-16.45	Presentation of APIVITA EU research projects on marine biodiversity for future collaboration		Konstantinos Gardikis
16.45-17.15	Coffee Break		
17.15-18.00	Closing remarks & Discussion		Konstantinos Gardikis
TUESDAY 10th OCT.		Agricultural University of Athens	
Morning session			
9.30-10.00	Welcome – In vitro Testing Platforms in Algae4A&B Overview		Emmanouil Flemetakis
10.00-10.30	Analysis of microalgae Biomass using –omic platforms		Maria Patelou
10.30-11.00	In vitro bioactivity screening for microalgae extracts		Ioanna Anastasiou
11.00-11.30	Coffee Break		
11.30-12.00	Microalgae enzymes and proteins for green cosmetics		Nikolaos Labrou
12.00-12.30	Enzymes as targets for anti-ageing cosmetics		Evangelia Chronopoulou
12.30-13.00	Biosensors as a platform for bioactive compound testing		Rute Felix
13.00-14.30	Lunch Break		
Afternoon session			
14.30-16.00	Laboratory demonstration: In vitro screening platforms -		Lab of Molecular Biology AUA
16.00-17.00	Laboratory demonstration: Microalgae proteins and peptides for hair cosmetics, Stability analysis and assay of proteases for skin care cosmetics		Lab of Enzyme Technology AUA
17.00-17.30	Closing remarks and Discussion		Emmanouil Flemetakis
WED. 11th OCT.		APIVITA Production Site, Markopoulo, Attiki	
Morning session			
10.00-13.00	Tour of APIVITA production facilities, laboratories, beehives and botanical garden		
13.00-14.00	Lunch Break		
Afternoon session			
14.00-18.00	Algae4A&B administrative and scientific meeting		Algae4A-B partners only
THURSDAY 12th OCT.		APIVITA Experience store	
09:30-10:30	Welcome - Summary of meetings and open discussions		Algae4A-B partners only
10:30-11:30	Executive committee meeting		Algae4A-B partners only
11:30-12:30	Coffee break		
12:30-13:30	Executive committee meeting (continue)		Algae4A-B partners only
13:30-15:00	Lunch		
15:00-17:00	Closing remarks		Algae4A-B partners only

Summer school organisation
Dr. Konstantinos Gardikis –
APIVITA
gardikis-k@apivita.com

Pr. Emmanouil Flemetakis - AUA
mfilem@aua.gr

Venues
APIVITA experience store
Solonos 6, Athens

Agricultural University of Athens
Iera Odos 75, Athens

APIVITA factory
Industrial Park of Markopoulo
Mesogaias, Markopoulo, Attiki



Talks are available on www.algae4ab.eu



More information on www.algae4ab.eu

Algae4A-B at the Oceans Meeting 2017

Algae4A-B was represented by its partner CCMAR at the Oceans meeting 2017 held on 7-8 of September in Lisbon, Portugal (<http://www.oceansmeeting.pt>).

During this event flyers publicizing Algae4A-B were distributed as well as samples of the new sun care line launched by APIVITA in 2017, containing the "3D PRO ALGAE" active ingredient, a commercial spin-off from a previous MSCA RISE project funded by FP7.

The use of microalgae extracts in a high value cosmetic product was presented as a successful example of a well-defined knowledge-based end product coming from an Academia/ Industry collaboration.



The concept and innovative ideas of the follow-on MSCA RISE project, Algae4A-B, were very well received by the visitors and the use of sea products in natural cosmetics and aquaculture raised much curiosity and interest.

The Oceans meeting 2017 was dedicated to the theme "The oceans and human health" and was organized by the Portuguese Minister of the Sea, Mrs. Ana Paula Vitorino in partnership with the Forum Oceano – Portuguese Maritime Cluster, in the context of the UN 2030 Agenda for Sustainable Development.

This event aimed to disseminate projects, studies and knowledge on issues related to the Sea and Sustainability and to foster contacts with investors in different areas of the maritime economy promoting dialogue between potential business parties, business talks and dedicated showcase areas.

Associated with the exhibition there was a Ministerial Meeting and an International Conference that was attended by many Ministers and government representatives from around the world with responsibility for Ocean/ Fisheries/ Maritime affairs.

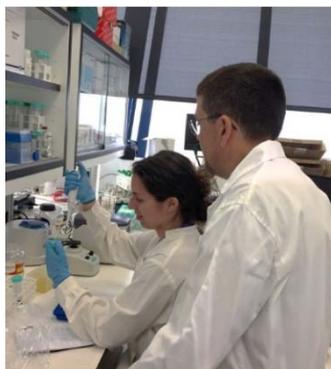
Algae4A-B Implemented secondments

Research and Innovation Staff Exchange (RISE) projects fund short-term exchanges ("secondments") for staff to develop careers combining scientific excellence with exposure to other countries and sectors. RISE enables more interaction between academia and non-academic organisations within Europe and worldwide.

CCMAR – FITMAR

Ana Mateus – 1 month

The purpose of the secondment was to evaluate the effect of immunostimulant compounds derived from microalgae to be used in aquaculture. Specific objectives were: a) the optimization of assays to evaluate the immune response in fish; b) the optimization of the methodology for biological testing of microalgae compounds and c) the preparation of samples for analysis.



