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Species identification and molecular phylogenetics of processed sea cucumbers from Malaysian market based on 12S mitochondrial rRNA gene (Article)

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## Abstract

Extensive processing of sea cucumber causes body deformation of the marine organism, hence causing difficulties in species identification of processed sea cucumbers. Due to the copresence of cases of unlabelled or mislabelled sea cucumber products in Malaysian markets and worldwide, a study was conducted to determine the species identities of sea cucumbers from selected Malaysian markets using non-protein-coding 12S mitochondrial rRNA gene. Phylogenetic analyses based on the distance-based Neighbour Joining method, and the character-based methods i.e. the Maximum Parsimony method, Maximum Likelihood method, and the Bayesian Analysis method of 81 ingroup sequences representing processed sea cucumber specimens, 13 fresh and processed reference samples for species identification, and five fresh additional specimens from Teluk Nipah Beach, Pangkor Archipelago and Manukan Island, Sabah suggested the presence of three main clusters i.e. a gamat family cluster consisting of family Stichopodidae (Stichopus horrens, Stichopus omeiensis and Thelenota anax) and two clusters of tenun laut family comprising family Holothuridae (Metenimothuria leucopileta, Holothuria (Metriatyla) scabra, Holothuria (Metriatyla) lessonae, Holothuria (Halodeima) atra, and Holothuria (Halodeima) edulis) and family Caudinidae (Acudina molgadoidea). The outcomes of this study also revealed the availability of 40 new 12S mitochondrial rRNA gene sequences deposited in the GenBank that can be utilised by the enforcement agencies to monitor and overcome the issues of species substitution and product mislabelling of processed sea cucumber products in Malaysian markets. © Universiti Putra Malaysia Press

## Author keywords

[12S rRNA gene] [Gamat] [Malaysian markets] [Phylogenetic analysis] [Processed sea cucumber] [Tenun laut]

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The sea cucumber specimens were morphologically identified by referring to information provided by local residents, experts (Assoc. Prof. Alexander M. Kerr (Marine Laboratory, University of Guam, USA) and the participants of National Science Foundation (NSF) Partnerships for used as reference samples of processed sea cucumbers. For unlabelled species information was gained from the salespersons.

## Funding text #2

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