STRUCTURAL ANALYSIS AND GENETIC EXPRESSION OF LIPIN AND KINASE OF LIPID DROPLETS OF *LEISHMANIA SPP*

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Leishmania parasites display organelles called lipid droplets (LD), which are known as factors of virulence. However, few enzymes responsible for LD biogenesis are known, and it is not yet determined whether there is a difference in genetic expression between the species of *Leishmania* and the structure of these proteins. This study involved an *in silico* analysis of lipin (LPN) and lipid droplet kinase (LDK) protein structures and gene expression, both those are related to the biogenesis of CLs in different species of *Leishmania*. For this, the gene sequences were compared *in silico*, such as alignment, phylogenetic analyses, construction of three-dimensional structures of the proteins encoded by these and structural alignment for identification of structural alterations of proteins. In addition, we performed the macromolecular docking of LDK protein. A comparative analysis of the expression of two genes identified was done by means of the RT-qPCR technique from mRNA samples previously extracted from axenic cultures of *L. amazonensis, L.braziliensis and L. infantum*. Thus, we confirmed that there is a statistically significant difference in the levels of genetic expression of *ldk* and *lpn* in *L. braziliensis* compared to *L. amazonensis* and *L. infantum*. Furthermore, we model the three-dimensional structures of LDK and LPN and the regions of LDK-LDK interaction, so as to be proposed for a model of LD biogenesis in *Leishmania*. The data suggest differences in the levels of genetic expression of these proteins possibly related to the LD formation by different *Leishmania* species, since the similar mutations were present in the *Leishmania* species with the same tissue tropism. These data bring new insights on the different species of the parasite that can be related to clinical forms of leishmaniasis and increase understanding of the biology of the parasite.

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