TOP 5 ARTICLES

Prof. Peter Zilla

Article:

Impact Factor: 9.600

Summary:
Pulmonary hypertension (PH) is characterized by elevated pulmonary arterial pressure, which leads to right ventricular (RV) hypertrophy and failure. The pathophysiological mechanisms of PH remain unclear but oxidative stress is believed to contribute to RV dysfunction. Melatonin is a powerful antioxidant and is cardioprotective against ischemia-reperfusion injury and hypertension. Therefore, we hypothesized that a chronic treatment with melatonin, given as a curative or preventive therapy, may confer cardiovascular benefits in PH. PH was induced in Long Evans rats (n ≥ 6 per group), with a single subcutaneous injection of monocrotaline (MCT, 80 mg/kg). Melatonin was given daily in the drinking water, with the treatment starting either on the day of the injection of MCT (dose testing: melatonin 75 ng/L and 6 mg/kg), 14 days after the injection of MCT (curative treatment: 6 mg/kg), or 5 days before the injection (preventive treatment: 6 mg/kg). The development of PH was assessed by measuring RV hypertrophy, RV function, cardiac interstitial fibrosis, and plasma oxidative stress. Compared with controls, MCT-treated rats displayed RV hypertrophy and dysfunction, increased interstitial fibrosis, and elevated plasma oxidative stress. A chronic melatonin treatment (75 ng/L or 6 mg/kg) reduced RV hypertrophy, improved RV function and reduced plasma oxidative stress. Curative and preventive treatment improved RV functional and plasma oxidative stress parameters and reduced cardiac interstitial fibrosis. Our data demonstrate that melatonin confers cardioprotection in this model of PH. As melatonin is an inexpensive and safe drug, we propose that clinical investigation of the effects of melatonin on RV function in patients with PH should be considered.
Aims/Hypothesis: There is evidence to suggest that ectopic fat deposition in liver and skeletal muscle may differ between black and white women resulting in organ-specific differences in insulin sensitivity. Accordingly, the aim of the study was to examine ethnic differences in hepatic and peripheral insulin sensitivity, and the association with hepatic and skeletal muscle lipid content, and skeletal muscle gene expression.

Methods: In a cross-sectional study including 30 obese premenopausal black and white women, body composition (dual energy x-ray absorptiometry), liver fat and skeletal muscle (soleus and tibialis anterior) fat accumulation (proton-magnetic resonance spectroscopy), skeletal muscle gene expression, insulin sensitivity (two-step isotope labelled, hyperinsulinaemic–euglycaemic clamp with 10 mU m⁻² min⁻¹ and 40 mU m⁻² min⁻¹ insulin infusions), and serum adipokines were measured.

Results: We found that, although whole-body insulin sensitivity was not different, obese white women presented with lower hepatic insulin sensitivity than black women (% suppression of endogenous glucose production [% supp EGP], median [interquartile range (IQR)]: 17 [5 – 51] vs 56 [29 – 100] %, p = 0.002). While liver fat tended to be lower (p = 0.065) and skeletal muscle fat deposition tended to be higher (p = 0.074) in black compared with white women, associations with insulin sensitivity were only observed in black women (% sup EGP vs liver fat: r = −0.57, p < 0.05 and % supp EGP vs soleus fat: r = −0.56, p < 0.05).

Conclusions/Interpretation: These findings may suggest that black women are more sensitive to the effects of ectopic lipid deposition than white women.
Prof. Peter Zilla

Article:
DOI: 10.1097/MOL.00000000000000192.

Impact Factor: 5.656

Summary:
Purpose of Review: Lipoprotein metabolism and the role of apolipoprotein E in the pathogenesis of dysbetalipoproteinemia.

Recent Findings: Remnant lipoproteins, modulated by lifestyle and genetic factors, are atherogenic. Dysbetalipoproteinemia could be viewed as a monogenic disorder of remnant metabolism.

Summary: Elevated plasma triglyceride and cholesterol concentrations (mixed hyperlipidemias) are commonly encountered and dysbetalipoproteinemia should be considered in this setting. Dysbetalipoproteinemia (remnant clearance disease, Fredrickson type III hyperlipidemia) is an uncommon dyslipoproteinemia related to mutations in apolipoprotein E that disrupt the clearance of remnants of triglyceride-rich lipoproteins; it may be overlooked because xanthomata of the skin and/or tendons occur in a minority of patients. The diagnosis ideally requires the demonstration of remnant lipoprotein accumulation and a genetic cause. Genotyping for apolipoprotein E2 may not prove the diagnosis as it may be associated with low plasma lipid values. The recent association of remnant lipoproteins with atherosclerosis along with many factors that modulate remnant lipoprotein metabolism underscores the importance of recognising dysbetalipoproteinemia as an extreme state of remnant lipoprotein accumulation. Although there may be some differences between remnants in the general population and dysbetalipoproteinemia, it is clear that remnants promote atherosclerosis. Current treatment strategies are adequate but new strategies could also be of benefit in dysbetalipoproteinemia.
Prof. Johan Louw

Article:
Impact Factor: 4.603

Summary:
Scope: Saturated-free fatty acids, such as palmitate, are associated with insulin resistance. This study aimed to establish if an aspalathin-enriched green rooibos extract (GRE) and, its major flavanoid, aspalathin (ASP) could contribute significantly to the amelioration of experimentally induced insulin resistance in 3T3-L1 adipocytes.

