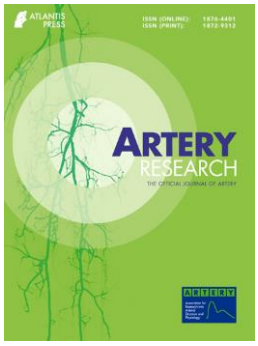

Artery Research

ISSN (Online): 1876-4401 ISSN (Print): 1872-9312
Journal Home Page: https://www.atlantis-press.com/journals/artres

P3.02: ROSUVASTATIN IMPROVES ARTERIAL WAVE REFLECTION AND PULSE PRESSURE AMPLIFICATION BY RESTORING ENDOTHELIAL FUNCTION

C. Ott, U. Raff, M.P. Schneider, R.E. Schmieder

To cite this article: C. Ott, U. Raff, M.P. Schneider, R.E. Schmieder (2011) P3.02: ROSUVASTATIN IMPROVES ARTERIAL WAVE REFLECTION AND PULSE PRESSURE AMPLIFICATION BY RESTORING ENDOTHELIAL FUNCTION, Artery Research 5:4, 157–157, DOI: https://doi.org/10.1016/j.artres.2011.10.037

To link to this article: https://doi.org/10.1016/j.artres.2011.10.037

Published online: 14 December 2019

antiretroviral therapy is going to influence the HIV-1 infected South Africans' long-term risk for cardiovascular disease remains to be seen.

P3.02
ROSUVASTATIN IMPROVES ARTERIAL WAVE REFLECTION AND PULSE PRESSURE AMPLIFICATION BY RESTORING ENDOTHELIAL FUNCTION

C. Ott, U. Raff, M. P. Schneider, R. E. Schmieder
Department of Nephrology and Hypertension, University of Erlangen-Nuremberg, Erlangen, Germany

Objective: One of the major indicators of intact endothelial function is basal nitric oxide (NO) activity. Further, is seems to be likely that statin therapy exerts beneficial effects on vascular function, at least in part via an improvement of NO bioavailability.
Design and Methods: In a double-blind crossover study twenty-nine hypercholesterolemic patients were randomly assigned to receive rosuvastatin and placebo for 42 days. Pulse wave analysis was assessed after 30 minutes of rest (baseline) and after infusion of L-NMMA. The magnitude of the increase in central augmentation index (cAIx) in response to inhibition of NO synthase (NOS) by L-NMMA is indicative of basal NO activity.
Results: CAIx was significantly lower (18.3±10 versus 21.9±12%, p=0.027) with rosuvastatin compared to placebo. There was no increment of cAIx in response to L-NMMA in placebo group. In contrast, cAIx increased significantly in response to L-NMMA (20.5±11 versus 25.7±10mmHg, p=0.001) in rosuvastatin group. The percentage of increase of cAIx tended to be more pronounced after treatment with rosuvastatin compared to placebo (53.7±92 versus 14.1±36%, p=0.087), indicating increased basal NOS activity with rosuvastatin treatment. Pulse pressure amplification (PPA) improved (1.31±0.2 versus 1.26±0.2 %, p=0.016) after rosuvastatin compared to placebo. Regression analyses revealed that both LDL-cholesterol and CRP-levels are independent determinants of basal NO activity improvement, which itself is an independent determinant of vascular function, expressed by an improvement of arterial wave reflection and PPA.
Conclusion: Rosuvastatin improves vascular function by restoring endothelial function expressed by improved NO production in patients with hypercholesterolemia, thereby exerting anti-atherosclerotic effects on the vascular wall.

