

Inorganic Polyphosphates Regulate F-ATPase Activity and is an Activator of the Mitochondrial Permeability Transition Pore in *Rhipicephalus (Boophilus) microplus* Embryos

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The present study focused on the tick *Rhipicephalus microplus*, which is an important cattle ectoparasite in South and Central Americas, Asia, Africa and Oceania. Polyphosphate (poly P) metabolism in eukaryotic cells shows specific peculiarities for different cellular compartments and the physiological roles of polyphosphates recently found in arthropod mitochondria remains obscure. Here, the possible involvement of poly P in ATPase regulation and mitochondrial permeability transition pore activation in *Rhipicephalus microplus* embryos was investigated. Mitochondria were isolated by differential centrifugation. F-ATPase activity and mPTP were assayed spectrophotometrically during embryogenesis of *R. microplus*. The F-ATPase activity increased during embryogenesis with higher levels near to larval eclosion. The influence of poly P₃ and poly P₁₅ were analyzed during the period of higher enzymatic activity. ATPase activity was stimulated by a factor of four by poly P₃, while polyP₁₅ barely changed this activity. On the other hand, only Poly P₁₅ was able to activated mitochondrial permeability transition pore. Altogether, our results indicate that inorganic polyphosphate can be correlated with energy metabolism in the mitochondria of *R. microplus* embryos.

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