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Phytomedicinal activity of *Terminalia arjuna* against carbon tetrachloride induced cardiac oxidative stress[Prasenjit Manna¹](#), [Mahua Sinha¹](#), [Parames C. Saha](#)

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Abstract

Chronic and acute overproduction of reactive oxygen species (ROS) plays a positive role in the development of cardiovascular diseases under pathophysiological conditions. However, very little is known about carbon tetrachloride (CCl₄) induced cardiac oxidative stress. The present study was conducted to find out CCl₄ induced oxidative insult in cardiac tissue and the cardioprotective effect of the 70% ethanol extractable active constituents of the bark of *Terminalia arjuna* (TA) against that stress in mice. Oral administration of CCl₄ at a dose of 1 ml/kg body weight for 2 days significantly reduced the activities of antioxidant enzymes, superoxide dismutase (SOD), catalase (CAT) and glutathione-S-transferase (GST), as well as depleted the level of reduced glutathione (GSH) in the cardiac tissue. In addition, extent of lipid peroxidation and the level of oxidized glutathione (GSSG) were increased under the same experimental conditions. Oral treatment of the active constituents of TA at a dose of 50 mg/kg body weight for 7 days prior to CCl₄ administration significantly restored the activities of all antioxidant enzymes as well as increased the level of GSH and decreased the level of lipid peroxidation end products. In addition, FRAP assay showed that the active constituents of TA enhanced the cardiac intracellular antioxidant activity. Histological studies also supported the cardioprotective role of the active constituents. The active constituents-induced protective effect was compared with a known antioxidant, vitamin C. To the best of our knowledge, this is the first report describing the CCl₄ induced cardiac oxidative stress and cardioprotective action of the active phytoconstituents of *Terminalia arjuna* against that oxidative insult.

Keywords: [Carbon tetrachloride](#), [Cardiac oxidative stress](#), [Terminalia arjuna bark](#), [Anti-oxidants](#), [Cardioprotection](#), [Vitamin C](#)

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