The aim of this study was to evaluate the role of 
-lipoic acid (L-LA) on oxidative 
damage and inflammation that occur in endothelium of aorta and heart while constant 
consumption of high-fructose corn syrup (HFCS). The rats were randomly divided into 
three groups with each group containing eight rats. The groups include HFCS, HFCS + 
-LA treatment, and control. HFCS was given to the rats at a ratio of 30% of F30 corn 
syrup in drinking water for 10 weeks. -LA treatment was given to the rats at a dose of 
100 mg/kg/day orally for the last 6 weeks. At the end of the experiment, the rats were 
killed by cervical dislocation. The blood samples were collected for biochemical 
studies, and the aortic and cardiac tissues were collected for evaluation of oxidant-
antioxidant system, tissue bath, and pathological examination. HFCS had increased 
the levels of malondialdehyde, creatine kinase MB, lactate dehydrogenase, and uric 
acid and showed significant structural changes in the heart of the rats by 
histopathology. Those changes were improved by treatment as it was found in 
this treatment group. Immunohistochemical expressions of tumor necrosis factor ? and 
inducible nitric oxide synthase were increased in HFCS group, and these receptor 
levels were decreased by -LA treatment. All the tissue bath studies supported these 
findings. Chronic consumption of HFCS caused several problems like cardiac and 
endothelial injury of aorta by hyperuricemia and induced oxidative stress and 
inflammation. -LA treatment reduced uric acid levels, oxidative stress, and corrected 
vascular responses. -LA can be added to cardiac drugs due to its cardiovascular 
protective effects against the cardiovascular diseases.