Analyzes of the expression of microRNAs in *Paracoccidioides brasiliensis* during the mycelium, transition and yeast phases.

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Fungi of the genus *Paracoccidioides* comprise etiologic agents of Paracoccidioidomycosis (PCM) the main systemic mycoses in Latin America. At temperatures from 22ºC to 26ºC *Paracoccidioides* spp. grow as mycelium and in the host or at 36ºC they are yeast cells. The morphological transition from mycelium or conidia to the yeast phase is essential for development of disease in the host. In fungi small regulatory RNAs have been described during different morphological phases suggesting a possible regulatory role of those microRNAs in steps essential for fungal growth on the environment and host. Thus, the present study aims perform *in silico* description of proteins involved in the post-transcriptional gene silencing pathway mediated by microRNAs in *Paracoccidioides* spp., *in silico* identification of miRNAs present in the genome of these fungi and the characterization of miRNAs present in the fungi phases and during dimorphic transition, by RNA-Seq. *In silico* analyzes depicted the presence of RNA polymerase dependent RNA, dicers and argonauts homologous proteins in *P. brasiliensis* (*Pb*18 and *Pb*03) and *P. lutzii*. Evaluation of the level of expression of transcripts that encode for dicers and argonauts, at the fungus phases and during dimorphic transition by qRT-PCR, revealed differential expression profiles of proteins involved in post-transcriptional gene silencing pathway. The *in silico* analysis allowed the identification of miRNAs in *P. brasiliensis Pb*18 similar to that described in other fungi. Analysis of libraries of small RNAs from the different morphological stages of this fungus revealed a differential expression profile of microRNAs between the different phases. From total of microRNAs, 44 were regulated between the mycelium, transition and yeast phases. The differential expression profile of these microRNAs between the phases suggested gene regulation mediated by these small RNAs at specific stages of the fungus.

Keywords: microRNAs, fungi, mycoses.

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