In vivo Effect of a Bifunctional Protein (CrataBL) in Diabetes Induced by Alloxan

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Introduction: Chronic hyperglycemia is a major initiator of diabetic microvascular complications, that are targeted for research for therapeutic options. Plant species of the genus Crataeva, Capparidaceae family, common in northeastern Brazil, have been used as folk medicine against diabetes. The aim of this study was to evaluate the effect of a lectin isolated from tree bark, named CrataBL (Crataeva tapia bark lectin), in an experimental model of diabetes. Material and Method: diabetes was induced by intraperitoneal injection of Alloxan (200 mg/kg) in mice (C57 Black 6 male mice age, 7 - 8 weeks). After three days, those animals with glucose levels 11.2 - 19.6 mmol/L were considered diabetic and treated with a intraperitional injection of CrataBL, or NaCl 0,15 M (control group). Results and Discussion: CrataBL decreased the glucose blood level by 12% in average, 6 hours after administration, whereas the decrease of 36% was observed after daily treatment for 28 days being, both treatments compared to the glucose level at zero time. In control group glycemia did not change. 28-day treatment led to increased insulin, glucagon, leptin and pancreatic polypeptide, decreased TNF-α and inalted IL-6, cholesterol and triglycerides as well inalted lung, heart, kidney and liver tissues. Conclusions: CrataBL did not show an insulin mimic effect, but after 28 days animals treated with the lectin demonstrated a clinical improvement, probably due to the stimulation of the production of insulin by pancreatic β-cells, and also to the stimulating angiogenesis of microcirculation, improving the glucose absorption. Further studies are required to clarify the mechanisms of these effects. CEP 1793/11 (UNIFESP).

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