# The Extraction of Oil from Chlorophyta algae in Different Water Environments

Vila-Olazabal, Raul

In response to the global environmental crisis, scientists are beginning to narrow investigation upon the extraction of algae oil as a means of producing biofuel, which is commonly combined with fossil fuels in the production of alternate energy sources that minimize greenhouse gas emissions and reduce human dependency upon fossil fuels. Similarly, this research project focuses on determining the type of algae that contains the most extractable oil in Puerto Rico. Three types of Chlorophyta algae were examined: freshwater river algae, brackish water algae, and saltwater ocean algae. The experimental hypothesis stated that the saltwater ocean algae would yield the most extractable oil, approximately 0.25 ml per algae kilogram, as opposed to the brackish water algae and freshwater river algae, which would yield 0.15 ml and 0.10 ml respectively. After removing 3 kg samples from their corresponding water environments, the algae were dried with the purpose of reducing water retention. Using a press, an aqueous solution, containing a mixture of both algae oil and water, was extracted, and in order to purify the resulting solution, the excess water was evaporated. Conclusively, the experiment proved the hypothesis in that the saltwater ocean algae contained the most oil (23.7 ml per algae kilogram).

**Awards Won:**