Antioxidant and Calcium

(Medline Express Antioxidant articles) Article 1 - Antioxidant and calcium channel blockers counteract endothelial barrier injury induced by acute pancreatitis in rats. AUTHORS: Wang-XD; Deng-XM; Haraldsen-P; Andersson-R; Ihse-I Scand-J-Gastroenterol. 1995 Nov

Multiple organ failure is the major mortality-related complication in severe acute pancreatitis. Endothelial barrier injury may be involved in pathophysiology.

METHODS:

The present study evaluated alterations in endothelial barrier integrity in different organs/tissues 12 h after induction of acute pancreatitis by intraductal infusions of bile. Potential effects of oxygen free radicals and calcium influx were evaluated by pre-treatment with an antioxidant, N-acetyl-L-cysteine, and calcium channel antagonists, verapamil and diltiazem.

RESULTS:

Tissue oedema, reflected by an increase in tissue water content, was noted in the stomach, proximal small intestine, cecum, spleen, pancreas, kidneys, liver, lungs, heart, and brain in rats with pancreatitis. Also, an increased endothelial barrier permeability, as evidenced by the leakage of radio labelled human serum albumin from blood to tissues, occurred in the stomach, proximal small intestine, colon, peritoneum, spleen, pancreas, kidneys, liver, lungs, and heart, accompanied by altered liver functions, increased levels of pancreatic enzymes, compromised renal oedema and endothelial permeability changes in most organs/tissues, whereas the effects of verapamil and diltiazem were less marked. The preventive effects occurred in an organ-dependent manner.

CONCLUSIONS:

Endothelial barrier injury is found in all investigated organs/tissues in acute experimental pancreatitis. Oxygen free radicals and calcium influx may play a role in the development of these changes.