

INTERRELATIONSHIP BETWEEN OSTEOCALCIN (BGP) AND ENERGETIC METABOLISM IN TWO STRAINS OF RATS.



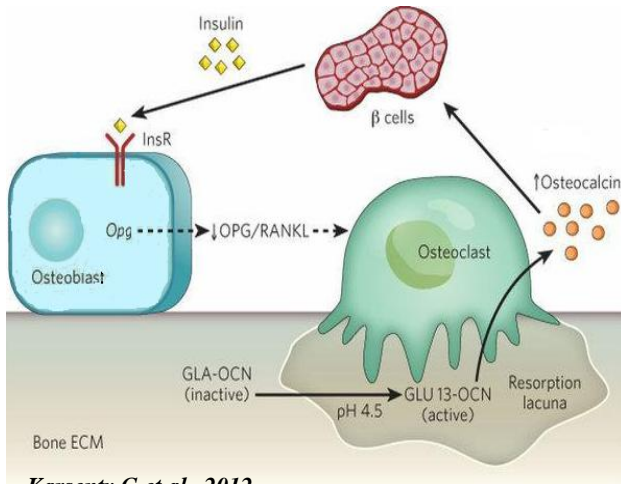
Marotte C^{1,2}, Bryk G,^{1,2} Zeni Coronel M², Lucero DM³, Schreier L³, Portela ML⁴, Zeni SN^{1,2}.

¹ Lab. Enfermedades Metabólicas Óseas, Hospital de Clínicas, Instituto de Inmunología, Genética y Metabolismo (INIGEM) CONICET- UBA; ²Cát. Bioquímica General y Bucal, Fac. de Odontología, UBA; ³Laboratorio de lípidos y lipoproteínas. Depto. Bioquímica Clínica. Facultad de Farmacia y Bioquímica, UBA. ⁴Cátedra de Nutrición y Bromatología. Facultad de Farmacia y Bioquímica, UBA. snzeni@hotmail.com



Introduction:

It has suggested that osteocalcin is inversely related to body fat. Osteocalcin appears to regulate energetic metabolism through the insulin receptor signaling pathway in the osteoblast, which affects bone resorption and osteocalcin activity. Fat tissue is an endocrine organ that secretes different hormones and growth factors; several of them affect bone remodeling and insulin secretion.



Karsenty G et al., 2012

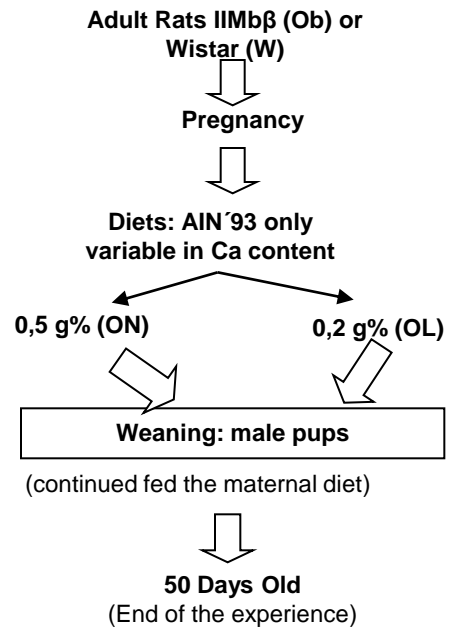
Hypothesis:

The spontaneous obese (Ob) IIMb β strain of rats that develops glucose intolerance and hypertriglyceridemia would present differences in osteocalcin levels and resorption process as compared to Wistar rats .

Objective:

The present report comparatively studied total osteocalcin levels, glucose homeostasis and body fat mass in spontaneous obese (OB) strain and Wistar (W) rats.

