Emotionallity of mice selectively bred for high wheel-running activity
Jonas, Izabella; Nyakas, Csaba; Doornbos, Mark; Vaanholt, Lobke M.; Garland Jr., Theodore; Visser, G. Henk; Dijk, Gertjan van
Published in:
International Journal of Obesity

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2007

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA):

Copyright
Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment.

Take-down policy
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): http://www.rug.nl/research/portal. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.
T1:PO.110
Prevalence of TCF4 gene microsatellite alleles in obese hypertensive patients
Sarzani Riccardo1, Pietrucci Francesca1, Salvi Fabio1, Caraceni Daniele1, Lancellotti Letizia1, Caffarelli Fiammetta1, Lorenzetti Barbara1, Trotta Fabiana1, M’ Dessi-Fulgheri Paolo1, Rappelli Alessandro1
1Ancona University Politecnica Delle Marche, Ancona, Italy

Obesity is increasing worldwide together with its companions hypertension and type 2 diabetes. The obese hypertensive patients are usually at high cardiovascular risk because derangements of glucose and lipids metabolism are also present. A study in 3 different populations suggested a relationship between the TCF4 gene microsatellite DG10S478 allele “X” (with more than 5 TTTG repetitions) and type 2 diabetes. This genetic marker may be especially useful to identify patients with susceptibility to diabetes in a population with high cardiovascular risk and increased incidence and prevalence of diabetes. Thus, the objectives of this study were: 1) identify the carriers of TCF4 allele X among obese hypertensives; 2) verify the prevalence of the X allele in comparison to healthy subjects. We studied 131 obese hypertensives without diabetes, and 146 healthy subjects as control population. Genotyping of the microsatellite was performed by PCR and direct sequencing. The allele frequencies were similar (allele X = 37.4%) to those found in the previous published study on 3 different population. We didn’t find a higher allele X frequency in obese hypertensives compared to the control group (39.7% vs. 35.3%, P=0.323). Furthermore, there were no allele X-related differences in BMI and waist among groups (P=0.76). We conclude that, although TCF4 allele X could be useful to identify obese hypertensives that might develop diabetes, its prevalence is not increased in this population. Thus, according to the previous published work, allele X associates with type 2 diabetes through mechanisms not linked to obesity and related consequences.

T1:PO.111
Emotionality of mice selectively bred for high wheel-running activity
Jonas Izabella1, Nyakas Csaba1,2, Doornbos Mark1, Vaaanholt Lorbke M1, Garland Jr. Theodore1, Visser G. Henk1, van Dijk Gertjan1
1University of Groningen, Netherlands; Semmelweis University, Budapest, Hungary; University of California, Riverside, USA

Our previous research showed that female mice selectively bred for high voluntary wheel running activity are resistant against high fat diet-induced obesity, despite increased high fat intake in these mice relative to female controls. Since high fat feeding relates to brain serotonin levels and mood regulation, we investigated whether selected mice 1) have altered diet selection when given a choice of fat and carbohydrates, 2) have different performances in behavioral tests (i.e., plus maze, open field, complex maze), and 3) have differences in biogenic amine levels in discrete brain regions relative to controls. When given choice, selected mice strongly preferred high carbohydrate diet over the fat diet, irrespective of the regular diet (i.e., chow or high fat food). Secondly, selected animals had a higher level of anxiety, as ev idenced by higher closed –arm occupation in the plus maze relative to cont rats, but selected animals were more explorative in open field and complex maze. Finally, levels of serotonin, but not of the 5HT metabolite 5HIA, were markedly suppressed in prefrontal cort ical ices of selected females and males, an effect that was more pronounced in animals feeding the high fat diet than those feeding chow. The results indicate that low brain ser otinin levels in high activity mice may underlie reduced fat selection and their increased state of anxiety. They do not explain, however, the higher level of spontaneous activity and explorative beaviour in these selected mice.