P3.03
BIOACTIVES OF WILD BERRIES: POTENTIAL ALTERNATIVES TO VASODILATOR DRUGS

K. S. Bhullar, H. P. V. Rupasinghe
Nova Scotia Agricultural College, Truro, Canada

Hypertension is described as one of the risk factors in arterial and cardiovascular health. With increasing hypertension risk in all age groups and side-effects of vasodilator drugs, need for an effective natural cure is crucial. Wild berries provide valuable biologically active phytochemicals which can also neutralize reactive oxygen species (ROS) that are pathological mediators in many chronic diseases including hypertension. Present research was carried out to study the total bioactive content and antioxidant capacity of ethanol extracts of wild berries and their ability to inhibit angiotensin converting enzyme (ACE) which is principal blood pressure regulating enzyme. Among the investigated five species of cloudberry (*Rubus chamaemorus* L.), crowberry (*Empetrum nigrum*), blueberry (*Vaccinium corymbosum)*, cranberry (*V. macrocarpon)*, partridgeberry (*V. vitis-idaea*), the highest anthocyanin content was found in early harvested crowberry while late harvested fruit of lingonberry exhibited the highest antioxidant capacity and phenolic content ($p \leq 0.05$). The ACE inhibition by berry extracts was measured by using a florescence based assay at presence of histidine −L-hippuryl-L-histidine-chloride substrate. All the berry extracts showed a concentration responsive enzyme inhibition *in vitro* indicating effective ACE inhibition. However, partridgeberry and cranberry were among the most effective ($p=0.05$). This study has demonstrated potential cardiovascular health benefits of berries and further studies are warranted to confirm the results using cell lines, animal and clinical studies.
Keywords: cardiovascular disease, hypertension, natural health products, wild berries

P3.04
EFFECTS OF ANTIHYPERTENSIVE DRUGS ON CENTRAL BLOOD PRESSURE

D. Agnoletti [1], Y. Zhang [2], C. Borghi [3], J. Blacher [1], M. E. Safar [1]
[1]*Paris Descartes University; AP-HP; Diagnosis and Therapeutic Center, Hôtel-Dieu, Paris, France*
[2]*Centre for Epidemiological Studies and Clinical Trials, Ruijin Hospital, Shanghai, Shanghai, China*
[3]*Department of Internal Medicine, University of Bologna, Bologna, Italy*
Background: Central blood pressure (BP) is considered a better predictor of cardiovascular events than brachial BP, and mechanisms influencing central BP are mostly related to reduction of arterial stiffness and/or reflected waves. Comparison between drugs on their effect in central hemodynamics has poorly been studied.
Objective: To assess the role of 3 antihypertensive drugs on central BP, in comparison with placebo, and their associated mechanisms.
Methods: Multicenter, multinational, randomized, double blind, placebo-controlled clinical trial analyzing the effects of a 12-week treatment with amlodipine, candesartan, indapamide sustained release, or placebo in 145 outpatients with essential hypertension and no cardiovascular complications, enrolled in the X-CELLENT (NatriliX SR versus CandEsartan and amLodipine in the reduction of systoLic blood prEssure in hyperteNsive patienTs) study. Post-hoc analysis focusing on central hemodynamics.
Results: Each active drug reduced brachial and mostly central BP. Amlodipine and indapamide produced a greater reduction of central than brachial pulse pressures, while candesartan had a similar but lesser effect. Augmented pressure, a well established wave reflection index, was reduced by all active drugs. Within duration of the trial, no effect was achieved on pulse wave velocity. Pulse pressure amplification was similarly increased by all active treatments.
Conclusions: Amlodipine and indapamide, more than candesartan, have an effect on both static and pulsatile central BP, causing a reduction of central systolic, diastolic and pulse pressures. Within the limits of the investigation, central BP reduction was not due to changes in arterial stiffness, but rather in wave reflections and pulse pressure amplification.

