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Algarve University develops bio ethanol using carobs

Researchers from the University of the Algarve have presented a pioneering research project in which bio ethanol was produced from carobs.

Researcher Maria Emília Costa from the Centre of Marine and Environmental Research at the University of the Algarve (UAlg), and project coordinator Sara Fernandes, presented the team's findings of a study entitled 'Alfaetilico – Second Generation Energy' during the Local Technology Meeting at the end of last month.

Financed by the QREN/PO Algarve 21 Programme, in a consortium between the university and Algarvian carob industries (AGRUPAmento de Alfarroba e Amêndoa CRL), this project developed fermentation technology for the production of second-generation bio ethanol using the residue of carob pulp, a waste product of the region's carob industry, which is rich in sugar content.

Through this project, the research team aimed to use the sugar that can be extracted in water, to satisfy the national market with bio fuels, using second generation technology. Bio ethanol is added to petrol, which by the year 2020 will have to comprise 20 percent of this bio fuel, throughout the European Union.

Currently there is no other production unit in Portugal to satisfy the demand of bio ethanol required in petrol by 2020, meaning the country would have to rely solely on imports.

Various tests have been run at the Engineering and Environmental Biotechnology Laboratory/CIMA-UAlg in mechanically-shaken fermentation tanks and the pilot fermentation stations available. During these tests, bio ethanol was successfully made using various production systems, with the aim of semi-industrial production.

It was also found that carob is an excellent and low cost raw material for the production of bio ethanol with the technological and economic potential for a bio-refinery. The researchers were able to develop technology for competitive production values and bio ethanol levels throughout the production process.