Gamat or *Timun Laut*?

Ossicle shapes of *Holothuria* (*Merthensiothuria*) *leucospilota* and *Stichopus horrens* for Identification

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Overview

Gamat is a local name for all species of family Stichopodidae.

- Genera of *Stichopus* and *Thelenota* are the two members of family Stichopodidae which can be found in Malaysia's seawaters e.g. *Stichopus horrens* Selenka, 1867 and *Thelenota anax* H.L. Clark, 1921.
- *Gamat* has been exploited for its body fluid extracts i.e. ***air gamat*** and lipid extracts i.e. ***minyak gamat***.
- In line with the development of science and technology, modern-formularised *gamat*-based products sold by Malaysia's companies e.g. Gamat eMas Sdn. Bhd., Nur Af Enterprise, Nutrifes Food & Beverages Industries Sdn. Bhd., and Luxor Network Sdn. Bhd. are also available in the markets.
- ***S. horrens* or *Gamat Emas*** has been used as the main ingredient.

Timun laut is a general local name for all species of sea cucumbers in Malaysia including *gamat* species, and can be used to refer to non-*gamat* species.

- ***Holothuria (Mertensiothuria) leucospilota* (Brandt, 1835)** is suggested as the most abundant *timun laut* in Malaysia.
- This species is one of the commercial species of sea cucumbers exploited as food in Malaysia, Thailand, Indonesia, the Philippines, and Vietnam (Choo 2008).
- In Malaysia, this soft-bodied species or *timun laut* is locally known as *bat puntil*, *bat hitam* or *balat hitam*.

Shapes of the ***ossicles*** (small pieces of calcified materials forming part of the skeleton of an invertebrate animal) can differentiate between *gamat* species and *timun laut* (i.e. non-*gamat*) species for species identification. This morphological approach is as important as the genetic approach e.g. using mitochondrial DNA (mtDNA) gene sequencing.

Key Findings

Table 1. Ossicle shapes in various body parts of *Holothuria (Mertensiothuria) leucospilota* (*timun laut*) and *Stichopus horrens* (*Gamat Emas*) from Pangkor Island, Perak Darul Ridzuan, Malaysia. The microscopic observations were done using Nikon ECLIPSE 80i digital compound microscope.

No.	Body parts		Ossicle Shapes	
			Holothuria leucospilota	*Stichopus horrens*
1	Dorsal cuticles	1	Table	Table
		2	Button	x
		3	Perforated plate	x
		4	x	Rosette
2	Ventral cuticles	1	Table	Table
		2	Anchor-shaped button	x
		3	Button	x
		4	X	Rosette
		5	X	Terminal plate
		6	X	Major I-shaped rod (i.e. boomerang-shaped rod)
3	Tentacles	1	C-shaped rod	C-shaped rod
		2	I-shaped rod	I-shaped rod
		3	F-shaped rod	x
		4	L-shaped rod	x
		5	x	X-shaped rod
		6	x	Table
		7	x	Rosette
4	Respiratory tree	1	I-shaped rod	I-shaped rod
		2	C-shaped rod	C-shaped rod
		3	x	Y-shaped rod
5	Intestines	1	x	X-shaped rod
		2	x	Y-shaped rod

Timun laut

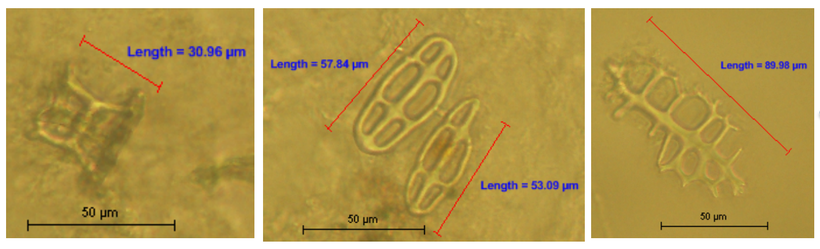
FIGURE 1. *Holothuria* (*Mertensiothuria*) *leucospilota* (Brandt, 1835). Photo source: Kamarul Rahim Kamarudin.

Versus

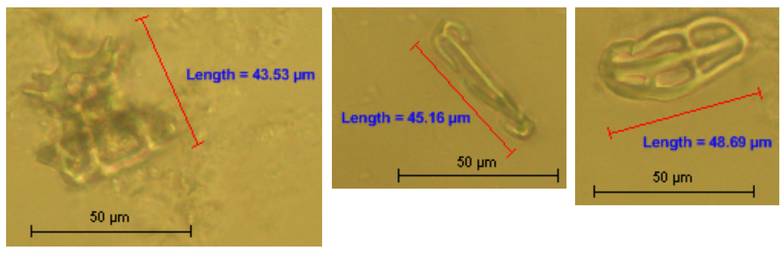
Gamat

FIGURE 2. *Stichopus horrens* Selenka, 1867. Left photo = dorsal view, right photo = ventral view. Photo source: Ridzwan Hashim.

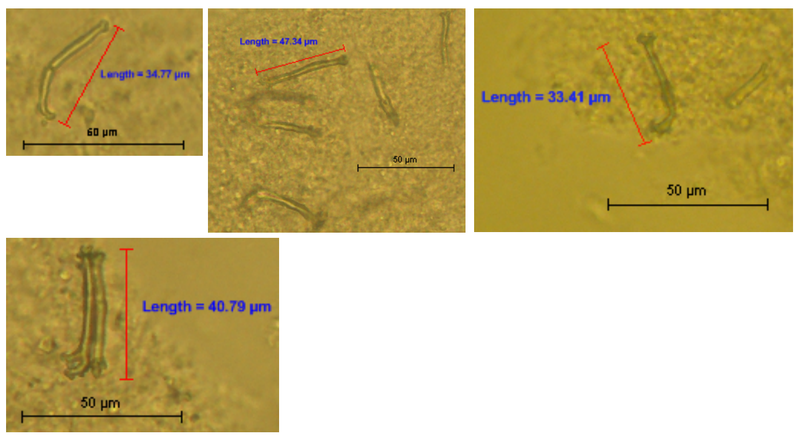
1. Dorsal cuticles



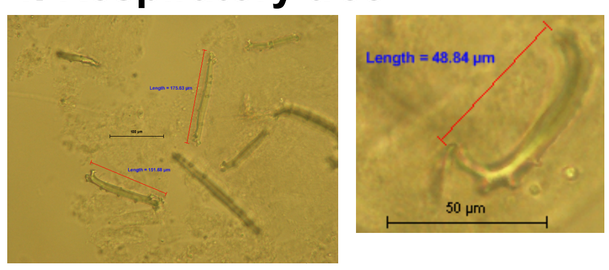
2. Ventral cuticles



3. Tentacles



4. Respiratory tree



5. Intestines

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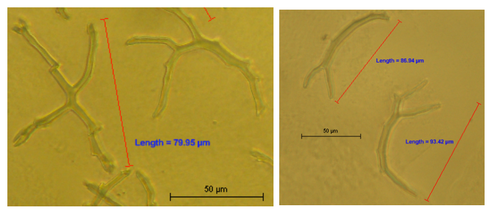

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