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Analysis of the Effects of Benzylidene Digoxin 15 (BD-15) on Oxidative Stress and Biochemical Parameters in the Hearts of Rats Induced by LPS-Inflammation.

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The heart is an extremely important organ, and any alteration or damage, such as inflammation, can have consequences for all body systems. A cardiotonic steroid can enhance contraction and heart rate, modulate Na,K-ATPase, and can be used in various cardioprotective treatments. This study aims to analyze oxidative stress and biochemical parameters under the influence of a cardiotonic steroid derivative, benzylidene digoxin 15 (BD-15), in response to inflammation induced by lipopolysaccharides (LPS). For this purpose, adult male Wistar rats were used, maintained under four conditions during two hours of treatment via intraperitoneal injection, with 9 animals in the CTR and LPS (250 µg/kg) groups, and 7 animals in the BD-15 (100 µg/kg) and LPS (250 µg/kg) + BD-15 (100 µg/kg) groups. After the treatment, the animals were sacrificed, and the heart was collected for analysis. Oxidative stress experiments were performed, including the determination of reduced Glutathione (GSH), Carbonyl Protein, Lipid Peroxidation, and Catalase, as well as biochemical parameters such as Glucose, Cholesterol, and Triglycerides (TAG). The results showed that in GSH levels, there was a 37% increase between CTR vs LPS and a 21% decrease between LPS vs LPS+BD-15; in Carbonyl Protein content, there was a 40% increase between CTR vs LPS, a 37% decrease between CTR vs BD-15, and a 37% decrease between LPS vs LPS+BD-15; in TBARS, there was a 66% increase between CTR vs LPS and a 30% decrease between LPS vs LPS+BD-15; and finally, in Catalase activity, there was an 80% increase between CTR vs BD-15 and a 50% decrease between LPS vs LPS+BD-15. Meanwhile, the biochemical parameter tests did not show significant differences between the groups. Therefore, BD-15 demonstrates significant cardioprotective effects when LPS-induced inflammation is induced, highlighting its potential as a treatment for this tissue.

Keywords: heart, lipopolysaccharides (LPS), oxidative stress, biochemical parameters, cardiac steroids, BD-15.

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