BISIGODOS is a 42-month project that aims at the production of high value-added algae derived chemicals and bio-resins for flexible packaging, coatings, printing, food and hair care applications.

The starting raw material is cost-effective and renewable algae biomass, which is directly cultivated from the CO_2 from industrial emissions (cement, steel factory, thermal power plants, etc.).

The work carried out was related to the cultivation of the alternative algae strains based on the requirements of the cases of study and optimal growth conditions (WP2), process Integration, energetic and mass balance evaluation and improvement (WP3), extraction of the lipid fraction and the transesterification of fatty acids and the production of diols and diisocyanates (WP4)

Moreover, in WP5 and WP6, some of the compounds were separated and processed further for aminoacids, conductive polymers, surfactants and ink production. The scaling up of each selected fine chemical substance and bio-resins was studied and carried out in WP7

In WP8 the regulatory, economic and environmental viability study of each selected fine chemical substance and bio-resins was carried out. Dissemination and exploitation activities was achieved along the project development in WP9 as well as Project Management (WP10).

The objectives for the last 18 months period were mainly focused on carrying out the research in the following areas:

- Optimization of the bio-reactors design: validation of the dynamic photobioreactor model.

- Selection and cultivation of suitable alternative algae strains based on the value chains and end users' requirements.

- Purification, separation and recovery routes and process simulation.

-Transesterification of algae oil components.

- Hydrothermal liquefaction.

-Chemical routes optimization based on model compounds and algae derived molecules.

- PU synthesis from diols and diisocyanates scaling up and production.

-Bio-surfactants scaling up and production.

-Conductive polymers scaling up and production.

-Waterbased inks scaling up and production.

-Aminoacids scaling up and production.

-Approach and development of techno-economical, environmental, regulatory analysis.

-Dissemination and technology transfer activities.

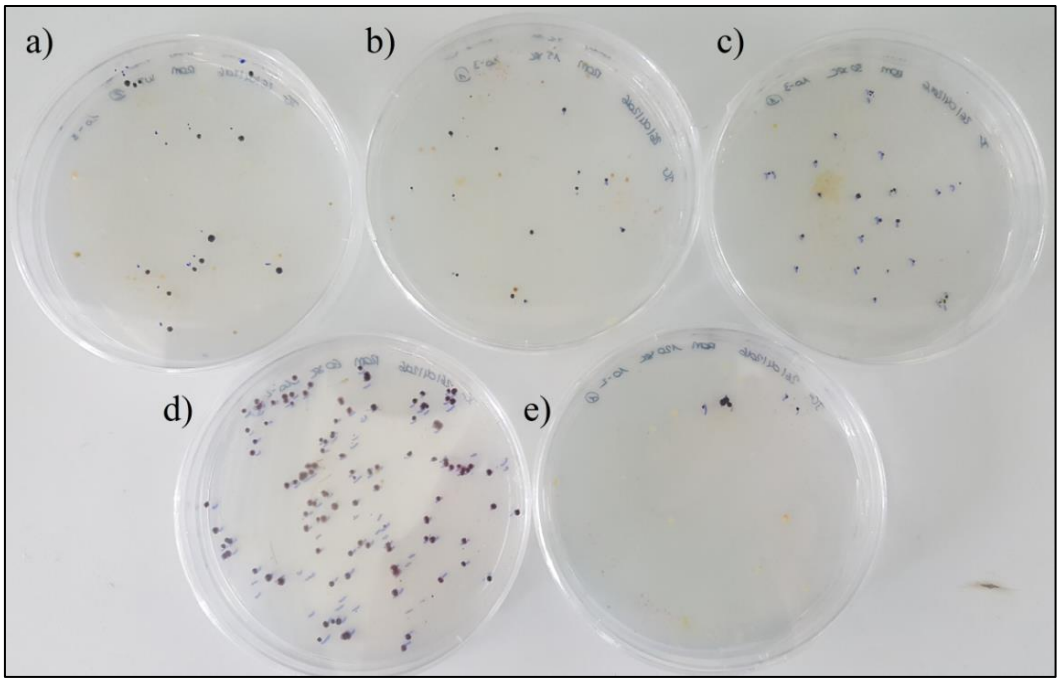

Figure 1. Photographs of UV mutagenesis of *Rhodosorus marinus* a) for the control, b) 15 seconds, c) 30 seconds, d) 60 seconds and e) 120 seconds of exposition at dilution of 10^{-3}.

