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RESEARCH

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## Assessing diversity and phylogeny of Indonesian breadfruit (*Artocarpus* spp.) using internal transcribed spacer (ITS) region and leaf morphology



Dindin Hidayatul Mursyidin<sup>\*</sup> and Akbar Setiawan

### Abstract

**Background** Breadfruit (*Artocarpus* spp.) is the main genus of Moraceae with multipurpose benefits, both ecologically and economically important, e.g., food ingredients, building materials, traditional medicine, and natural insecticides. However, most endemic *Artocarpus* have been threatened due to natural disasters and habitat degradation. The objective of our study was to determine the genetic diversity and relationships of endemic *Artocarpus* from South Borneo, Indonesia, using an internal transcribed spacer (ITS) region and leaf morphology.

**Results** Morphologically, endemic *Artocarpus* endemic to South Borneo, Indonesia, has a different leaf shape, i.e., narrow-obovate to broad-elliptic, from simple to deeply dissected. Following the ITS region, this germplasm has a moderate level of nucleotide diversity (0.069). The phylogenetic analysis revealed *Artocarpus* into four (4) main clades, where the nearest is shown by the 'Puyian' (*Artocarpus rigidus*) and 'Binturung' (*Artocarpus odoratissimus*) at a coefficient divergence of 0.027, whereas the furthest by 'Kulur' (*A. camansi*) and 'Tiwadak' (*A. integer*) at a coefficient of 0.132.

**Conclusion** In brief, although an endemic *Artocarpus* of South Borneo, Indonesia, has a moderate level of nucleotide diversity, this germplasm also shows a unique phylogenetic relationship. Thus, this information is urgent in supporting the future *Artocarpus* breeding and preservation programs, mainly to save this germplasm from being threatened.

**Keywords** Genetic diversity, Breadfruit (*Artocarpus* spp.), Phylogenetic relationship, Breeding and preservation, Nuclear DNA

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## Journal of Genetic Engineering and Biotechnology

### Assessing diversity and phylogeny of Indonesian breadfruit (*Artocarpus spp.*) using internal transcribed spacer (ITS) region and leaf morphology

--Manuscript Draft--

<b>Manuscript Number:</b>	JGEB-D-22-00557R1
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<b>Abstract:</b>	<p><b>Background</b></p> <p>Breadfruit (<i>Artocarpus spp.</i>) is the main genus of Moraceae with multipurpose benefits, both ecologically and economically important, e.g., food ingredients, building materials, traditional medicine, and natural insecticides. However, most endemic <i>Artocarpus</i> have been threatened due to natural disasters and habitat degradation. The objective of our study was to determine the genetic diversity and relationships of endemic <i>Artocarpus</i> from South Borneo, Indonesia, using an internal transcribed spacer (ITS) region and leaf morphology.</p> <p><b>Results</b></p> <p>Morphologically, endemic <i>Artocarpus</i> endemic to South Borneo, Indonesia, has a different leaf shape, i.e., narrow-obovate to broad-elliptic, from simple to deeply</p>

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Assessing diversity and phylogeny of Indonesian breadfruit (*Artocarpus* spp.) using internal transcribed spacer (ITS) region and leaf morphology  
Dindin Hidayatul Mursyidin; Akbar Setawan  
Journal of Genetic Engineering and Biotechnology

Dear Dr Mursyidin,

I am pleased to inform you that your manuscript "Assessing diversity and phylogeny of Indonesian breadfruit (*Artocarpus* spp.) using internal transcribed spacer (ITS) region and leaf morphology" (JGEB-D-22-00557R1) has been accepted for publication in Journal of Genetic Engineering and Biotechnology.

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We look forward to publishing your manuscript and I hope you will consider Journal of Genetic Engineering and Biotechnology again in the future.

Best wishes,

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