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Cardioprotective effect of aqueous *Commiphora myrrha* extract against alcoholic cardiomyopathy in rats

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This study aimed to evaluate the cardioprotective efficacy of *Commiphora myrrha* resin in alcoholic cardiomyopathy (ACM) through integrated biochemical, histopathological, and NF-κB-related immunohistochemically assessments. Although ACM is a well-recognized consequence of chronic alcohol consumption, characterized by progressive cardio myocyte degeneration and necrosis, current effective and safe therapeutic strategies remain limited. Moreover, despite accumulating evidence implicating inflammatory signaling pathways—particularly NF-κB—in ACM pathogenesis, the potential modulatory role of *C. myrrha* resin in this context has not yet been systematically investigated, thereby representing a critical gap in the existing studies. For inducing the ACM rat model, rats were given ethanol for 30 days. Other rats were given distilled water as a negative control, *C. myrrha* as a positive control, and ethanol plus *C. myrrha*. The MDA, 4-HNE, MDA, NO, TNF-α, and HSP70 were measured. The histopathological alterations as well as the NF-κβ expression in cardiac tissue were investigated. The data were analyzed using ANOVA followed by Tukey's test. Alcohol increased the level of MDA, 4-HNE, TNF-α, NO, and HSP70, reduced NF-kB expression of the heart, and caused blood vessel congestion, cardiomyocyte necrosis, and myocardial fibrosis. While *C. myrrha* restored heart integrity and improved cardiac tissue since these compounds can overexpress HSP70 and alter cell cytokine expression. Our findings uniquely suggest a new mechanism by which furano-sesquiterpenoids and triterpenes from *C. myrrha* possess antioxidant and free radical-neutralizing properties, making them key mediators of protection against myocardial injury and providing scientific support for developing *C. myrrha* as a nutritional supplement.

Keywords: Antioxidants, TNF-α, HSP70, lipid peroxidation, NF-kB