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### Data Article

# Data set for extraction and transesterification of bio-oil from *Stoechospermum marginatum*, a brown marine algae



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#### ARTICLE INFO

##### Article history:

Received 28 July 2017

Accepted 24 August 2017

Available online 30 August 2017

##### Keywords:

Biodiesel

Marine algae

Transesterification

Molar ratio

#### ABSTRACT

The article presents the experimental data on the extraction and transesterification of bio-oil derived from *Stoechospermum marginatum*, a brown macro marine algae. The samples were collected from Mandapam region, Gulf of Mannar, Tamil Nadu, India. The bio-oil was extracted using Soxhlet technique with a lipid extraction efficiency of 24.4%. Single stage transesterification was adopted due to lower free fatty acid content. The yield of biodiesel was optimized by varying the process parameters. The obtained data showed the optimum process parameters as reaction time 90 min, reaction temperature 65 °C, catalyst concentration 0.50 g and 8:1 M ratio. Furthermore, the data pertaining to the physio-chemical properties of the derived algal biodiesel were also presented.

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## Specifications Table

<b>Subject area</b>	Alternate fuels
<b>More specific subject area</b>	Biodiesel, 3rd generation bio-fuel
<b>Type of data</b>	Figures and Tables
<b>How data was acquired</b>	Experimental analysis in laboratory
<b>Data format</b>	Raw and Tabulated
<b>Experimental factor</b>	Yield of biodiesel and its Physiochemical properties
<b>Experimental features</b>	Transformation of marine seaweed into bio-fuel and analysis of its physio-chemical properties
<b>Data sources</b>	Fuels and lubricants laboratory, Hindustan University
<b>Data accessibility</b>	Data is with this article

## Value of the data

- This data provides a methodology for converting marine seaweed into biodiesel, value added product.
- The data's tabulated describes the best possible way to obtain maximum yield of biodiesel through optimizing reaction time, reaction temperature, catalyst concentration and molar ratio.
- The data presented here also details the physio-chemical properties of the yielded biodiesel and its suitability as engine fuel.

## 1. Data

Fig. 1 shows the pre-treatment procedure for marine algae for extracting bio-oil. Fig. 2 illustrates the extraction and transesterification of bio-oil from *Stoechospermum marginatum*. Table 1 describe the yield of biodiesel by optimizing the various process parameters like reaction time, reaction temperature, catalyst concentration and molar ratio. Table 2 illustrates the physio-chemical properties like density, kinematic viscosity, calorific value, cetane number, flash and fire point of transesterified bio-oil from *S. marginatum*.

## 2. Experimental design, materials and methods

### 2.1. Materials

*Stoechospermum marginatum*, a brown seaweed was collected from the inter tidal region of Mandapam, Ramanathapuram district, Tamil Nadu, India. 99.9% pure industrial grade *n*-hexane was purchased from Mivion Chemicals, Mumbai, India. Industrial grade NaOH and Methanol was supplied by Accord Chemical Corporation, Mumbai, India. The other materials used for oil extraction and transesterification were Erlenmeyer flask, flat and round bottomed flask and side arm flask and soxhlet apparatus.

### 2.2. Methods

The collected seaweed was cleansed thoroughly with sea water to remove the adhered sand followed by washing with double distilled water. The brown seaweed was brought to the laboratory and dried for 12 h at ambient temperature under sunlight. For further removal of moisture, the seaweed

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