CCMAR – FITMAR

Joao Cardoso – 1 month

Microalgae are unexplored sources of pharmacologically active compounds that may be bactericidal or bacteriostatic and in this way a means to control pathogens. The aim of this secondment was to explore the antibacterial potential of different microalgae extracts on isolated pathogenic bacteria of marine fish.



APIVITA – CCMAR

Sophia Letsiou – 2 months

The aim of the secondment of Sophia Letsiou from APIVITA to CCMAR was to develop an epithelial model to assess the toxicity of microalgae extracts.

APIVITA – CCMAR

Konstantinos Gardikis – 2 months

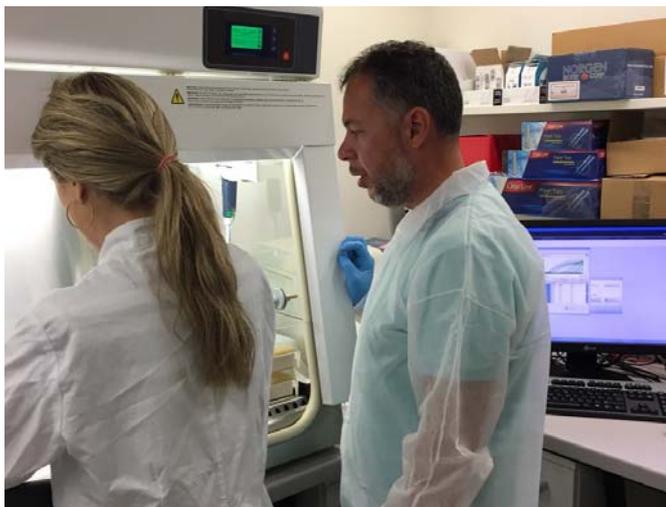
The aim of this study was the sample preparation for subsequent omics analysis in the context of WP3. This process entailed the set-up of cell cultures and the identification of the approach to be used and method optimization for the extraction of material for omics analysis. The work during the visit was focused on developing the cell culture approach and the methodology for the "omics" approach



More information on www.algae4ab.eu

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AUA - FITMAR

Emmanouil Fletmetakis – 3 months

During the secondment pilot experiments were performed in order to setup conditions and evaluate the effects of H₂O₂-induced oxidative stress on microalgae small scale laboratory cultures. Cell viability was estimated using fluorescence microscopy and cell oxidative status and metabolism were monitored by measuring selected transcript levels using RT-qPCR. In addition, the analysis of the *Tetraselmis chuii* genome continued, including the construction of novel draft genome assemblies and gene models.

AUA - FITMAR

Evangelia Chronopoulou – 5 months

The purpose of the secondment was the transfer of knowledge and the development of research activities related to the catalomic analysis of microalgae under different culture conditions employing in vitro enzyme assays. The work focused on enzymes of cosmetic importance such as proteases. Algae extracts from target strains and culture conditions have been subjected to solution-based assays for enzyme activity screening using optimized stopped or continues measurements. The most promising selected enzyme has been partial purified. The obtained results can provide both the consortium and scientific community with valuable in vitro methods for catalomic analysis. Transfer of knowledge focused on technologies and methods in enzyme analysis, enzyme kinetics and analytical biotechnology.

IFAPA - APIVITA

Manuel Manchado – 1 month

The aims were i) the characterization of glucans as key nutraceuticals; ii) the evaluation of the transcriptomic responses induced in different organs by different administration routes and iii) the comparative analysis with glucans from alternative sources to identify biologically specific responses and potential benefits of glucans from microalgae.

IFAPA - APIVITA

Ana Manuela Crespo – 1 month

The secondment was focused on (a) the improvement and testing of new methodologies to collect hatching liquid from sole eggs in order to enhance protease activity and the (b) molecular cloning of choriolytic enzymes to carry out in vitro characterization of the three main proteases identified in sole.

AUA - FITMAR

Nikolaos Labrou – 3 months

The purpose of the secondment was the transfer of knowledge and the development of research activities related to the analysis, screening and examination of bioactivity of microalgae extracts employing in vitro enzyme assays. The work focused on evaluating the inhibition potency of selected microalgae extracts towards enzyme targets that regulate skin aging, inflammatory process and pigmentation. The obtained results can provide both the consortium and scientific community with valuable in vitro methods for bioactivity measurements. Transfer of knowledge focused on technologies and methods in enzyme analysis, enzyme kinetics and analytical biotechnology.

FITMAR - AUA

Sonia Torres – 2 months

The objective of this secondment was to continue the work on the bioactivity assessment of specific microalgae extracts prepared in FITOPLANKTON MARINO premises, using the *in vitro* bioactivity testing platform developed under WP3. For this purpose, *in vitro* toxicity and bioactivity tests were performed on Primary Human Dermal Fibroblasts (NHDF) and Primary Keratinocytes isolated from normal human adult skin. During this secondment period work was focused mainly on cyanobacteria exo-polysaccharides. In order to evaluate the possible protective effects of the tested exo-polysaccharides against cell damage both oxidative stress and induced wounding protocols were applied to the cells. Evaluation of protective extract effects was based on ATP intracellular determination and microscopical observations. Finally, to assess the molecular responses of the skin cells upon induced stress in the presence of the cell-free extracts, total RNA was isolated from selected treatments and will be further analysed by RNAseq and RT-qPCR by AUA and LIFESEQ.

More information on www.algae4ab.eu



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