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Evaluation of the Treatment with a New Cardiotonic Steroid Derived from Benzylidene Digoxin 8 (BD-8) on Biochemical Parameters and Oxidative Stress in the Plasma of Wistar Rats

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Cardiotonic steroids are natural compounds capable of binding to and inhibiting Na, K-ATPase. Due to this characteristic, various physiological activities have been described in different tissues, such as neuroprotection, anti-inflammatory regulation, antitumor effects, and treatment of cardiac diseases. Benzylidene digoxin 8 (BD-8), in an in vitro study, demonstrated a significant increase in the activity of the α2 isoform of Na, K-ATPase, an isoform that is highly expressed in nervous tissue. Consequently, a project to evaluate the effect of different doses (20, 100, 200, and 400 µg/Kg via i.p.) of this molecule has been developed to determine the optimal dose for subsequent studies on its neuroprotective effect. The objective of this project is to determine the biochemical and oxidative stress parameters in the plasma of male Wistar rats treated with a new cardiotonic steroid derived from benzylidene digoxin 8 (BD-8) at different concentrations. Biochemical parameters were determined using commercial diagnostic kits following the manufacturers' instructions. The following parameters were measured: total proteins (Control: 5.749 ± 1,25 g/dL; Treated: 5.322 ± 1,23g/dL (min), 6.038 ± 1,16 g/dL (max)), glucose (Control: 128.9±8,44 mg/dL; Treated: 99.9±24,25 mg/dL (min), 135.7±24,83 mg/dL (max)), total cholesterol (Control: 116.7±15,99 mg/dL; Treated: 108.5±13,45 mg/dL (min), 112.2±20,74 mg/dL (max)), triacylglycerol (Control: 140.2±16,74 mg/dL; Treated: 119.6±19,35 mg/dL (min), 135.7±16,47 mg/dL (max)), and lactate (Control: 23.98±7,79 mg/dL; Treated: 18.84±7,13 mg/dL (min), 25.39±5,81mg/dL (max)). Compared to their control groups, no significant differences were observed. Additionally, an evaluation of lipid peroxidation also revealed no significant differences. Therefore, the BD-8 molecule is likely safe for use at any of the doses evaluated, as no significant negative modulation was observed in the treated groups.

Keywords: cardiotonic steroids, BD-8, plasma, biochemical parameters, oxidative stress.

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