

UNIVERSIDAD SEK CHILE

Legumbres: fuente de salud





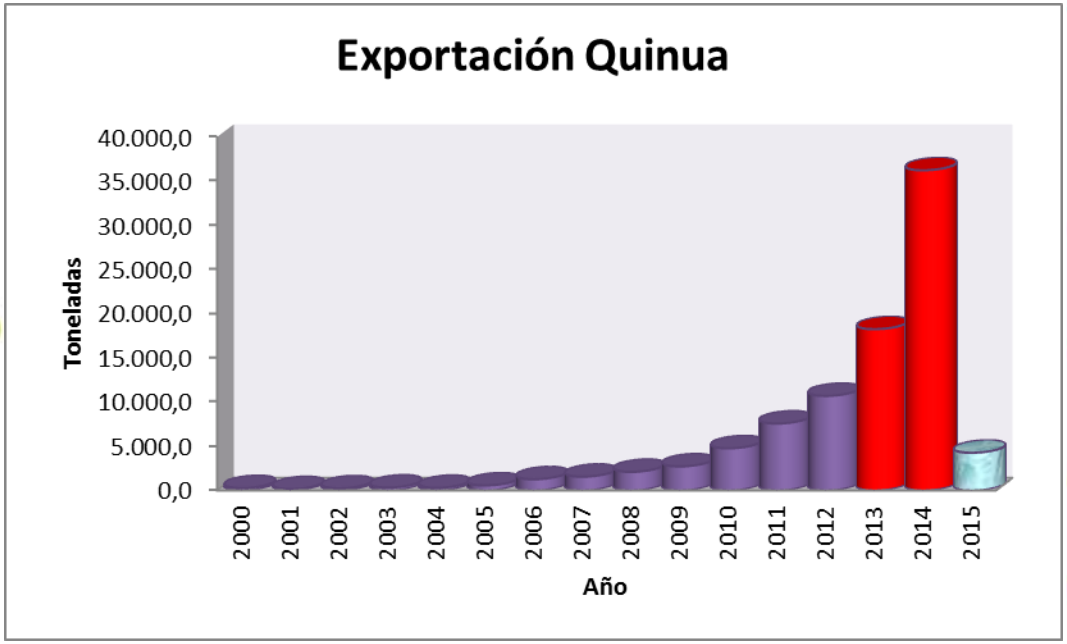
Dr. Pedro L Prieto-Hontoria

Lima, 22 Septiembre de 2015

sierra exportadora

Reflexión necesaria del pasado…

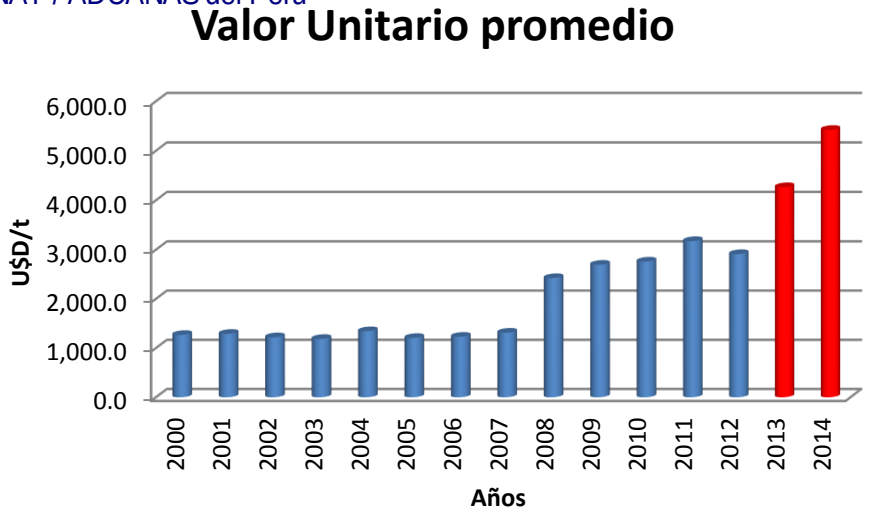
Quinua
2013 Año Internacional
Un futuro sembrado hace miles de años



2016
AÑO INTERNACIONAL
DE LAS LEGUMBRES

+120 años
Educando personas

SUNAT / ADUANAS del Perú



¿Qué opininamos realmente?













