

POLYMORPHISM IN *HOLOTHURIA (PLATYPERONA) SANCTORI* FROM THE ALGERIAN COASTAL AREA

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Abstract

The morphological, endoskeleton and genetic criteria were used to compare between individuals of two morphotypes of *H. (Platyperona) sanctori*. In this study, we concluded that both morphotypes (A & B) constitute the same species.

Keywords: Echinodermata, Genetics, Systematics, Algerian Basin

Introduction

The systematic study of holothurians “sea cucumbers” is quite complex. The morphology, size and distribution of ossicles in the body wall tissues are key characters in the determination of these species [1]. *Holothuria (P.) sanctori* is a southern species, which is distributed through the Mediterranean [2, 3] and is widely dominant in many parts of the Algerian Infralittoral [4].

Material and methods

The animals were collected in 3 stations [Sidi Fredj (Algiers), Figuier plage (Boumerdes) and Stidia (Mostaganem)] (Fig. 1B) and then anesthetized with MgCl₂.6H₂O to describe their morphology [1]. The ossicles isolated from a tissue taken in the bleach (12 °) were measured using light microscope (X 20). The fraction of the 16S mtDNA gene and the primers AR (5'-CGCCTGTTTATCAAAAACAT-3') and BR (5'-GCCGGTCTGAATCAGATCACGT-3') [5] were used. PCR amplification was performed on 49 µL with ddH₂O (30.8 µL), buffer 10 X (5 µL), dNTPs (5 µL), AR (2µL), BR (2 µL), Taq polymerase (0.2 µL), MgCl₂ (4 µL) and 1 µL of DNA template. The phylogenetic tree is constructed from the obtained sequences and mtDNA sequence of *Holothuria (Platyperona) forskali* is used as an out group.

Results

1. Morphology and endoskeleton analysis

The morphotype A is dark brown color and the morphotype B has a brownish color and is easily recognized underwater by its white spots clearly visible in dark middle and lightly visible in light middle (Fig. 1A). Ossicle measurements resulting from the comparative study are indicated in table 1.

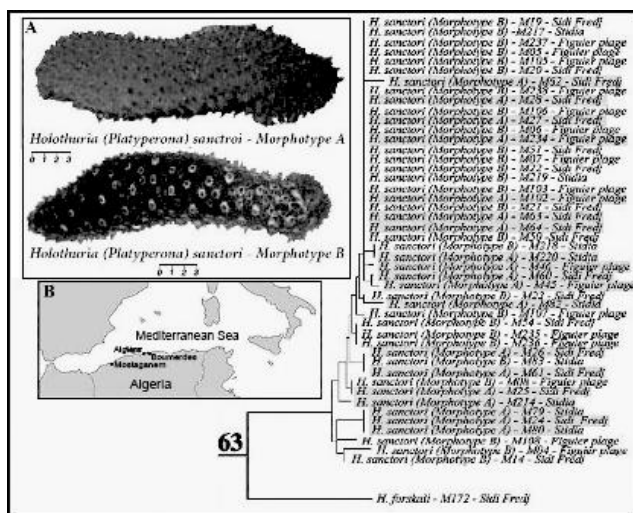


Fig. 1. The studied morphotypes (A); studied sites (B). Left: The 16S neighbour-joining tree using Kimura-2- parameter distance model. The (%) bootstrap1000 replicate is represented.

Tab. 1. The ossicles measurement. N = Number of ossicles.

		<i>H. (P.) sanctori</i> Morphotype A		<i>H. (P.) sanctori</i> Morphotype B	
		Bivium	Trivium	Bivium	Trivium
Tables	Height of the arrow (µm)	28.91	24.18	26.80	21.41
	Disc diameter (µm)	31.73	27.54	31.48	25.00
	Ratio Diameter/Height	0.110	0.114	0.117	0.117
Buttons	Length (µm)	58.07	79.38	56.47	70.36
	Width (µm)	25.85	26.93	27.24	28.91
	Number of holes	10	13	09	12
	Holes width (µm)	05.66	05.51	05.73	05.73
Perforated plates		Enlarged	Elongated	Enlarged	Elongated
	Length (µm)	81.83	99.23	72.28	-
	Width (µm)	66.64	34.55	60.52	-
	Ratio Length/ Width	01.23	02.87	01.19	-
	Diameter of perforation (µm)	08.45	08.70	11.64	-

2. Molecular analyses

The phylogenetic tree clearly shows that both *H. (P.) sanctori* morphotypes are closely grouped to a single clade with few alternative sites (Fig. 1 left). They are in fact monophyletic.

Discussion

The two morphotypes of *H. (P.) sanctori* are genetically identical and thus represent the same species rather than different species. These two polymorphic and ecotypic forms are characterized by the reduction of their ossicles in size and in number.

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