

5. RiboCeine and Cardiovascular Health

Kader, T.; Porteous C.M.; Williams M.J.A.; Gieseg, S.P.; McCormick, S.P.A. [Ribose-cysteine increases glutathione-based antioxidant status and reduces LDL in human lipoprotein\(a\) mice](#). *Atherosclerosis*, 2014, 237, 725-733.

Overview: Glutathione is a co-factor for glutathione peroxidase, the enzyme that catalyzes the detoxification of lipid peroxides. A low glutathione peroxidase activity and increased oxidized lipids are associated with cardiovascular disease.

Methods: Human lipoprotein(a) transgenic mice were treated with 4 mg/day ribosecysteine (0.16 g/kg body weight) for 8 weeks. Livers and blood were harvested from treated and untreated controls (n = 9 per group) and glutathione concentrations, glutathione peroxidase activity, thiobarbituric acid reactive substances (TBARS), 8- isoprostanes and plasma lipid concentrations were measured.

Results: Ribose-cysteine increased glutathione concentrations in the liver and plasma ($P < 0.05$). Glutathione peroxidase activity was increased in both liver (1.7 fold, $P < 0.01$) and erythrocytes (3.5 fold, $P < 0.05$). TBARS concentrations in the liver, plasma and aortae were significantly reduced with ribose-cysteine ($P < 0.01$, $P < 0.0005$ and $P < 0.01$, respectively) as were the concentrations of 8-isoprostanes in the liver and aortae ($P < 0.0005$, $P < 0.01$, respectively). Ribose-cysteine treated mice showed significant decreases in Low Density Lipoproteins, human lipoprotein(a) and apoB concentrations ($P < 0.05$, $P < 0.01$ and $P < 0.05$, respectively), an effect which was associated with upregulation of the Low Density Lipoproteins receptor (LDLR).

Conclusion: As ribose-cysteine lowers Low Density Lipoproteins, human lipoprotein(a) and oxidized lipid concentrations, it might be an ideal intervention to increase protection against the development of atherosclerosis. 1 Blankenberg, S. et al. Glutathione Peroxidase 1 Activity and Cardiovascular Events in Patients with Coronary Artery Disease. *New England Journal of Medicine*, 2003;349:1605-1613.