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IMPACT OF ADRB3 SNP ON ABDOMINAL FAT IN OVERWEIGHT AND OBESE WOMEN

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Introduction The β-3 adrenergic receptor takes part in lipid metabolism and the Trp64Arg polymorphism of the gene has been associated with metabolic risk factors and obesity. The aim of this study was to analyze the effect of the Trp64Arg polymorphism of the ADRB3

gene on the android adipose tissue (AAT) and the abdominal visceral fat (VAT) during a controlled exercise and diet program in overweight and obese healthy women. Methods 101 women (38.28 ± 8.11 years, 1,62 ± 0.06 m, 80.21 ± 10.23 kg) followed a 24-week weight loss intervention of a controlled training program (supervised exercise group, S; 3 times/week; 38-60 min/session; strength, endurance or combined training) or exercise recommendations (non-supervised group, NS) and a caloric restriction (30% of the total daily energy expenditure). AAT (kg) and VAT (kg) were determined by dual-energy X-ray absorptiometry before and after the intervention. Genotyping of the overweight subjects was done based on the PCR and RFLP techniques according to previously used protocols, and of the obese subjects using Real Time PCR [1, 2] Results Genotype distribution was 84 Trp64Trp and 17 Trp64Arg subjects. In the NS group we found higher AAT in Trp64Trp women than in Trp64Arg only after the intervention (2.94±0.320 vs 2.26±0.13 kg, p=0.049). Pooling NS+S we observed a tendency toward the same (2.64±0.18 vs 2.29± 0.07 kg, p=0.070). Trp64Arg NS group tended to have higher AAT after 24 weeks than S group (2.94±0.32 vs 2.33±0.15 kg, p=0.083). Regarding VAT, within NS group Trp64Trp and Trp64Arg significantly differed before and after the program (1.35±0.22 vs 0.74±0.09 kg, p=0,01 and 1.21±0.19 vs 0.51±0.08 kg, p=0,001). Pooling NS+S we found a borderline significance between Trp64Trp and Trp64Arg at baseline (1.02±0.12 vs 0.78±0.05 kg, p=0.056) and significant difference at the end (0.87±0.11 vs 0.55±0.04 kg, p=0,007). Trp64Arg women of the NS group did not improve significantly these parameters during the weight loss program in contrast to the other groups. Discussion Previous studies mentioned the importance of the Trp64Arg polymorphism of the ADRB3 gene [3,4]. Our data confirm that it has an influence on android and visceral adipose tissue and that controlled exercise combined with diet seems to be the best tool to reduce them. (Funding: DEP2008-06354-C04-01) References [1] Clement et al. 1995. N Engl J Med 333(6): 352-354. [2] Zapico et al. BMC public health, 12(1), 1100. [3] Tchernof et al. 2000. Diabetes, 49(10), 1709-1713. [4] De Luis, D. A. et al. 2008. Annals of Nutrition and Metabolism, 52(4), 267-271. Contact: barbara.szendrei@upm.es