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TI

The hormone-sensitive lipase C-60G promoter polymorphism is associated with increased waist circumference in normal-weight subjects.

AU

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DT

Article

LA

English

ED

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AB

Objective: Hormone-sensitive lipase (HSL) is a key enzyme in the mobilization of fatty acids from triglyceride stores in adipocytes. The aim of the present study was to investigate the role of the HSL gene promoter variant C-60G, a polymorphism which previously has been associated with reduced promoter activity in vitro, in obesity and type 2 diabetes.Design: We genotyped two materials consisting of obese subjects and non-obese controls, one material with offspring-parents trios, where the offspring was abdominally obese and one material with trios, where the offspring had type 2 diabetes or impaired glucose homeostasis. HSL promoter containing the HSL C-60G G-allele was generated and tested against a construct with the C-allele in HeLa cells and primary rat adipocytes. HSL mRNA levels were quantified in subcutaneous and visceral fat from 33 obese subjects.Results: We found that the common C-allele was associated with increased waist circumference and WHR in lean controls, but there was no difference in genotype frequency between obese and non-obese subjects. There was a significant increased transmission of C-alleles to the abdominally obese offspring but no increased transmission of C-alleles was observed to offspring with impaired glucose homeostasis. The G-allele showed reduced transcription in HeLa cells and primary rat adipocytes. HSL mRNA levels were significantly higher in subcutaneous compared to visceral fat from obese subjects.Conclusion: The HSL C-60G polymorphism is associated with increased waist circumference in non-obese subjects.

CC

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IT

Major Concepts
Molecular Genetics (Biochemistry and Molecular Biophysics); Nutrition; Human Medicine (Medical Sciences)

IT

Parts, Structures, & Systems of Organisms
adipocyte; subcutaneous fat; visceral fat

IT

Diseases
obesity: nutritional disease

Obesity (MeSH)

IT

Chemicals & Biochemicals
triglycerides; mRNA [messenger RNA]; hormone-sensitive lipase;
glucose: homeostasis

IT

Miscellaneous Descriptors
waist circumference; allele transmission

ORGN

Classifier
Hominidae 86215
Super Taxa
Primates; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
HeLa cell line (cell_line)
human (common): adult, middle age, female, male
Taxa Notes
Animals, Chordates, Humans, Mammals, Primates, Vertebrates

ORGN

Classifier
Muridae 86375
Super Taxa
Rodentia; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
rat (common)
Taxa Notes
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals,
Rodents, Vertebrates

RN

9001-62-1 (hormone-sensitive lipase)
58367-01-4 (glucose)

GEN

human HSL gene [human hormone-sensitive lipase gene] (Hominidae):
promoter polymorphism, G-allele