85
EVEROLIMUS-ELUTING STENTS REDUCE MONOCYTE EXPRESSION OF TOLL-LIKE RECEPTOR 4 COMPARED WITH BARE STENTS

Bagheri B., Shokri M., Garjani A., Sohrabi B., Taherkhanchi B.

Background: Toll-like receptors (TLR) are well known components of the innate immune system. Among them, TLR4 is involved in inflammatory processes seen in the formation of atherosclerotic plaques. It is documented TLR4 is upregulated on monocytes following percutanoeus coronary intervention (PCI) and can trigger inflammatory reponses. The goal of this study was to compare the monocytic expression of TLR4 following implantation of drug-eluting stents (DES) and bare metal stents (BMS). Here, we hypothsised whether type of stent can influnce inflmmatory responses following PCI.
Methods: Patients were diveded into two groups DES (n = 95) and BMS (n = 95). Blood collection was done before PCI (0 h), 2 h (2 h) and 4 h (4 h) after termination of PCI procedure. Expression of TLR4 on the surface of $CD14^+$ monocytes was measured using flowcytometry. The study was done in Shahid Madani Heart hospital, Tabriz, Iran. All DES patients received everolimus eluting stents. Both groups had similar procedures and medicines.
Results: Compared with baseline values, a signeficant up regulation of TLR4 + /CD14 + monocytes was noted after PCI ($P < 0.01$). No significant difference was seen between DES and BMS groups at 0 h and 2 h. However, BMS group showed higher expression of $TLR4^+$/$CD14^+$ monocytes. At 4 h, TLR4 expression was significantly lower in DES group compared with BMS group ($30.1 \pm 3.4\%$ vs. $39.5 \pm 3.8\%$, $P = 0.04$).
Conclusion: Monocyte expression of TLR4 is higher in BMS settings than DES. These findings suggest that drug-eluted stents can promptly reduce PCI related inflammation possibly by partial inhibition on monocytic expression of TLR4. Such dugs can be furhter investigated in other conditions that TLR4 is involved.

86
EXERCISE TRAINING AND VASCULAR REACTIVITY IN DB/DB MICE: MECHANISMS BEYOND WEIGHT LOSS

Sallam N., Wang B., Laher I.

Aim: Elucidating the mechanisms underlying the beneficial effects of exercise could reveal novel drug targets. We examined the biochemical, functional, and molecular adaptations to exercise training in the aortae and femoral arteries of *db/db* mice: a model of type 2 diabetes.
Methods: *db/db* mice and their controls were exercised at moderate intensity for an hour a day, 5 days a week. Following 4 or 8 weeks of exercise, blood samples were collected for measuring markers of hyperglycemia, systemic oxidative stress, inflammation and dyslipidemia. The vasomotor function of the thoracic aortae and femoral arteries and protein expression of superoxide dismutase (SOD), cyclooxygenase (COX), endothelial nitric oxide synthase (eNOS) and Akt were examined.
Results: Four weeks of exercise improved nitric oxide (NO)-mediated vasorelaxation in the aortae and femoral arteries of *db/db* mice in parallel with increased SOD-2 and SOD-3 expression, reduced systemic oxidative stress and triglycerides, but independent of weight loss, glycemia or inflammation. Eight weeks of exercise reduced body weight, blood glucose and systemic inflammation along with increased Akt and eNOS expression. Exercise did not restore NOS- and COX-independent vasodilatation in the femoral arteries or mitigate the hypercontractility of the aortae in *db/db* mice.
Conclusions: The effects of exercise were duration dependent. The benefits were confined to NO-mediated vasodilatation and were associated with increased eNOS/Akt and SOD expression and reduced cardiovascular risk factors. The ability of exercise to act on several targets may explain its clinical efficacy – a strategy that should be mimicked in effective drug therapy.

87
EXPRESSION OF SDF1 ON THE FUNCTIONALITY OF ENDOTHELIAL PROGENITOR CELLS IN MONONUCLEAR CELLS OF PATIENTS UNDERGOING CARDIAC SURGERY

Tejerina T., Ramajo M., Navarro-Dorado J., Garcés Z., Reguillo F., Mantilla T., Medina U.

