



ELSEVIER

Contents lists available at ScienceDirect

Data in Brief

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

Data article

Q2 Transcription profile data of phorbol esters biosynthetic genes during developmental stages in *Jatropha curcas*

Nurul Jadid^{a,*}, Rizal Kharisma Mardika^a,
Kristanti Indah Purwani^a, Erlyta Vivi Permatasari^a,
Indah Prasetyowati^a, Muhammad Isa Irawan^b

^a Department of Biology, Institut Teknologi Sepuluh Nopember, Surabaya 60111, Indonesia

Q3 ^b Department of Mathematics, Institut Teknologi Sepuluh Nopember, Surabaya 60111, Indonesia

ARTICLE INFO

Article history:

Received 27 November 2017

Received in revised form

14 March 2018

Accepted 15 March 2018

Keywords:

Casbene synthase

Diterpenoid

Geranylgeranyl diphosphate synthase

Jatropha curcas

Phorbol esters

ABSTRACT

Jatropha curcas is currently known as an alternative source for biodiesel production. Beside its high free fatty acid content, *J. curcas* also contains typical diterpenoid-toxic compounds of Euphorbiaceae plant namely phorbol esters. This article present the transcription profile data of genes involved in the biosynthesis of phorbol esters at different developmental stages of leaves, fruit, and seed in *Jatropha curcas*. Transcriptional profiles were analyzed using reverse transcription-polymerase chain reaction (RT-PCR). We used two genes including GGPPS (Geranylgeranyl diphosphate synthase), which is responsible for the formation of common diterpenoid precursor (GGPP) and CS (Casbene Synthase), which functions in the synthesis of casbene. Meanwhile, *J. curcas* *Actin* (*ACT*) was used as internal standard. We demonstrated dynamic of GGPPS and CS expression among different stage of development of leaves, fruit and seed in *Jatropha*.

© 2018 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

* Corresponding author.

E-mail address: nuruljadid@bio.its.ac.id (N. Jadid).

<https://doi.org/10.1016/j.dib.2018.03.061>

2352-3409/© 2018 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Specifications Table

Subject area	<i>Biology</i>
More specific subject area	<i>Molecular plant biology, plant physiology</i>
Type of data	<i>Figures and text</i>
How data was acquired	<i>cDNA synthesis, RT-PCR and image analysis</i>
Data format	<i>Analyzed</i>
Experimental factors	<i>Genes involved in the biosynthesis of phorbol esters were GGPPS and CS. The expression of each gene was analyzed using reverse-transcriptase PCR (RT-PCR).</i>
Experimental features	<i>Samples consisted of three plant organs including leaves, endosperm and fruit (pericarp) in two different developmental stages (young and mature stages). All samples were subjected to total RNA extraction followed by cDNA synthesis. The cDNA obtained was then amplified using specific GGPPS and CS primers. ACT (actin) was used as internal standard.</i>
Data source location	<i>Department of Biology, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia</i>
Data accessibility	<i>The data are available with this article</i>

Value of the data

- The transcription profile of *JcGGPPS* and *JcCS* data of the *J. curcas* demonstrate the dynamic expression of the genes in different plant organs at distinct developmental stages.
- The data are useful to be combined with biochemical analysis to determine in which part of plant organ the phorbol esters are accumulated.
- Determination of the expression of both genes might contribute for further study to understand the relationship between phorbol esters biosynthesis and plant development.

1. Data

Jatropha curcas - a species of Euphorbiaceae family - is generally found in the tropical asian countries [1]. *Jatropha* is currently cultivated and is importantly used for alternative biodiesel development throughout those regions. Like other Euphorbiaceae plants, *J. curcas* is characterized by the presence of toxic compounds, including phorbol esters [2]. Here, we demonstrate the transcription profile of *GGPPS* and *CS* as key genes involved in the biosynthesis of phorbol esters [3]. The profile was analyzed semi quantitatively using Reverse Transcription-Polymerase Chain Reaction (RT-PCR) at different stages of leaves, seeds (endosperm) and fruit (exocarp) development (young and matured organs). Young fruit and seed were collected at 29 days after pollination (dap). Meanwhile, the matured exocarp and seed were at 35 and 41 dap, respectively. Fig. 1 shows different DNA fragments with varying sizes representing *JcGGPPS*, *JcCS* and *JcACT* (577 bp, 956 bp and 554 bp, respectively). Figs. 2 and 3 demonstrate the transcription profile of *JcGGPPS* dan *JcCS* genes in different organs and developmental stages of *J. curcas*.

2. Experimental design, materials, and methods**2.1. Collection of plant materials**

Fruits (exocarp), seeds (endosperm) and leaves of *J. curcas* were obtained from Purwodadi-Botanical Garden, The Indonesian Institute of Science (LIPI), Indonesia. No specific regulations were

Download English Version:

<https://daneshyari.com/en/article/6596648>

Download Persian Version:

<https://daneshyari.com/article/6596648>

[Daneshyari.com](https://daneshyari.com)