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Short Communication

Membranous Whorl Associated with the Mitochondrion of *Leishmania mexicana*

Anabella SEBASTIAN[1], Hector J. FINOL[2] and Felix TEJERO[1]

[1]Section of Parasitology, Institute of Tropical Zoology, Faculty of Sciences, Central University of Venezuela, Caracas and [2]Center for Electron Microscopy, Faculty of Sciences, Central University of Venezuela, Caracas, Venezuela

Summary. Recent studies carried out in our laboratory had shown a singular structure in the mitochondrion of *Leishmania mexicana* during its *in vitro* development. This particular structure looks like a membranous whorl.

Key words: *Leishmania mexicana*, membranous whorl, mitochondrion, parasite.

We have observed that during the development of the Trypanosomatidae (specially *L. mexicana*) a portion of the mitochondrion proliferates, and assumes the form of elaborated convoluted structures with rough endoplasmic reticulum elements occupying, regularly arranged, grooves into the mitochondrial mass. Similar submicroscopic patterns had been described earlier. Indeed, Vickerman and Preston (1976), suggested that this labyrinth could be a mitochondrial system in a compact condition, ready for expansion after multiplication. In addition, Pannese (1966) and Ghadially (1997), had described membranous whorls in vertebrate mitochondria of ganglion neuroblasts and renal cells, respectively. They suggested that these membranous processes might be related to new mitochondrion formation.

In our *L. mexicana* samples (Deane *et al*. 1966), this arrangement was found in association with the mitochondrial envelope (Fig. 1). Apparently, patterns in such a manner could represent a mitochondrial transformation related to autolytic processes. The assembly itself seems to involve changes linked to the development of dense osmiophilic layers, the membranous whorl formation, as well as the transformation of such structures into lysosomal bodies, which eventually can be converted in myelin-like figures. These *L. mexicana* whorls could be acting like a storage area of mitochondrial envelope derived from condensed forms. We have seen that during the *in vitro* development of *L. mexicana* in LIT medium (Docampo *et al.* 1974), organellar ultrastructure takes different complexity arrangements. Probably, it is

Address for correspondence: Felix Tejero, Apartado 60006, Chacao, Caracas 1060, Venezuela; Fax: +58(212)2645213; E-mail: ftejero@reacciun.ve

Fig. 1. This electron micrograph shows a mitocondrial membranous whorl in a *Leishmania mexicana* promastigote. Scale bar - 4, 2 µm

consequence of the medium chemical composition, stages of development occurring in the culture, metabolic changes, and/or continuous series of organellar degeneration, among others.

Whorl formation in trypanosomatids has only been reported in *Crithidia fasciculata* (Hill *et al.* 1968) and *Trypanosoma raiae* (Vickerman and Preston 1976). Therefore, it is necessary to continue this line of investigation in order to establish if these arrays are present in other members of the family and/or order.

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