Legumbres Perlas de SALUD

- Hidratos de Carbono (IG bajo→Diabetes)
- Fuente de Hierro no hemo
- Fuente de proteína (Imp. vegetarianos)
- Alimento ideal para desnutrición
- Vitaminas del grupo B→ Niacina o B3, tiamina, piridoxina, riboflavina, acído fólico o B9 (buen funcionamiento SN), B1
- Vitamina C (antioxidante) y vitamina A (Piel, ojos)
- Calcio (soya-Intolerantes), Fósforo (Formación de huesos y SN) y Magnesio (formación de huesos), Zn y K
- Fibra (<Colesterol y control glucemia)

Combinación "inteligente" de proteinas

- Lograr Mismo perfil de aa esenciales que alimentos de origen animal. Menor ingesta de grasa saturada y colesterol
- Legumbres déficit (metionina y cisteína), el arroz (lisina e isoleucina)
- **Legumbres + cereales integrales:** lentejas/frijol con arroz, alubias con pasta o mandioca, cuscús con garbanzos y verduras, garbanzos con trigo, espaguetis con guisantes
- **Legumbres + frutos secos y semillas:** garbanzos con piñones, ensalada de lentejas con nueces, humus o paté de garbanzos (garbanzos triturados con semillas de sésamo y especias).
- **Cereales integrales + lácteos vegetales:** arroz o avena con batido de soja

¿Cómo evitar el exceso de gases?

- **Romper el hervor** mientras se están cociendo las legumbres

  → Abuelas llamaban "asustar a las lentejas”

- Tomar las legumbres **en puré** o pasadas por el chino

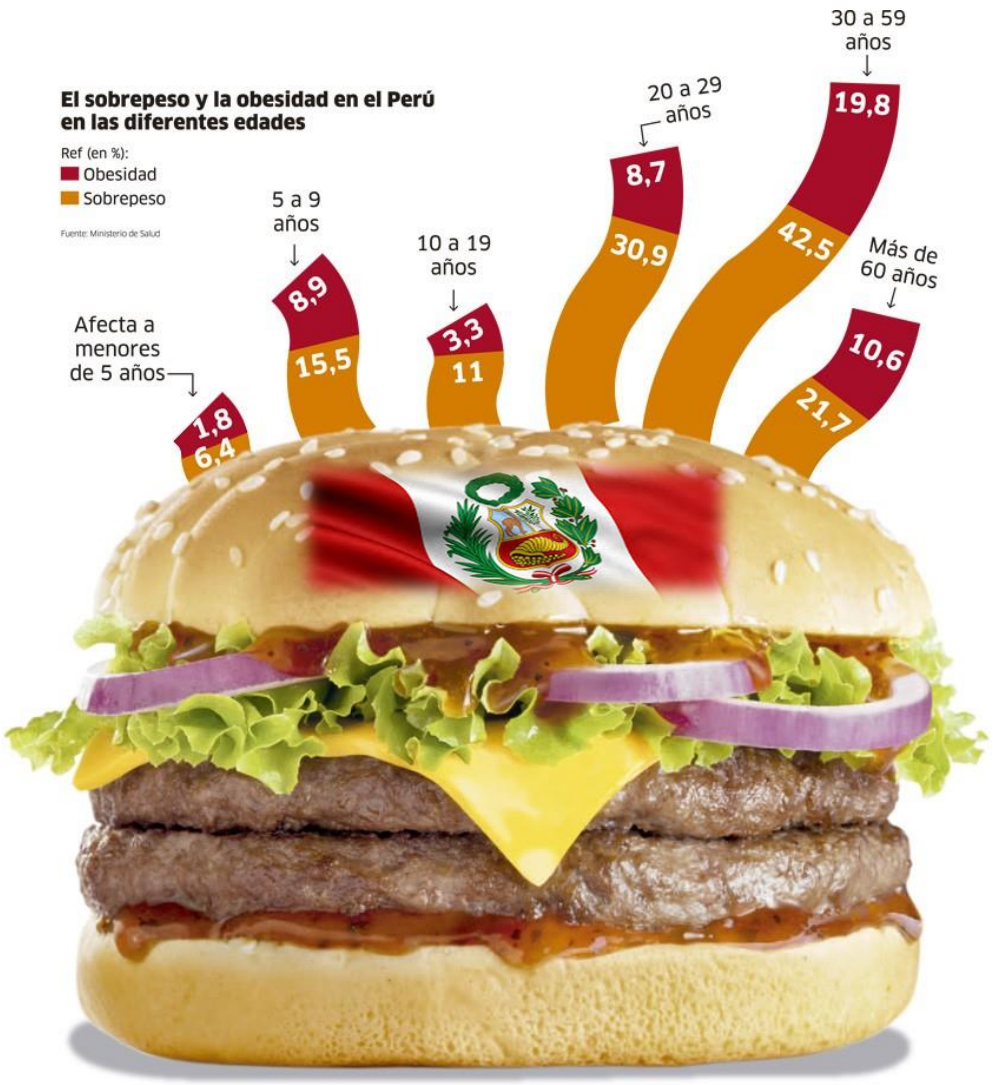
- Añadir durante la cocción **condimentos carminativos** como comino, anís, romero, tomillo o hinojo, entre otros