Methods and Results: 3T3-L1 adipocytes were cultured in DMEM containing 0.75 mM palmitate for 16 h to induce insulin resistance before treatment for 3 h with GRE (10 μg/mL) or ASP (10 μM). GRE and ASP reversed the palmitate-induced insulin resistance. At a protein level GRE and ASP suppressed nuclear factor kappa beta (NF-κB), insulin receptor substrate one (serine 307) (IRS1 (Ser 307 )) and AMP-activated protein kinase phosphorylation and increased serine/threonine kinase AKT (AKT) activation, while only GRE increased glucose transporter four (Glut4) protein expression. Peroxisome proliferator-activated receptor alpha and gamma (PPARα and γ), and carnitine palmitoyltransferase one (CPT1) expression were increased by ASP alone.

Conclusion: Together these effects offer a plausible explanation for the ameliorative effect of GRE and ASP on insulin-resistance, an underlying cause for obesity and type 2 diabetes.
Article:
Mycobacterium tuberculosis pncA polymorphisms that do not confer pyrazinamide resistance at a breakpoint concentration of 100 μg/ml in MGIT. Journal of Clinical Microbiology. 2015 Aug 19.
Impact Factor: 3.993

Summary:
Sequencing of the Mycobacterium tuberculosis pncA gene allows for pyrazinamide susceptibility testing. We summarize data on pncA polymorphisms that do not confer resistance at a susceptibility breakpoint of 100 μg/ml pyrazinamide in MGIT within a cohort of isolates from South Africa and the U.S. Centers for Disease Control and Prevention.
1. INTRAMURAL RESEARCH UNITS

Alcohol, Tobacco and Other Drug

1. Parry CDH, Deluca P, Cooper R, van Hout MC. Do we have sufficient information to optimally inform regulatory or other policy decisions about medications containing codeine? Addiction. 2015 Aug 6.
   DOI: 10.1111/add.13047.
   Impact Factor: 4.738

   DOI: 10.7196/SAMJnew.7910.
   Impact Factor: 1.632

Biostatistics

   DOI: 10.1080/20786190.2015.1073895.
   Impact Factor: None

   DOI: 10.1080/20786190.2015.1078156.
   Impact Factor: None

   DOI: 10.7196/SAJP.8782.
   Impact Factor: 0.521

Burden of Disease

   DOI: 10.3233/978-1-61499-564-7-1000.
   Impact Factor: None

   DOI: 10.3233/978-1-61499-564-7-993.
   Impact Factor: None

Centre for Tuberculosis

   DOI: 10.1155/2015/364758.
   Impact Factor: 3.236


Health Systems


HIV Prevention

MRC Office of AIDS

MRC Office of Cancer

MRC Office of Malaria

MRC Office of Tuberculosis

Non-Communicable Disease
2. GBD 2013 DALYs and HALE Collaborators, [Kengne AP, Matzopoulos R, Msemburi WT, Stein DJ]. Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990-2013: quantifying the epidemiological transition. Lancet. 2015 Aug 27. DOI: 10.1016/S0140-6736(15)61340-X. **Impact Factor: 45.217**


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**Biomedical Research and Innovation Platform** *(Prev. known as: Diabetes Discovery Platform)*

Impact Factor: 3.270

South African Cochrane Centre
Impact Factor: 6.035

Impact Factor: 9.176

DOI:10.7196/SAMJnew.8271.
Impact Factor: 1.632
2. **EXTRAMURAL RESEARCH UNITS**

**Anxiety and Stress Disorders**


Child and Adolescent Lung Health
   **Impact Factor: 3.131**

   **Impact Factor: 2.723**

Developmental Pathways for Health
   **Impact Factor: 1.976**

   **Impact Factor: 0.750**

Health Policy
   **Impact Factor: 2.250**

Herbal Drugs
   **Impact Factor: 2.998**

Hypertension and Cardiovascular Disease
   **Impact Factor: 2.700**

Inter-university Cape Heart
   **Impact Factor: 9.600**


Molecular Mycobacteriology

Receptor Biology


Rural Public Health and Health Transition


Stem Cell Research and Therapy

   DOI: 10.7196/SAJBL.8008.
   **Impact Factor: None**

   DOI: 10.7196/SAJBL.8004.
   **Impact Factor: None**

   DOI: 10.7196/SAJBL.8006.
   **Impact Factor: None**

   DOI: 10.7196/SAJBL.8402
   **Impact Factor: None**
3. **GRANT FUNDED RESEARCH**

Strategic Research Initiatives


SHIP – Research


4. **CLOSED RESEARCH UNITS**

Clinical and Biomedical Tuberculosis

5. RESEARCH UNITS WITH NO QUALIFYING PUBLICATIONS

**INTRAMURAL**

- Environment and Health
- Gender and Health
- Primate
- Violence, Injury and Peace

**EXTRAMURAL**

- Antiviral Gene Therapy
- Bioinformatics Capacity Development
- Cancer Epidemiology
- Common Epithelial Cancer Research Centre
- Diarrhoeal Pathogens
- Drug Discovery and Development
- Gynaecological Cancer
- Health Services to Systems
- HIV/TB Pathogenesis and Treatment
- Human Genetics
- Immunology of Infectious Disease
- Medical Imaging
- Microbial Water Quality Monitoring
- Prospective Gastrointestinal Cancer
- Respiratory and Meningeal Pathogens
## 6. GRANTS AWARDED

### MRC LIST OF NEW CONTRACTS FOR AUGUST 2015

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