Figure 2. Different NaCl concentrations (left to right: 2 g/L, 5 g/L, 10 g/L, 20 g/L, 30 g/L, 35 g/L, 40 g/L) of the culture medium of *S. platensis*

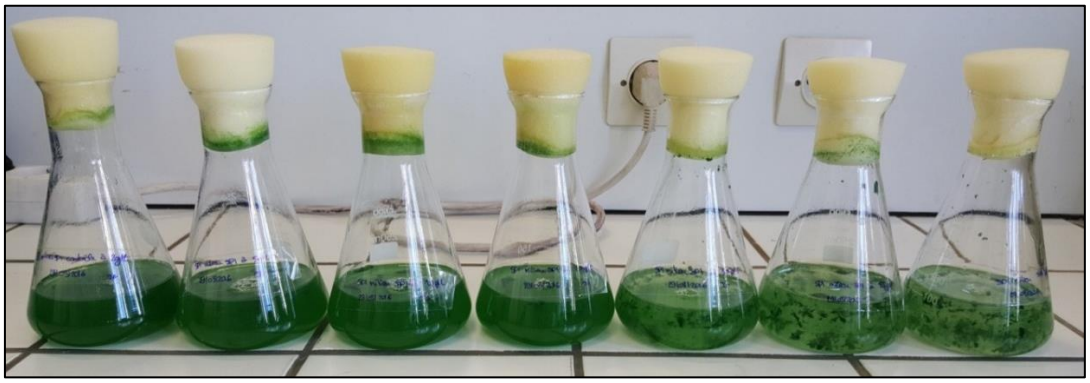

Figure 3. 20 days later than figure 4

Figure 4. Culture of *S.platensis* (left bottle) and culture of *S.maxima* (right bottle) received at BFS facilities