- Terminar la comida con una **infusión digestiva**.

- **Masticar bien** los alimentos y comer **y beber despacio**.

Problema de Salud Pública SXXI

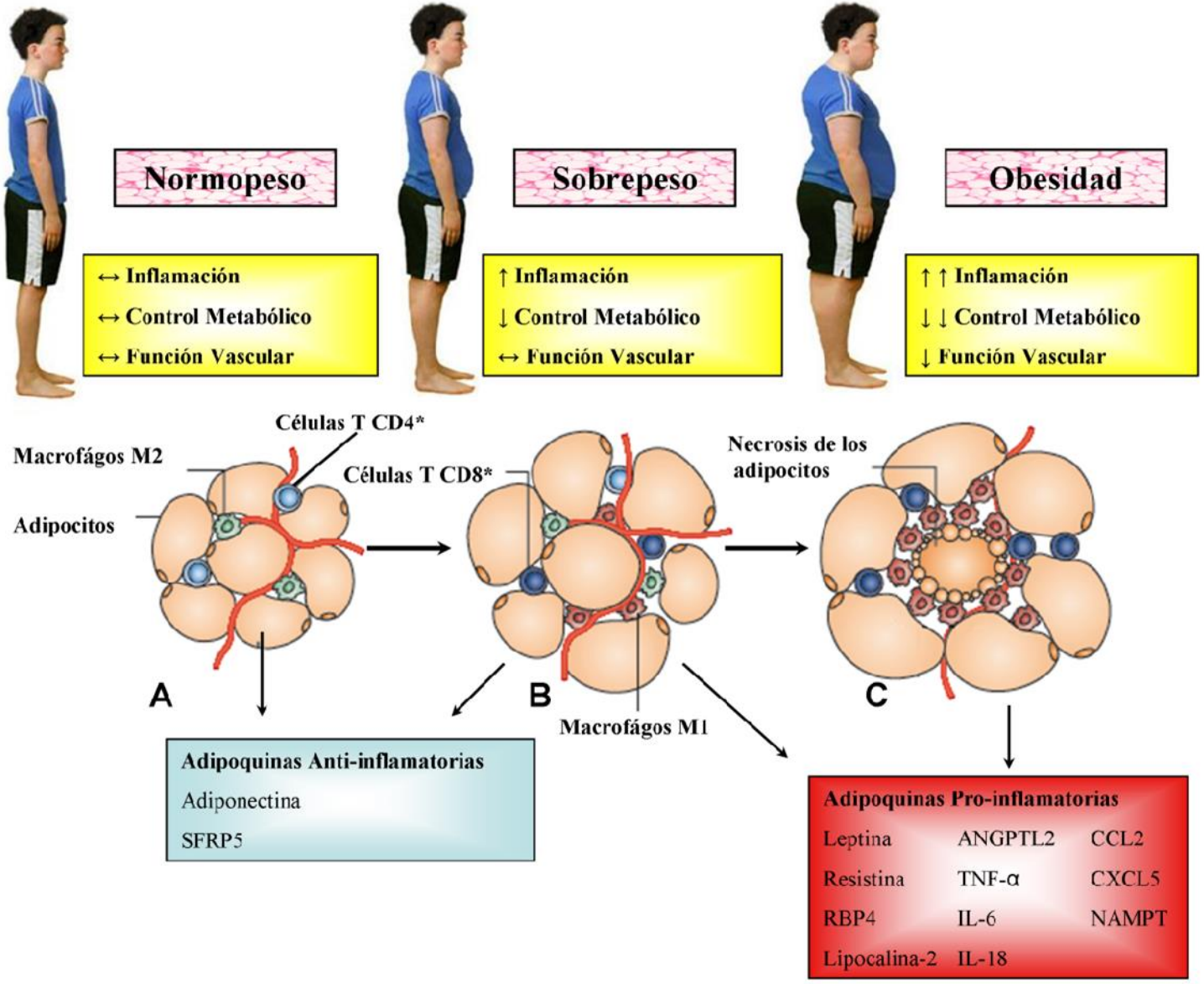




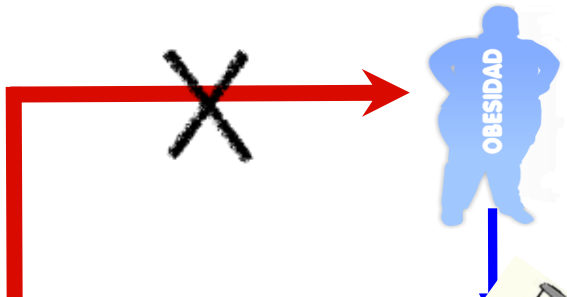
+120 años

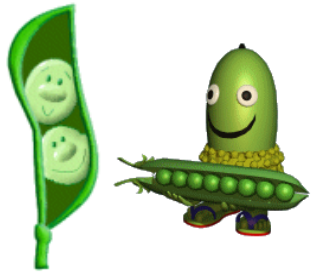
Educando personas

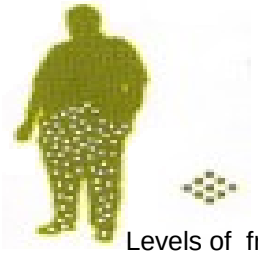
Obesidad e Inflamación



Obesidad, Inflamación y Estrés Oxidativo







Levels of free radicals

ROS

Antioxidantes

Estrés Oxidativo

Inflamación

Resistencia a la Insulina

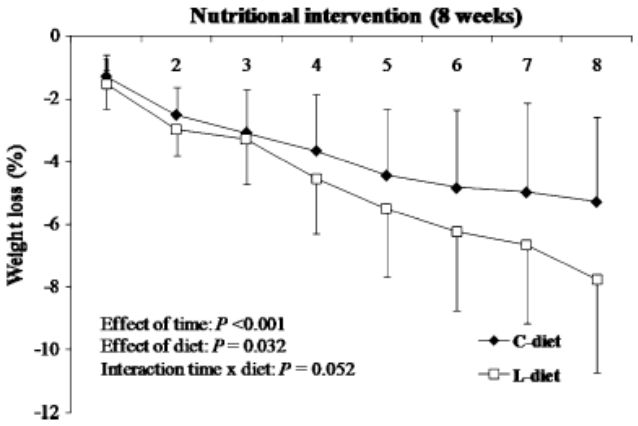
Hiperlipidemia

Diabetes

Ateroesclerosis

Complicaciones de la Obesidad

Legumbres antiobesidad y antiinflamatorias



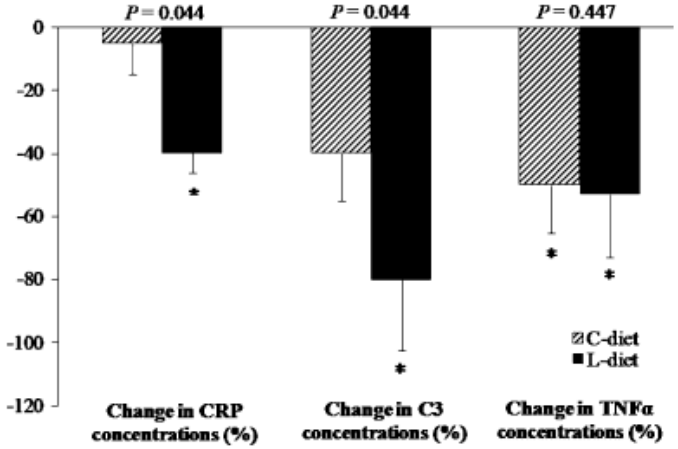


Fig. 1 Time-course in the weight loss change (%) during the 8-week nutritional intervention induced by control and legume-based diets

