

abdominal height (B) are greatly correlated to W/H ($r = 0.7$ and 0.55 , $P < 0.001$) which is the anthropometric parameter best correlated to VF ($r = 0.71$, $P < 0.0001$) and VF/SCF ($r = 0.57$, $P < 0.004$). LMI (lean mass index: lean mass without bone/height²) is well correlated to W/H, VF, VF/SCF (respectives $r = 0.56, 0.73, 0.67$, $P < 0.001$). However, newly suggested combined ratios A and B appear more reliable for estimation of VF ($r = 0.77$, $P < 0.0001$ for A and B) and VF/SCF (r are equivalent).

In conclusion, this preliminary study brings out the interest of the technique of DEXA for intra-abdominal visceral fat estimation in obese women.

Study of cardiovascular vagosympathetic control by spectral analysis of heart rate and blood pressure in obese patients. J Sibony-Prat, J Pariès, M Chabert, JR Attali, P Valensi (*Laboratory of Nutrition and Metabolic diseases, Jean Verdier Hospital, university Paris-Nord, av du 14 juillet, 93140 Bondy, France*).

Several clinical and experimental studies suggest an alteration of parasympathetic (PS) and sympathetic (S) control in obesity. We have recently shown that more than 40% of non diabetic obese patients have an alteration of heart rate (HR) variations from PS origin.

The aim was here to investigate PS and S cardiovascular control by using spectral analysis of HR and blood pressure (BP) variations. Sixty-two non diabetic obese patients were compared with 38 healthy controls. Sex ratio was similar in the two groups. Spectral analysis has been performed with the Anapres system. Two characteristic peaks were individualised: one of high frequency (0.20–0.25 Hz) for HR variations during a controlled breathing period which is an indicator for PS activity, the other of low frequency (around 0.10 Hz) for systolic

BP variations in the standing position which is mainly an indicator for S activity. In controls the value of the high frequency peak ($r = -0.556$, $P < 0.0001$) but not the value of the low frequency peak ($r = -0.002$) correlated negatively with age. In the obese patients both the high and low frequency peaks correlated negatively with age ($r = -0.249$, $P = 0.05$ and $r = -0.269$, $P = 0.036$ respectively) and did not correlate with BMI. In the obese patients, the high frequency peak was significantly lower than in the control group (mean \pm SD = 4.80 ± 3.37 vs 8.38 ± 4.14 , $P < 0.0001$). In the 25 obese patients over 40 years old, the low frequency peak was also significantly lower than in the controls (10.00 ± 3.10 vs 11.95 ± 4.25 , $P = 0.05$).

This study sustains the need to take age into account when interpreting cardiovascular parameters which depend on vagosympathetic control. It suggests that in obese patients vagal activity is reduced and in those over 40 years sympathetic activity is also reduced.

Characterization of HDL apolipoproteins in the goose susceptible to liver steatosis. D Hermier¹, N Sellier², D Rousselot-Pailley², P Forgez³ (¹ *Inra, 37380 Nouzilly;* ² *Inra, Artiguères, 40280 Benquet;* ³ *Inserm, Hôpital Saint-Antoine, 75012 Paris, France*).

In Palmipedes, fatty liver is an acquired hepatic steatosis induced by overfeeding of specific susceptible breeds. In the Landes goose, hepatic steatosis is accompanied by an increase in plasma HDL from 5 g/L in control to over 10 g/L [Hermier et al (1991), *Biochim Biophys Acta* 26, 331-339]. Goose HDL is the major plasma reservoir for apolipoprotein A-I (apoA-I) and apolipoprotein C-like (apoCs-like). These proteins were characterized in the goose and compared to the corresponding apolipoproteins in mammals. HDL were separated from plasma by

sequential ultracentrifugation. ApoHDLs were identified after migration in area-gel at alkaline pH and then transferred on PVDF membranes before sequencing.

Amino acid (AA) composition of goose apoA-I was very similar to that of the chicken. The N-terminal amino acid sequence homology to other avian apoA-I was 91% in the duck and 82% in the chicken. ApoCs-like were described for the first time in avian species and were named apoCa and apoCb. The partial N-terminal sequence of apoCa exhibited a 9 AA motif identical to the one found in mammalian apoC-III. Thus apoCa might be the avian equivalent of apoC-III, which is the main inhibitor of lipoprotein lipase (LPL). Goose apoCb exhibited two isoforms due to differences in the electric charge, Cb₁ and Cb₂. Cb₁ and Cb₂ had the same N-terminal AA sequence and presented no sequence similarity with any other known protein, and especially with apoC-II, which is the main LPL activator in mammals. Cb₁, Cb₂, or both isoforms were detected in 20%, 28% and 52% of the geese, respectively. Their transmission mode was consistent with two segregating alleles from a single concomitantly expressed gene.

The metabolic role of apoCs-like and of their isoforms remains to be established in the goose, especially in relation to susceptibility to liver steatosis.

Effect of the diet on lipid profile of adipose tissue in (fa/fa) obese Zucker rats. R Cantoral, MT Macarulla, MI Torres, MA De Diego, MP Portillo (*Department of Nutrition, Faculty of Pharmacy, University of País Vasco, c/ Marqués de Urquijo s/n, 01006 Vitoria, Spain*).

Genetic obesity observed in fa/fa Zucker rats induces some lipid metabolism modifications. Thus, changes in the concentra-

tion of many fatty acids have been observed in adipose tissue.

The purpose of this work was to investigate if these alterations could be corrected by using different dietary treatments. In this study two factors were considered: the reduction of the energy intake and that of the dietary fat content.

Twenty-eight male Zucker rats were divided into four groups: seven lean rats fed ad libitum (group A), seven obese rats fed ad libitum (group B), seven obese rats fed a 25% energy-restricted diet, which provided 10% of total energy from fat (group C) and seven obese rats fed a 25% energy-restricted diet, which provided 50% of energy from fat (group D). All diets were prepared by using olive oil as fat source.

After 4 weeks, animals were sacrificed by decapitation and subcutaneous adipose tissue was removed. Fatty acid concentrations were measured by gas chromatography. ANOVA test was used for statistical analysis.

Obese rats of group B showed an increase in C 14:0, C 16:0 and C 16:1 and a decrease in C 12:0, C 18:0, C 18:1, C 18:2 and C 18:3. Energy restriction did not allow to correct this fatty acid profile (no statistical difference was found between groups B and C).

In contrast, despite identical energy intake, when the diet provided a high amount of fat, some fatty acid disturbances were completely corrected and others were clearly improved.

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Effects of fatty acids on S 14 expression in murine preadipocyte cell lines. JP Grillasca¹, J Antras-Ferry², H Khiri², C Forest², J Torresani, R Planells. (¹ *U 130 and U 38 Inserm, Faculté de médecine, 27, bd J-Moulin, 13000 Marseille*; ² *Ceremod, 9, rue J-Hetzel, 92190 Meudon, France*).