Experimental design

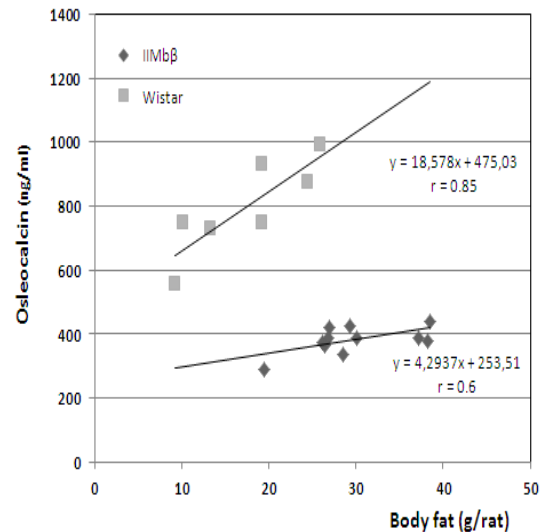
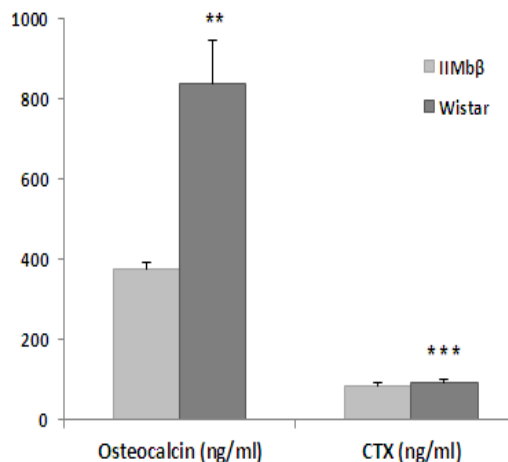
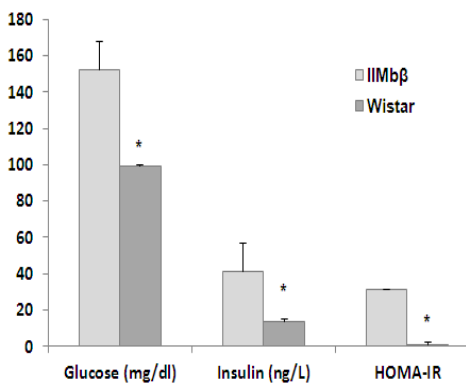
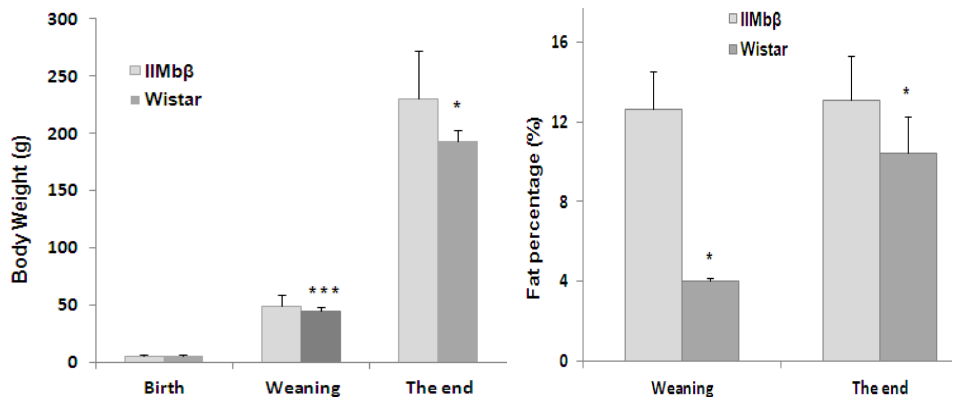


Materials and Methods

Food and deionizer water were supplied "ad libitum". Food consumption and BW were recorded 3 times/week. At the end of the experience body composition (AOAC methods), bone mineral content (DXA) and specific bone turnover markers: bone alkaline phosphatase (bAP), osteocalcin (ELISA) and C-telopeptide of type 1 collagen (CTX) (ELISA) were determined.

Results

	IIMb β	Wistar
Fat absorption (mg/d)	1.72 \pm 0.60	1.00 \pm 0.18*
Fat absorption (%)	97.5 \pm 0.5	99.3 \pm 1.0
Liver weight (g)	12.3 \pm 2.6	7.9 \pm 0.5*
Perigonadal+Retropertitoneal fat weight (%)	4.36 \pm 0.48	1.30 \pm 0.41**
Cholesterol levels (mg/dl)	98.4 \pm 4.9	48.4 \pm 6.3**
non-HDLCholesterol (mg/dl)	85.0 \pm 4.4	32.0 \pm 3.8**
Triglycerides (mg/dl)	225 \pm 34	89 \pm 10**
25OHD (ng/dl)	19.0 \pm 5.4	15.4 \pm 2.8



(*) $p < 0.01$; (**) $p < 0.001$ and (***) $p < 0.05$ Ob vs. W group

CONCLUSION:

The results confirmed that there was an inverse relationship between levels of osteocalcin and body fat content. The concomitant reduction in bone resorption of OB rats, may suggest a decrease in the biological active osteocalcin that could be the responsible of the observed increment in fasting glucose levels and insulin resistance. The study was partially supported by UBACyT 20020100100320 and CONICET