

D-Ribose Improves Cardiac Index In Patients Undergoing “Off” Pump Coronary Artery Revascularization

D.PERKOWSKI, MD¹, S. WAGNER, RN¹, A. MARCUS, MD¹, J. ST. CYR, MD, PHD². ¹SADDLEBACK HOSPITAL, LAGUNA HILLS, CA AND ²BIOENERGY, INC., MINNEAPOLIS, MN.

Coronary artery disease (CAD) patients may undergo revascularization using an “off” pump cardiopulmonary bypass (OPCAB) procedure. The OPCAB procedure has gained acceptance with proper patient selection. The role of myocardial metabolism, precisely cellular high-energy phosphate compounds, in cardiovascular diseases has continued to attract interest. Ribose (R) a natural occurring pentose sugar, has previously demonstrated a benefit in enhancing myocardial high energy compounds with a temporal improvement in diastolic dysfunction. Might R offer a functional benefit to CAD patients undergoing “off” pump revascularization? Forty adult patients with ischemic CAD, operated on during a one-year enrollment interval, comprised this trial. Patients presenting with an acute myocardial infarction were excluded. Pre-operative mean ejection fraction was 60.4% (range: 40-72%) with nine patients having a peri-operative placement of an intra-aortic balloon pump. All patients underwent OPCAB revascularization and each patient received oral R pre-operatively. Cardiac indices were measured at baseline and in the post-operative interval. R with the “off” pump revascularization technique resulted in no operative deaths and a 38% greater increase in mean cardiac indices (2.29 ± 0.48 L/min/m² baseline to 3.16 ± 0.72 L/min/m² post-operatively, $p < 0.001$). Only three patients demonstrated a decrease in cardiac index post-operatively. This preliminary trial implies that an OPCAB revascularization procedure along with pre-loading of oral R improves cardiac index post-operatively. A multi-center trial is currently proposed; however, this preliminary finding argues that pre-loading with R prior to an “off” pump technique for coronary artery revascularization can potentially achieve a functionally desired benefit.