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Extraction and quantification of chlorophyll from microalgae Chlorella sp.

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Algal biomass emerged as a potential resource of bioenergy and valuable derivatives in recent years. The major characteristics such as high oil contents, carbon sequestration, high growth rate, availability and valuable by-products (pigments) are leading it to compete in the market with traditional sources. The aim of current study was to (i) extract chlorophylls (a and b) at temperature (30, 35 and 40 °C) and time (60, 90 and 120 min) from marine Chlorella sp. by ultrasonication assisted solvent extraction using methanol: hexane (2:1 v/v), (b) find suitable dilution factor for chlorophyll quantitation using UV-spectrophotometer considering 1:10, 1:15,1:20 ml/ml and (c) determine suitability of dissolving solvents (methanol, ethanol, and acetone) for chlorophyll quantitation using respective simultaneous equations. Maximum extraction in terms of total chlorophylls (a and b) was 18.43 µg/ml achieved at 30 °C and 120 min. The absorbance spectra peaks were found good with a dilution factor of 1:20 ml/ml, while acetone was observed more attractive towards chlorophyll solubility on resuspension of extract. These pigments have a high market in pharmaceutical, dietary products, and food industry and recovery of these compounds can play an important role to make bioprocess industry more economical.
Keyword: microalgae; marine Chlorella; ultrasonication; chlorophylls; spectrophotometry

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