
Abstract

OBJECTIVE: Peroxisome proliferator-activated receptor-gamma 2 (PPAR gamma 2) is an important regulator of adipose tissue metabolism and insulin sensitivity. The aim of this investigation was to determine whether a PPAR gamma 2 Pro12Ala polymorphism was associated with cardiovascular risk factors (obesity, blood pressure, diabetes and blood lipids) in Western Australian Caucasians (n=663).

DESIGN: Subjects were selected from two population studies (the Carotid Ultrasound Disease Assessment Study (CUDAS) and Busselton Population Health Survey) on the basis of body mass index (BMI). 292 obese (BMI > or =30 kg/m) and 371 lean (BMI <25 kg/m) subjects were studied.

METHODS: Blood pressure and anthropometric measurements were collected from all participants, as well as a fasting venous blood sample. Biochemical measurements (high-density lipoprotein (HDL)- and low-density lipoprotein-cholesterol, triglycerides) and PPAR gamma 2 Pro12Ala genotype were also determined.

RESULTS: Obese Pro/Ala and Ala/Ala subjects had lower levels of HDL-cholesterol (P=0.032) and a trend towards higher levels of triglycerides (P=0.055) compared with obese Pro/Pro subjects. In the obese group, the Ala allele was significantly associated with the presence of combined hyperlipidaemia (odds ratio = 2.33, P=0.042). There was no significant difference in the frequency of the polymorphism between lean and obese groups (P=0.069). No association was observed between Pro12Ala genotype and obesity, blood pressure or diabetes in either group.

CONCLUSIONS: Obese carriers of the Pro12Ala polymorphism have a greater risk of developing combined hyperlipidaemia, possibly due to impaired activation of PPAR gamma target genes. The Pro12Ala polymorphism is not directly associated with obesity, hypertension or diabetes in this population.