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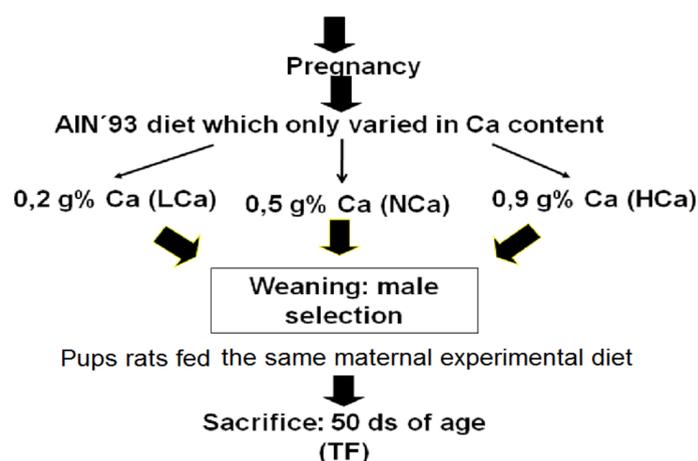
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Introduction: According to literature, bone, fat mass and pancreas are interrelated through osteocalcin (BGP), bone resorption, insulin and leptin levels. Ca intake might affect these interrelationships by inducing changes in bone resorption. Obesity could also affect bone and pancreas interrelationship through the effect of, leptin in the osteoblastic insulin receptor or in sequestering vitamin D in fat pad.

Objective: to evaluate changes in these interrelationship by feeding a low, normal or high Ca diet (LCa NCa and HCa, respectively), in growing genetically predisposed obese IIMb/β (O) rats

Materials and methods:

Experimental design:



Animals and experimental design:

Genetically

Predisposed obese IIMb/β (O) rats (200-250 g body weight)

- Baseline (To): Obese rats were mated and divided in 3 groups fed the AIN93 diet that only varied in Ca content (LCa, NCa, HCa):

- Pregnancy and lactation continued with the same experimental diet

- Weaning: male pup (40-45 g BW). They continued feeding the same maternal experimental diet "ad libitum", until 50 days of age.

Determinations:

Food consumption, intake efficiency and body weight (BW): 3 times/week.

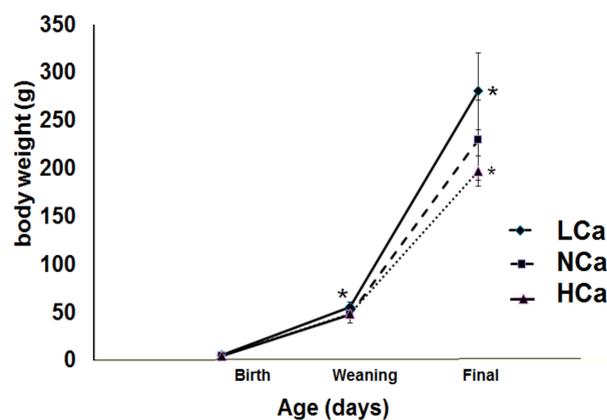
At the end of the study:

Serum Ca, phosphorus (P), BGP, CTX, 25OHD, glucose and insulin;

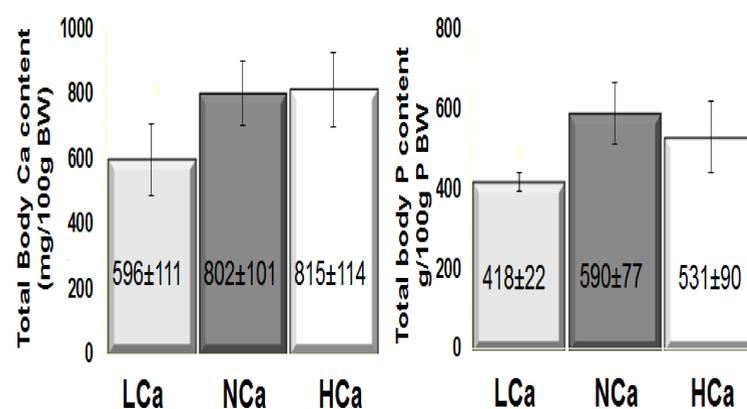
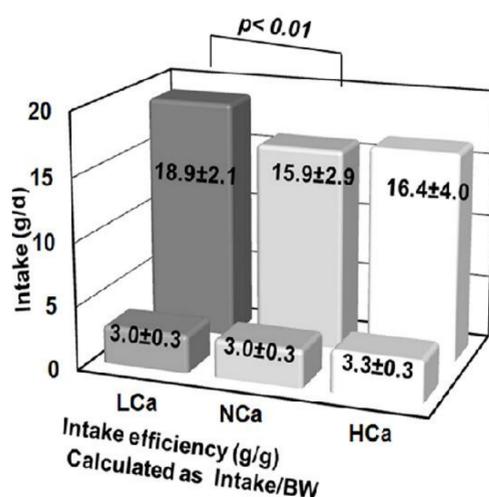
Ca absorption percentage, total body of Ca, P and Ca/P ratio;

Liver weight, fat absorption, total body fat, adipose perigonadal and retroperitoneal percentage (PG+RP%) pads

Results:



(*): $p < 0.01$ compared to ONCa



	LCa	NCa	HCa
Fat intake (mg/d)	1745.6±194.9	1765.3±615.9	1720.0±121.2
Fat in heces (mg/d)	30.3±11.1	37.5±8.4	54.2±13.1*
Fat absorption (%)	97.6±0.6	97.5±0.5	96.4±0.9
Liver weight (g)	15.6±0.7*	12.3±2.6	10.2±1.2
Perigonadal+Retroperitoneal Fat percentage (%)	5.34±0.24*	4.36±0.48	3.77±0.46*

	LCa	NCa	HCa
Ca Absorption %	91.3±8.7*	87.7±1.3	64.0±6.0*
Total Body Ca (mg)	1656.0±119.0*	1818.0±298.0	1639.0±266.0*
Total Body P (mg)	1281.0±359.0*	1457.0±309.0	1068.0±274.0*
Body Ca/P ratio	1.36±0.04	1.36±0.03	1.54±0.05*
Total skeleton BMC (g/100g BW)	0.84±0.2*	1.44±0.3	1.27±0.3*
Total skeleton BMD (mg/cm ²)	222.3±9.0*	234.6±7.2	232.6±4.4
Proximal tibia BMD (mg/cm ²)	203.0±13.0*	210.0±16.0	200.2±10.2*

	LCa	NCa	HCa
Glucose (mg/dl)	252±49*	152±69	112±62*
Insuline (ng/dl)	6.9±3.2*	4.1±1.6	1.9±1.3*
HOMA-IR	81.5±46.3*	31.0±22.5	9.6±6.1*

(*): $p < 0.01$ compared to NCa

	LCa	NCa	HCa
sCa (mg/dl)	10.4±0.5	10.3±0.6	10.6±0.7
sP (mg/dl)	11.9±1.4	10.5±1.3	10.9±0.8
BALP (IU/L)	188.0±27.0	173.0±33.0	208.0±30.0*
BGP (ng/ml)	514.0±60.0*	375.0±46.0*	739.3±190.7*
sCTX (ng/ml)	70.0±4.0*	83.0±7.0*	69.0±13.0*
25OHD (ng/ml)	24.8±4.8*	19.0±5.4*	20.5±2.3

Conclusion: The interrelationships between bone, fat mass and pancreas was not only modified by Ca intake but also by the dietary Ca/P ratio, in genetically predisposed obese IIMb/β rats .