Table 1 Change in anthropometrical, clinical, and metabolic variables after 8 weeks following calorie-restricted diets (C-diet vs. L-diet)

Characteristics	Control diet (n = 15)		Legume diet (n = 15)		p-value between baselines[c]	p-value between endpoints[c]	p-value between changes[c]
	Baseline	Endpoint	Baseline	Endpoint			
Men/Women (n)	9/6		8/7				
BMI (kg/m^2)	31.3 ± 4.0 (29.1; 33.8)	29.4 ± 4.1[a] (27.3; 32.1)	33.7 ± 4.7 (30.5;35.5)	31.7 ± 3.9[a] (28.1;32.7)	0.634	0.942	*0.014*
WC (cm)	100.5 ± 9.9 (95.5; 107)	92.9 ± 10.1[a] (89; 100)	100.7 ± 9.9 (95;106)	95.0 ± 9.4[a] (88;99.2)	0.641	0.649	0.942
Body fat (%)	30.4 ± 8.2 (25.7; 36.0)	28.5 ± 6.6 (25.4; 34.0)	35.2 ± 9.4 (29.5;40.3)	33.5 ± 10 (28.2;38.7)	0.556	0.553	0.864
Systolic BP (mmHg)	115 ± 9 (110;121)	111 ± 12 (105; 119)	115 ± 13 (110;122)	106 ± 10[a] (101;111)	0.635	0.193	*0.043*
Diastolic BP (mmHg)	76 ± 9 (71; 82)	72 ± 10[b] (67; 77)	76 ± 6 (72;79)	70 ± 6[a] (66;73)	0.999	0.444	0.377
