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Mini Review Article Open Access

Mini Review: Presence of Cytoplasmic Organelle Chromatoid Body in Class Insecta

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Abstract

In the present work we made a review on the cytoplasmic organelle chromatoid body (CB) in the Insecta class. We note that the CB has been described in 14 orders of insects. However, we emphasize the importance of new orders should be analyzed, since the detailed knowledge of the reproductive biology of insects may help in understanding taxonomic, evolutionary and mainly contribute to the development of tools that minimize the populations of vectors and insect pests, contributing directly to human welfare.

Keywords: Nuage; oogenesis; spermiogenesis

Mini Review

The Insecta class comprises approximately 1.000.000 species distributed in 32 orders [1]. These organisms are generally characterized by three body parts (head, thorax and abdomen) and six locomotory appendages attached to the thorax.

All general aspects – biology, ecology, genetics, cytogenetics, morphology, evolution, reproduction, among others – are widely studied in the Insecta class, since the knowledge of these organisms are of great importance, especially in public health, where they act as vectors, and the economy, where they act as agricultural pests [2,3].

In 1907, was first described in the Insecta class the chromatoid body (CB) [4]. The CB or "nuage" is a cytoplasmic organelle present in germ cells, which possibly assists in post-transcriptional control of gene products in germ cells, since it consists principally by RNA and proteins [5-7].

In females, it is believed that CB is the precursor of the yolk during oogenesis [8]. In males, it is believed that this organelle has a fundamental role in spermiogenesis, such as cellular communication between spermatids [9-11], and aid in the formation of the sperm acrosome [6,9,10,12].

According to the importance of CB gametogenesis in insects, we grouped all orders and species with CB described in the literature. Among the 32 orders of insects described, we found that the CB was described in 14 (Table 1). However, we note that the number of

Species		References
Order	**Scientific Name**	
Coleoptera		
	Chelymorpha cassidea	[13]
	Dytiscus sp.	[04]
Dermaptera		
	Doru lineare	[14]
	Forficula auricularia	[14]
Diptera		
	Dermatobia hominis	[15]
	Drosophila melanogaster	[16]
Hemiptera		
	Aspidiotus hederae	[17]
	Belostoma (Zaitha) fluminea	[18]
	Caenus delius	[19]
	Chariesterus armatus	[20]
	Diceroprocta biconica	[21]
	Gerris marginatus	[22]
	Gerris remigis	[22]
	Pentatoma (Chlorochroa) juniperina	[19]
	Pentatoma (Rhytodolomia) senilis	[19]
	Podisus crocatus	[19]
	Triatoma infestans	[23]
	Triatoma sordida	[23]
Hymenoptera		
	Melipona quadrifasciata	[24]
	Scaptotrigona postica	[25]
	Tenthredo olivacea	[26]
Lepidoptera		
	Diatraea saccharalis	[27]
	Ephestia sp.	[28]

Table 1: Revision of Orders of Insect Class whit Chromatoid Body described.

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Species		References
Order	Scientific Name	
Mecoptera		
	Panorpa communis	[29]
Megaloptera		
	Sialis flavilatera	[29]
Orthoptera		
	Acrida lata	[30]
	Lutosa brasiliensis	[31]
	Nemobius sp.	[32]
	Rhomaleum mtcropterum	[33]
	Scyllina cyanipes	[34]
Plecoptera		
	Perla marginata	[35]
Psocoptera		
	Cerastipsocus venosus	[29]
Siphonaptera		
	Hystrichopsylla talpae	[29]
Strepsiptera		
	Elenchus japonicus	[36]
	Elenchus tenuicornis	[36]
Thysanura		
	Lepisma domestica	[37]
	Thermobia domestica	[38]

Table 2: Continuation.

species analyzed in some orders is very small and the works are quite old (Table 2).

Therefore, this mini review aimed to gather all the orders of insects with the cytoplasmic organelle CB described. Through the analysis of the tables, it is possible to note that new orders should be analyzed, since the detailed knowledge of the reproductive biology of insects may help in understanding taxonomic, evolutionary and mainly contribute to the development of tools that minimize the populations of vectors and insect pests, contributing directly to human welfare.

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