Background: Cardiovascular disease (CVD) is the leading cause of death in the world. Evidence has demonstrated that CV function are modulated by endothelial progenitor cells (EPCs), contributing to vessel repair. Atherosclerosis has been linked, among other factors (Diabetes Mellitus), to depletion, poor functionality and impairment of EPCs. Transcription factors, such as SDF1α, CXCR4 and ETS2, have been related to the regulation of cell adhesion and endothelial differentiation molecules, which control the evolution of atherosclerosis. Our specific objective was to determine the degree of expression of SDF1α, CXCR4 and Ets-2, and explore their impact on pathologies such as diabetes mellitus type 2 (DM2) or hypercholesterolemia.
Methods: Sixty patients undergoing coronary artery-bypass grafting (CABG) from the cardiac surgery service were recruited to the study. Peripheral mononuclear cells were isolated with Ficoll-Hypaque density gradient centrifugation. Proteins were assessed by the bicinchoninic acid assay. Expression of SDF1α, CXCR4, and Ets-2 was measured by Western blot.
Results: Patients in CABG with DM2 showed a statistically significant lower expression of SDF1α (1.750 ± 0.4269 vs. 3.242 ± 0.5366, $P = 0.0144$) and Ets-2 (0.5490 ± 0.06163 vs. 1.124 ± 0.1536, $P = 0.0020$), CXCR-4 (0.8951 ± 0.1031 vs. 1.440 ± 0.1659, $P = 0.0123$) in mononuclear cells compared with non-diabetic CABG. Similarly, when the comparison was made between a group of patients with hypercholesterolemia and one without hypercholesterolemia, we observed a significant trend towards a lower expression of SDF1α (1.869 ± 0.3027 vs. 3.251 ± 0.9495, $P = 0.0739$) and Ets-2 (0.6893 ± 0.07980 vs. 1.007 ± 0.1917, $P = 0.0759$) in mononuclear cells of CABG patients.
Conclusions: SDF1α, CXCR- 4 and Ets-2 are involved on coronary artery disease and lower expression in patients with diabetes mellitus type II or hypercholesterolemia could be associated with decreased adhesion of EPCs and with an early restenosis.

88
FRESH AND DECAYED STEM JUICE OF MUSA ACUMINATA X BALBISIANA (MUSA PARADISIACA) REDUCE THE FORCE AND RATE OF CONTRACTILITY OF AN ISOLATED PERFUSED RABBIT HEART

Bbosa G., Nalumansi O., Lubega A., Onegi B.

Decaying stem juice of *Musa acuminata* × *balbisiana* is commonly used by local communities and traditional herbalist in Central Uganda in the management of cardiovascular conditions like hypertension. The study investigated the ionotropic and chronotropic effect of fresh and decaying stem juice of *Musa acuminata* × *balbisiana* on the isolated perfused rabbit heart. An experimental study determined the effects of fresh and decayed stem juices of *Musa acuminate X balbisiana* on the rate and force of contraction of an isolated rabbit heart using Langendorff's heart perfusion experiment and methods. The heart rate (beats/minute) was recorded. The force of contraction of the heart was determined by measuring the height of each peak on the kymogram. The force and rate of contractility of an isolated perfused rabbit decreased with increasing doses of the stem juice from 0.156 mg/mL to 100 mg/mL for both the fresh and decayed stem juice of *M. acuminata.* The decrease could be associated with the high $[K^+]$ ions that decrease the membrane potential or cause hyperpolarization of the myocardial cell membranes leading to reduced force and rate of heart contractility. The effect of the fresh stem juice was short lived and at very high concentrations, it caused a cardiac arrest while the effect of the decayed stem juice was prolonged. Fresh and decayed stem juice of *Musa acuminata* × *balbisiana* have

© 2014 The Authors

17427843, 2014, s1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/bcpt.12259_1. By Lain Entralgo, Wiley Online Library on [17/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License