



Issue 2 – February, 2015

Editorial

Significant advances and achievements have been made in the first year of the MIRACLES Project. The optimization of algae production through the development of molecular monitoring tools and metabolic modelling is well underway. Significant progress was made in creating the innovative technology needed to capture CO₂ from the atmosphere using sorbent technology, the development of a working liquid foam bed flat panel photobioreactor on bench scale and the comparison of membranes for growth medium recycling and algae harvesting. In the area of bioprospecting and cultivation at extreme locations, the first sampling programs have been successfully conducted and they produced ca. 250 microalgae isolates from extreme locations in the Canary Islands, Chile and Norway. Screening of these isolates and materials from culture collections is ongoing to define their production potential.

In the area of bioprocessing, appropriate analytical methods were established and harmonized, the biochemical composition of selected algae strains was determined and the first results were obtained with cell disruption technologies, including encouraging results for enzymatic processing. Extraction routes were explored with promising first results. Preparations are ongoing for the forthcoming work on product development and market assessment and a pilot-scale demonstration of integrated value chains.

Tools were set up for data exchange among partners as input for technical models that will form the basis for the Life Cycle Assessment and techno-economic assessment.

In mid-November 2014 the project's 1st Annual Progress Meeting took place in Madrid,

where the results to date were presented and discussed and plans for the next period were made. The various workshops were very productive and served to enhance active exchange and collaboration between the partners, which is essential in achieving the project's goals.

The progress to date suggests that the project can indeed make a valuable contribution in the area of industrial production of specialty products from microalgae for major market sectors, which is key in the scale-up and further commercialization. The results are highlighted in more detail in this Newsletter.

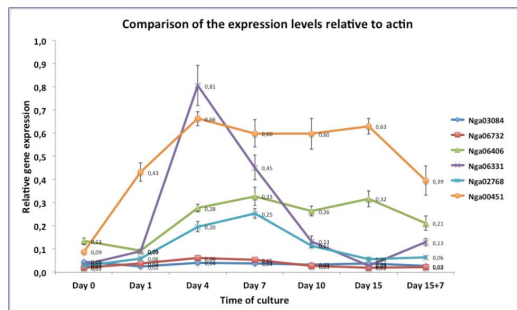
Finally, congratulations are in order to our project partner Fitoplancton Marino based in Cadiz, Spain who has become the first and only producer of microalgae in the world to obtain authorization to market the microalgae *Tetraselmis chuii* in the European Union as a seafood flavouring agent under the "Novel Food" regulation. This achievement is a big step for Fitoplancton and it also gives a boost to the application of algae products in food and other market segments.

Hans Reith, Wageningen University
Project Coordinator



Innovation in algae cultivation

Algae production is the first step in the entire chain of the algae economy. Algae production systems need to guarantee good quality and be predictable, stable and cost effective. In this work package we do research to improve this by achieving cost saving, sustainability and productivity enhancement. [Read more](#)



Bioprospection and development of metabolic models

Bioprospecting new, robust, and productive algal isolates to assess their industrial potential is a cornerstone of the MIRACLES project.

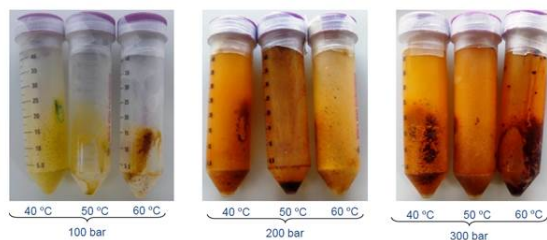
[Read more](#)

Development of integrated biorefinery

Interesting progress has been achieved during the first year of the project; especially related to the analytical methods and chemical composition for the selected algal strains, cell wall weakening, disruption and extraction technologies.

[Read more](#)

SUPERCritical FLUID EXTRACTION - SFE
Sequential extractions: 1st step optimization



Ready to start application development

After a first year mainly spent on selecting and optimising the proper evaluation methods and giving input to other Work Packages on the expectations of the end-users, WP4 partners are now ready to start the proper application development work.

[Read more](#)

All Set for Data Collection

Data Inventory Sheets, an Exchange Task Force and the Business Plan Model are in place in order to guarantee a reliable and continuous flow of information and the economic assessment needed.

[Read more](#)



MIRACLES 1st Annual Meeting - Madrid, November 2014

The MIRACLES Project's First Annual Progress Meeting took place in Madrid, Spain, and gathered all consortium partners for three days, on 11th, 12th and 13th of November 2014.

The meeting was focused on reviewing the progress of the activities developed so far for every Work Package, planning the activities for the second year and reporting the financial status of the project. On the final day, all partners visited NATAC and CIAL-CSIC facilities at Parque Científico de Madrid.

[Read more](#)