T1:PO.113
Effect of PGC-1γ on endothelial function and apoptosis
Park Joong-Yeol1,2, Won Jong Chul1,2, Lee Ki-Up1,2, Lee Woo Je1,2, Ko Kyung Soo1,2, Song Kee-Ho1,2
1University of Ulsan College of Medicine, Seoul, Korea; 2Inje University College of Medicine, Seoul, Korea; Konkuk University School of Medicine, Seoul, Korea

Aims: Central obesity is associated with increased cardiovascular morbidity and mortality. It has been proposed that increased lipid accumulation in vascular tissue and the consequent increase in oxidative stress may be a missing link between obesity and atherosclerosis. The peroxisome proliferators-activated receptor (PPAR) – gamma coactivator 1-alpha (PGC-1alpha) is a transcriptional coactivator playing an important role in energy met abolism. PGC -1alpha is present in vascular cells, but its role in vascular endothelial cells has not been established. In this study, we examined the effect of adenoviral overexpression of PGC-1alpha (Ad-PGC-1alpha) in human aortic endothelial cells (HAECs) on apoptosis induced by linoleic acid (LA).

Methods: Effect of PGC-1 on HAECs apoptosis was evaluated by ELISA, WST-1 assay, and caspase activity. Using Ad -PGC-1 and ANT-1 siRNA, effect of PGC-1 and ANT-1 on reactive oxygen species (ROS) production, fatty acid oxidation (FAO) and mitochondrial membrane potential (mTPM) were analyzed.

Results: PGC-1alpha prevented LA-induced endothelial apoptosis. PGC -1alpha also reduced LA-induced increases of antioxidant enzyme expression and ROS accumulation at basal state. LA decreased the activity of adenosine nucleotide translocase (ANT) and increased mTPM. In the Ad-PGC-1alpha-infected HAECs, activity and the mRNA expression of ANT -1 were increased and LA did not increase mTPM. siRNA against ANT -1 reversed the chae nges induced by PGC-1alpha.

Conclusion: These data suggest that PGC -1alpha functions as a physiologic regulator of ROS generation in endothelial cells and that part of this effect is medi ated by ANT-dependent increase in FAO.

T1:PO.112
Rosiglitazone reduce macrophage and chemokine expression in human adipose tissue in vivo
Bruun Jens M1,2, Paulsen S.K.1,2, Kim K.W.1, Christiansen T.1, Pedersen S.B.1, Richelens B.1
1Dept. Of Endocrinology And Metabolism C
2Visceral obesity is a chronic low-grade inflammatory state associated with insulin resistance, type 2 diabetes, and cardiovascular disease. Human adipose tissue (AT) seems to be involved in the abovementioned deleterious health effects of obesity through the production of inflammatory proteins. Rosiglitazone is a PPAR -agonist with known anti-diabetic effects and reported anti-inflammatory effects. Aim of the study was to investigate the long-term effects of Rosiglitazone (4mg daily) on ATmRNA levels of macrophage specific markers [CD14, CD68], chemokines, and chemokine receptors in six abdominally obese male subjects (mean age: 50.2 ± 2.9 yrs, mean BMI: 29.3 ± 1.0 kg/m², mean waist: 98.7 ± 1.2 cm). AT-biopsies were obtained from the subcutaneous abdominalAT-depot at baseline, after 3, and 6 months, at which time AT-mRNA levels were quantified using a real time RT-PCR method. Rosiglitazone reduced mRNA levels of CD14 (P<0.05), CD68 (P<0.01), MCP-1 (P<0.01), MIP-1 (P<0.05), and IL-8 non-significant (P=0.06) but increased mRNA levels of the equivalent chemokine receptors; CXCR2 (P<0.05), CXCR2 (P<0.05), and CXC1 non-significant (P=0.07). In conclusion, Rosiglitazone was for the first time found to exert anti-inflammatory effects in human AT in vivo, reducing mRNA levels of macrophage specific markers [CD14, CD68] and various chemokines. In parallel, increasing mRNA levels of the equivalent chemokine receptors were found. This suggests, that a complex interaction may exist between AT-inflammation and the need for chemokines to attract cell-types involved in tissue homeostasis [e.g. macrophages, leucocytes].