

Mitogenic Effect Of Scorpion Venom Purified Fractions: Relevance For Human Islet Transplantation And Diabetes

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Objectives: Graft-failure is the main challenge in human pancreatic islet transplantation. The search for compounds, which induce β cells proliferation, led us to study *Tityus serrulatus* scorpion venom. We previously demonstrated the mitogenic effect of the *T. bahiensis* venom crude extract in rat pancreatic beta cells (Luca, 2004), an effect to be expected from the occurrence of beta cells hyperplasia and nesidioblastosis in pancreas of victims of *Tityus* bites. Our main objective is to find the active(s) principle(s) responsible(s) for induction of β cells proliferation. **Methods and Results:** The *T. serrulatus* scorpion's venom crude extract was fractionated in a C-18 reverse phase column by HPLC. Twenty-four fractions were collected and tested by ³H-thymidine incorporation into DNA by rat insulinoma RINm5f. One fraction displayed a two-fold mitogenic activity relative to the control. In addition, this fraction enhanced insulin release from human islets, upon challenge with high glucose concentrations, leading to increased insulin mRNA and PCNA mRNA expression by the islets cells. **Conclusion:** We demonstrated that the active fraction of scorpion venom not only induces cell proliferation in murine β cells, but also has an effect on human β cells. However, further investigations are required to assess the actual potential of this venom fraction for human β cells proliferation and transplantation. **Financial Support:** FAPESP, CNPq, FINEP.

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