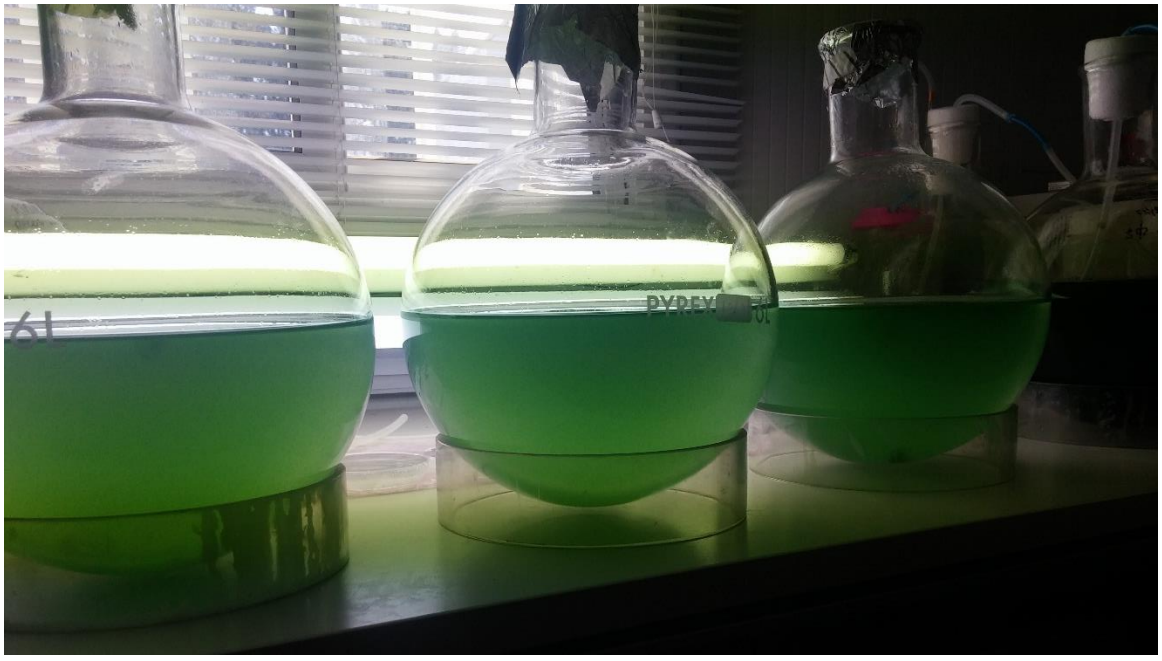

Figure 5. Culture of *S.maxima* in 5L flask

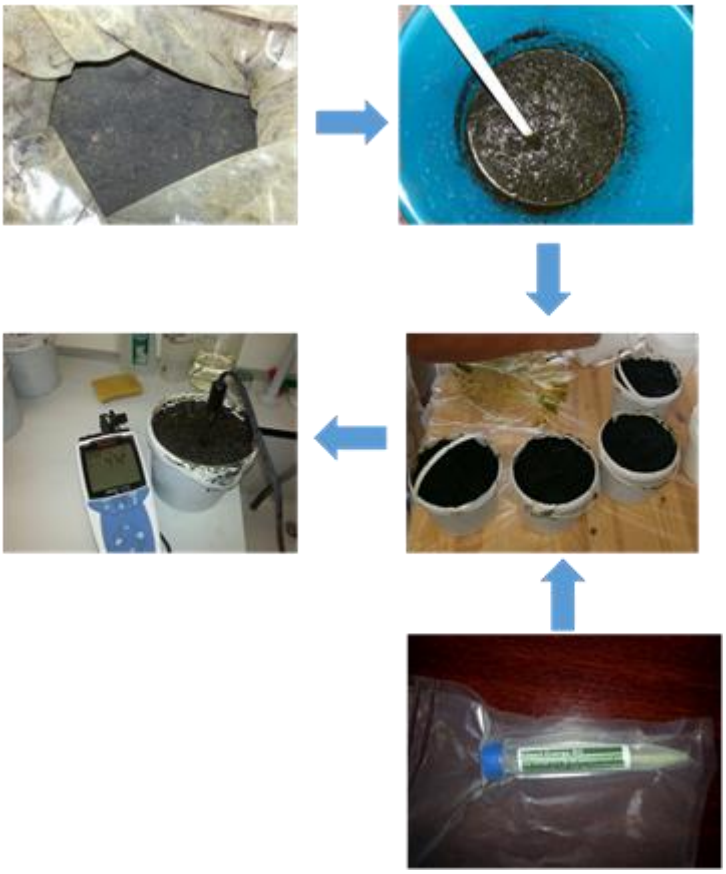

Figure 6: Aminoacids development

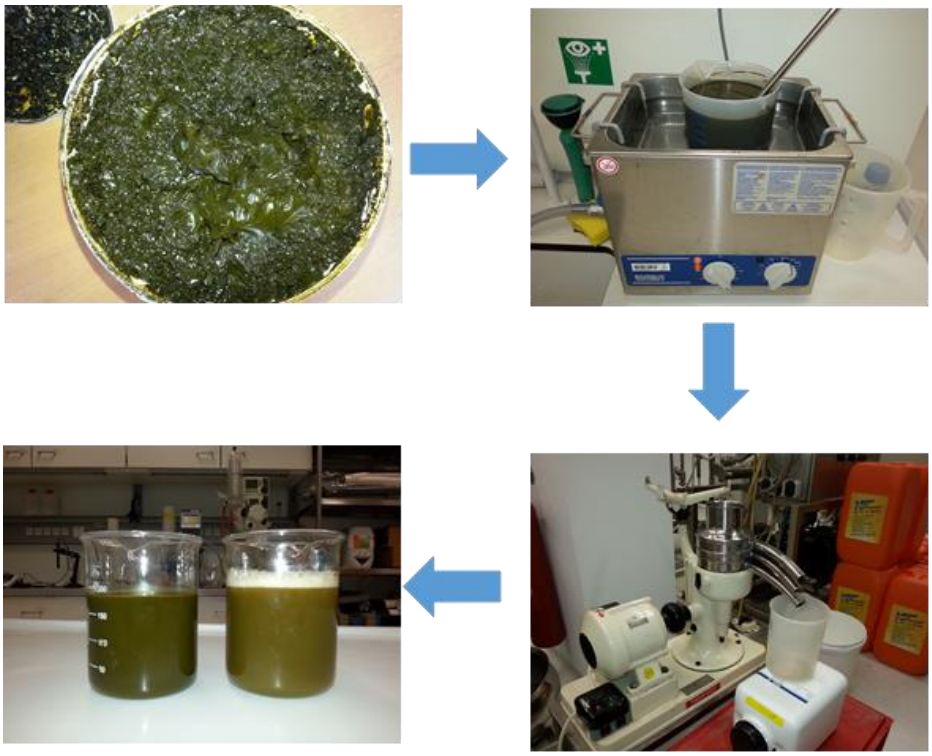

Figure 7. Separation of amino acids by laboratory centrifuge at biomass: water ratio of 1:9.