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Exosome-like vesicles secreted by *Echinococcus granulosus* larval stage contain proteins involved in parasite-host communication

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Statement of the Problem: Human echinococcosis is a zoonotic cestode disease caused by *Echinococcus* sp. larval stage. These helminth parasites lack digestive and excretory system but they have developed active endocytic-exocytic cellular processes to regulate metabolite uptake and excretion. The purpose of this study is to analyze the cestode exosome-like production and to characterize these vesicles focusing on the parasite-host interaction. Methodology & Theoretical Orientation: Viable protoscoleces and metacestodes were in vitro cultured in presence of loperamide or in control conditions and viability and calcium concentration were determined. Additionally, extracellular vesicles were purified from parasite-culture medium through several centrifugation and ultracentrifugation steps and were analyzed by confocal imaging, TEM, western blot and proteomic analysis. Findings: Loperamide reduced the viability of both larval stages in a dose-dependent manner, provoked a cytosolic calcium level increment and induced a higher density of vesicles respect to the control. In addition, TEM analysis enabled the vesicles morphological characterization and the identification of abundant exosomes (30-100 nm vesicles with cup-shaped morphology). Finally, a large amount of exosomal proteins have been identified by proteomic analysis, among them Alix and TSG101 which are components of the endosomal sorting complex required for transport and are considered exosomal protein markers; Syntenin-1 implicated in the regulation of exosome biogenesis; Tetraspanins, related to cell adhesion (in particular CD9, whose expression was corroborated by WB); proteins involved in vesicle related transport (such as rab proteins, syntaxin-binding protein) and proteins involved in host immune response, parasite antigens and uncharacterized proteins which are of special interest for their putative role in parasite-host interaction. Conclusion & Significance: *Echinococcus granulosus* secretes exosome-like vesicles which could be involved in the host immune response. Further studies are needed to fully investigate these vesicles which could be involved in parasite establishment and immune tolerance that guarantees cestode survival.

Biography

M. Celeste Nicolao has a PhD in Biological Science (National University of Mar del Plata, 2016) and she is currently working as a postdoc under the direction of Prof. Dr. Andrea Cumino. She has been serving as assistant teacher for subjects such as Introduction to Biology, Clinic Microbiology and Basic Immunology that are part of the Biology and Biochemistry courses of study. She participates in several research projects on Parasitology and has published original articles. Currently, her research is focused on the study of molecular and biochemical mechanisms involved in *Echinococcus* sp.-host interaction.

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