

Physiology

Effects of Quercetin on L-Arginine-Induced Acute Pancreatitis in Rats

[Solomon Rotimi](#)

,

[Oluwakemi Rotimi](#)

,

[Wisdom Iyanda-Joel](#)

,

[Isaacson Adelani](#)

, ... [Show all Authors](#)

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Abstract

This study evaluated the effect of quercetin on oxidative stress in a rat model of L-arginine-induced acute pancreatitis. Thirty male rats were randomly divided into five experimental groups thus: control, L-arginine group (2g/Kg body weight, i.p), and other groups were treated with 12.5mg/Kg body weight, 25mg/Kg body weight and 50mg/Kg body weight an hour after L-arginine administration. Twenty four hours thereafter, the rats were sacrificed and blood collected by cardiac puncture and organs were excised for the assay of plasma lipase and α -amylase activities as well as the activities of some antioxidant enzymes and levels of reduced glutathione, lipid peroxidation and chloramine. Acute pancreatitis was assessed by a significantly ($p < 0.05$) increase in the activities of plasma lipase and α -amylase 24 hours after L-arginine administration. All the quercetin dosages significantly ($p < 0.05$) reversed the activities of these enzymes. L-arginine administration resulted in significant ($p < 0.05$) reduction in the activity of glutathione-S-transferase in the lungs, pancreas and spleen as well as in the level of erythrocyte reduced glutathione. Only rats treated with 50mg/kg quercetin had a significant ($p < 0.05$) reversal. However, all the quercetin treated groups had significant ($p < 0.05$) increase in the level of erythrocyte reduced glutathione. Superoxide dismutase and peroxidase activities significantly ($p < 0.05$) reduced while myeloperoxidase activity significantly ($p < 0.05$) increased in the organs of rats as a result of L-arginine administration. These alterations were prevented by quercetin. These results show that quercetin protects the rat tissues from oxidative damage in L-arginine-induced pancreatitis.

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9650 Rockville Pike
Bethesda, MD 20814
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