P3.05
EFFECTS OF ACETAZOLAMIDE ON BLOOD PRESSURE AND PULSE WAVEFORM CHANGES INDUCED BY HIGH ALTITUDE EXPOSURE

M. Revera [1], P. Salvi [2], A. Giuliano [3], G. Bilo [1], A. Faini [1], F. Gregorini [1], C. Lombardi [1], G. Mancia [4], G. Parati [3]
[1]*Dept. Cardiology, San Luca Hospital, Istituto Auxologico Italiano, Milan, Italy*
[2]*Dept. Internal Medicine, University of Bologna, Bologna, Italy*
[3]*Dept. Cardiology, Ospedale San Luca, Istituto Auxologico Italiano and University of Milano-Bicocca, Milan, Italy*
[4]*Dept. of Clinical Medicine and Prevention Univ. Milano-Bicocca, Milan, Italy*

Background: Exposure to high altitude (HA) may induce mountain sickness and increase blood pressure (BP) but little is known on the effects on arterial properties. Acetazolamide (AC) has been proposed to prevent and treat mountain sickness, but no information is available on its effects on cardiovascular parameters at HA. Our aim was to assess these issues in healthy volunteers acutely exposed to very HA.
Methods: 42 subjects (age 36.8±8.9, 21 Male) were randomized to double blind AC 250 mg bid or placebo (PL). Arterial tonometry (PulsePen, DiaTecne, Milan) including carotid-femoral and carotid-radial PWV (CF-PWV,CR-PWV) and pulse wave analysis (augmentation index, AIx and subendocardial viability ratio, SEVR) was performed: at baseline (BAS), after 2 days of treatment at sea level (SLpost); within 6 hours from arrival at Capanna Margherita(Mount Rosa, 4559 m,HA1); and on 3rd full day of exposure to HA(HA2). Systolic (S) and diastolic (D)BP were measured with validated oscillometric device (AND UA 767-PC). Heart rate (HR) was derived from the ECG signal. Data are shown as means±SD.
Results. (See table, p=peripheral, c= central, M=mean). At HA, AIx (adjusted for HR) increased but was significantly lower in AC group, moreover AC treatment partially counteracted the decrease in SEVR.
Conclusions: Acute exposure to HA induced both a BP rise and changes in vascular function, partly counteracted by treatment with AC. These haemodynamic effects may contribute to the beneficial role of AC at HA and may have implications for the possible clinical usefulness of AC in patients with hypoxemia.

	BAS		SLpost		HA1		HA2	
	PL	AC	PL	AC	PL	AC	PL	AC
pSBP	114,8±12,2	115,4±13,4	114,5±12,2	110,1±12,8	115,7±9,8	108,3±9,6 #	120,7±8,4 **	114,2±11,7
cSBP	109,5±11,1	110,1±14,4	109,3±11,7	107,5±12,8	110,3±9	104,6±9,6	115,4±7,8 *	109,6±12,3
MBP	89,2±8,3	88,0±9,1	87,8±8,3	84,9±8,5	92,7±6,8 *	85,3±6,0 #	96,8±6,8 **	91,2±8,3 #
DBP	72,1±6,7	69,8±7,3	70,1±6,9	68,1±6,3	77,4±6,8 *	70,1±5,3 #	89,9±7,5 **	74,1±7,3 *#
HR	59,5±6,4	64,1±9,4	57,6±5,5	58,2±6,6 *	83,5±10,4 **	76,4±8,8 **#	68,7±10,9 **§	63,3±9,8 *§
AIx75	-8,4±12,5	-11,7±10,9	-7,3±11,3	-15,5±10 #	1,54±12,6 **	-7,5±12,6 *#	2,1±11,8 **	-8,1±10,9 *#
SEVR	0,88±0,14	0,78±0,23	0,89±0,19	0,87±0,2	0,58±0,14 **	0,67±0,13 *	0,74±0,17 **§	0,87±0,15 §#
cf-PWV	6,3±1,1	6,4±1,3	6,7±2,3	6,0±1,1	6,6±1,2	5,9±0,9	6,3±1,1	6,0±0,8
cr-PWV	7,7±1,1	7,7±1,2	8,1±1,7	7,9±1,3			6,7±1,5	8,3±1,6

*-p<0,05 Vs SIpre; *-p<0,05 Vs SIpost; §-p<0,05 Vs HA1; #-p<0,05 Vs PL at same step