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Towards standardized methods for the analysis of algal lipids: Total lipid content

The use of microalgae for biodiesel production has attracted significant interest in recent years. Lipids are precursors for biodiesel and accurately evaluating the potential of algae to produce lipids is critical if a algal-based biodiesel market is to be created. However, there are currently no standardized methods for evaluating lipids in algae and laboratories currently use a wide variety of methods to extract and quantify lipids. It is well known that different methods provide different values for lipid content and quality, and consequently, the use of diverse methods has created a situation where direct comparison of data generated by different laboratories is often challenging, if not impossible. We examined four different direct transesterification methods to determine which was the most effective for algae. The methods studied were the Griffiths method, Johnson method, American Oil Chemists Society (AOCS) method, and the National Renewable Energy Laboratory (NREL) method. The results indicate that the most effective method for evaluating total "fuel potential" of algae was the Griffiths method. Consequently, we recommend that the Griffiths method be considered for further evaluation as a standard method for quantifying total algal lipids.