Researchers design photobioreactor to produce biofuel from algae

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Researchers at the University of Alicante have patented a new device that allows more efficiently to cultivate microalgae and can be used as raw material for biofuel or for other valuable substances in the agri-food or pharmaceutical industry.

The Research Group in Polymer Processing and Pyrolysis at the University of Alicante is the team that has designed and developed this device, consisting of a photobioreactor, easily scalable to larger production, which has attracted the interest of both Spanish and foreign firms in the sector of biotechnology.

The director of the research group, Antonio Marcilla Gomis, explained that the novelty of this photobioreactor compared to those existing is that it allows mass production, less cleaning and maintenance operations, better use of CO2 and better light transfer to cultivation.

During the last decade, growing concerns about oil depletion and global warming have prompted wide research into fuel production from biomass.

This is because biofuels can provide environmental improvements in reducing greenhouse gases, which would not be achieved with the use of oil.

Algae can provide many advantages, because they breed quickly, do not require agricultural land and not even need clean or fresh water to grow, but more importantly they produce an oil that can be converted into biodiesel fuel type, as Marcilla Gomis states.

The design of this novel technology aims to overcome any difficulties or problems that have been presented over the years with the use of other similar cropping systems.

"The subject on the cultivation of microalgae is having a major boom in terms of research in the last fifteen years as an alternative energy to oil", he said.

However, as Marcilla Gomis clarified, the cost of the production of

microalgae for energy "is still far from what would be a profitable process comparable to oil".

"This does not mean that in a few years it may be so", this researcher expressed, who underlined that U.S. and Asia multinational firms are interested in a position in this field.

For example, as he reveals, in the U.S. there is an ongoing project, strategically aimed at precisely the achievement of non-oil fuel as an alternative energy source to supply the military and civil transport.

Apart from biomass to produce biofuels, microalgae can be used to achieve other substances of great industrial value in various sectors, such as food, pharmaceuticals or cosmetics.

Depending on the crop species, they can get antibiotics, polyunsaturated fatty acids, enzymes, proteins, vitamins, triglycerides or antioxidants.

At present, there is no similar photobioreactor in the market, and therefore, it is thought of as "a powerful potential technology for international marketing".

Provided by University of Alicante