Data in Brief 17 (2018) 1245–1252

Contents lists available at ScienceDirect

Data in Brief

journal homepage: www.elsevier.com/locate/dib

Data Article

Nano-cellulose biopolymer based nano-biofilm biomaterial using plant biomass: An innovative plant biomaterial dataset

A.B.M. Sharif hossain [a,b], Musamma M. Uddin [b], Mohammad Fawzi [a], Vajid N. Veettil [a]

[a] Program of Biotechnology, Department of Biology, Faculty of Science, University of Hail, Hail 2440, KSA
[b] Biotechnology Program, Institute of Biological Science, Faculty of Science, University of Malaya, Kuala Lumpur, Malaysia

ARTICLE INFO

Article history:
Received 8 February 2017
Received in revised form
20 February 2018
Accepted 20 February 2018
Available online 26 February 2018

Keywords:
Nanocellulose
Nanobiofilm
Nanobioplastic
Biodegradable
Corn leaf

ABSTRACT

The nano-cellulose derived nano-biofilm keeps a magnificent role in medical, biomedical, bioengineering and pharmaceutical industries. Plant biomaterial is naturally organic and biodegradable. This study has been highlighted as one of the strategy introducing biomass based nano-bioplastic (nanobiofilm) to solve dependency on petroleum and environment pollution because of non-degradable plastic. The data study was carried out to investigate the nano-biopolymer (nanocellulose) based nano-biofilm data from corn leaf biomass coming after bioprocess technology without chemicals. Corn leaf biomass was used to produce biodegradable nano-bioplastic for medical and biomedical and other industrial uses. Data on water absorption, odor, pH, cellulose content, shape and firmness, color coating and tensile strength test have been exhibited under standardization of ASTM (American standard for testing and materials). Moreover, the chemical elements of nanobiofilm like K^+, CO_3^{--}, Cl^-, Na^+ showed standard data using the EN (166).

E-mail addresses: hossainsharif41@gmail.com, abm.hossain@uoh.edu.sa (A.B.M. Sharif hossain).

https://doi.org/10.1016/j.dib.2018.02.053

Specification table

Subject area	Biological chemistry, Biochemistry
More specific subject area	Nanocellulose based nanobiofilm bioplastic from plant biomass
Type of data	Physicochemical, mechanical (Table and Figure)
How data were acquired	SEM, pH meter, spectrophotometer, Tensile test, absorption test, burning test, bore, shape and size test, chemical test by ASTM and EN standard.
Data format	Row data were collected and analyzed
Experimental factors	Single factor
Experimental features	Three replicates were used in the experiment as Randomized Complete Design (CRD). The sample was selected randomly from the different lots.
Data source location	Kuala Lumpur, Malaysia and Hail, KSA
Data accessibility	This is an innovative data, not yet published elsewhere.

Value of the data

1. Data have been highlighted bearing innovative information on nano-biofilm or other definite biomaterials for medical, biomedical and bioengineering industries from corn leaf biomass.
2. Data exhibited a outstanding and an innovative research. Data would be a valuable to the related researcher and academician, on nano-biofilm production using plant biomass as plant biomaterial.
3. Data investigated the appropriate quality of nano-cellulose based nano-biofilm plant biomaterial production using agro-biomass according to the ASTM (American standard for testing and materials) and EN (European Norms) standardization.
4. Data can be explored for the future studies in the related research community all over the world.

1. Data

Data show the nano-biofilm production procedure derived from nanocellulose based corn leaf biomass (Fig. 1). Data observe the nanosized biofilm as nanocellulose detected by Transmission Electron Microscopy (TEM) (Fig. 2) (Table 1). In Table 2, data exhibit the negligible water percent absorbed by nanobiomaterial based nano-biofilm. Moreover, data of the odor, color of flame and speed of burning represented by burning test were no odor, yellow–orange flame and slow speed of burning respectively which were under the standardization of burning test (Table 3). In addition, data describe on the color dying time for drying at different hours (Table 4). Table 5 shows the tensile strength and tensile modulus for the nano-bioplastic derived nanobiofilm. Data mentioned in Table 6, show the positive shape and size test for the nano-biofilm. In Table 7, data observe the value on pH and cellulose. In addition, chemical elements test data from nanobiofilm samples like K^+, CO_3^{--}, Cl^-, Na^+ were measured and represented data using the EN (166)) standardization (Table 8).

2. Experimental design, materials and methods

2.1. Sample collection and preparation

Five kg corn stalk new leaves were collected from the farmers field, Kuala Lumpur Malaysia and Hail regional area, KSA. Leaves were randomly chosen from both area and removed from corn stalk and washed to clean. Washed leaves were sliced by scissors and boiled (Fig. 1). Then it was blended by