

Effects of *Bothrops atrox* Venom on Swelling, Membrane Potential and Respiration in Rat Brain Mitochondria

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Introduction: The neurodegenerative diseases, including Alzheimer's and Parkinson's disease, are important causes of morbidity and mortality in Western countries. Common mechanisms of toxicity including mitochondrial dysfunction have been suggested; however, a definitive treatment for these neuropathies has not yet been found. The biodiversity of Brazilian fauna represents a promising source of new molecules with neuroprotective activity and potential to originate new drugs for the treatment of these diseases. This study aims to investigate the effects of a low-molecular weight peptide (pV), isolated from the venom of *Bothrops atrox*, on rat brain mitochondrial function. **Method:** Mitochondria were isolated from brain of male Wistar rats (200 to 220g) by differential centrifugation and Percoll density gradient centrifugation. **Results:** *B. atrox* pV (5, 10 and 20 µg/mL) did not induce the mitochondrial swelling and was able to inhibit the phosphate-induced swelling. The membrane electrochemical potential was not affected. Only at the highest concentration (20 µg/mL), *B. atrox* pV slightly reduced the oxygen consumption during state-3 respiration and slightly increased the oxygen consumption during state-4 respiration, but the alterations were not significant. **Conclusions:** Besides not causing brain mitochondrial dysfunction, the studied fraction also presented an interesting protective effect against the mitochondrial swelling, which might be useful in the treatment of neuropathies. Further studies are in progress in our laboratory to support these findings.

Keywords: Neurodegenerative diseases, mitochondria, neuroprotection, bioenergetics.

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