Age and Gender-Related Changes in Baroreflex Sensitivity in Obese Rats Subjected to Stress

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List of abbreviations

(a)	: Intersept
ABP	: Arterial blood pressure
ACh	: Acetylecholine
Ang-II	: Angiotensin-II
ANOVA	: Analysis of variance
ARC	: Arcuate nucleus
(b)	: Slope
BAT	: Brown adipose tissue
BCG	: Baroreflex calculated gain
BMI	: Body mass index
BP	: Blood pressure
BRS	: Baroreflex sensitivity
COP	: Cardiac output
DBP	: Diastolic blood pressure
ECG	: Electrocardiogram
FBG	: Fasting blood glucose
FBL	: Final body length
FBMI	: Final body mass index
FBW	: Final body weight
FDA	: Food and drug administration
FLI	: Final lee index
GLUT4	: Glucose transporter 4
GH	: Growth hormone
GHRH	: Growth hormone releasing hormone
HPA	: Hypothalamic pituitary adrenal
HR	: Heart rate
IBL	: Initial body length
IBMI	: Initial body mass index
IBW	: Initial body weight
IL-6	: Interleukin 6
ILI	: Initial lee index
i.p.	: Intraperitoneal
LC	: Leydig cell

LH	: Lateral hypothalamus
LI	: Lee index
LSD	: Least significant difference
LV	: Left ventricle
LV/BW	: Left ventricle/Body weight
LZRs	: Lean Zucker rats
mA	: milli ampere
MAP	: Mean arterial pressure
MSG	: Monosodium glutamate
NE	: Norepinephrine
NIDDM	: Non-insulin dependent diabetes Mellitus
NO	: Nitric Oxide
NPY	: Neuropeptide Y
NTS	: Nucleus tractus solitarius
OZRs	: Obese Zucker rats
PE	: Phenylephrine
POMC	: Proopiomelanocortine
(r)	: Correlation coefficient
RIA	: Radio-immunoassay
RV	: Right ventricle
RV/BW	: Right ventricle/ Body weight
SBP	: Systolic blood pressure
SC	: Sertoli cell
SD	: Standard deviation
SEM	: Standard error of mean
SNA	: Sympathetic nerve activity
SNP	: Sodium nitroprusside
SNS	: Sympathetic nervous system
SPSS	: Statistical Program for Social Science
SV	: Strok volume
TNF-α	: Tumur necrosis factor- alpha
TPR	: Total peripheral resistance
VMH	: Ventromedial hypothalamic nucleus
WG	: Weight gain
WG%	: Weight gain percent

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Introduction

The high prevalence of obesity is a major threat to the public health (Weisberg et al., 2008). Obesity is known to have evil effects on health and is associated with a shorter life expectancy; the adverse clinical consequences of obesity are so harmful that a 20% increase above the ideal weight is associated with a 20% increase in the mortality rate (Field et al., 2001).

Obesity can lead to chronic disease complications such as cardiac disorders, hypertension, hyperlipidemia, and diabetes, which threaten the health of human kind (Bong et al., 2010). Obesity is strongly correlated with cardiovascular morbidity and mortality (Yusuf et al., 2005). Obesity impairs the regulation of arterial blood pressure, but the mechanisms linking obesity and cardiovascular dysfunction are not well understood.

Stress is conceived as an aversive stimulus capable of altering physiological homeostasis (Masood et al., 2003). The cardiovascular system is the major organ targeted by stress, and stress is the most important etiologic factor in cardiovascular diseases (Zhao et al., 2007).

Obese subjects had an attenuated autonomic response to stress (El-Wazir et al., 2008).Obesity delays cardiovascular recovery from stress, and in parallel, it promotes the development of nocturnal hypertension as well