Glucose (mg/dl)	92.4 ± 9.6 (88.2; 99.9)	89.7 ± 6.7 (87.5; 94.4)	93.2 ± 5.7 (91.1;99.8)	92.4 ± 5.3 (89.9;96.3)	0.617	0.298	0.727
Insulin (μIU/ml)	10.5 ± 10 (4.9; 18.3)	8.2 ± 4.3 (6.0; 11.3)	7.5 ± 3.8 (5.4;9.6)	5.9 ± 4.0 (3.7;8.2)	0.312	0.163	0.752
HOMA-IR	2.1 ± 1.7 (1.0–4.6)	1.6 ± 1.0 (1.3–2.5)	1.8 ± 0.9 (1.2–2.3)	1.6 ± 0.9 (0.8–1.9)	0.341	0.200	0.643
TC (mg/dl)	181 ± 35 (161–205)	173 ± 30 (152–192)	215 ± 27 (195–236)	182 ± 27[a] (167–197)	0.088	0.408	*0.005*
HDL-c (mg/dl)	58 ± 10 (45–56)	49 ± 12 (40–54)	49 ± 10 (44–58)	44 ± 7[b] (40–50)	0.093	0.417	0.244
LDL-c (mg/dl)	128 ± 23 (95–133)	120 ± 20 (89–122)	142.2 ± 41 (125–165)	121 ± 28[a] (104–132)	0.441	0.445	*0.010*
Triglycerides (mg/dl)	104 ± 28 (80–111)	104 ± 51 (70–123)	99 ± 38 (78–118)	97 ± 37 (74–114)	0.513	0.795	0.756

Data are mean ± standard deviation (95% confidence interval). Values in italics are statistically significant

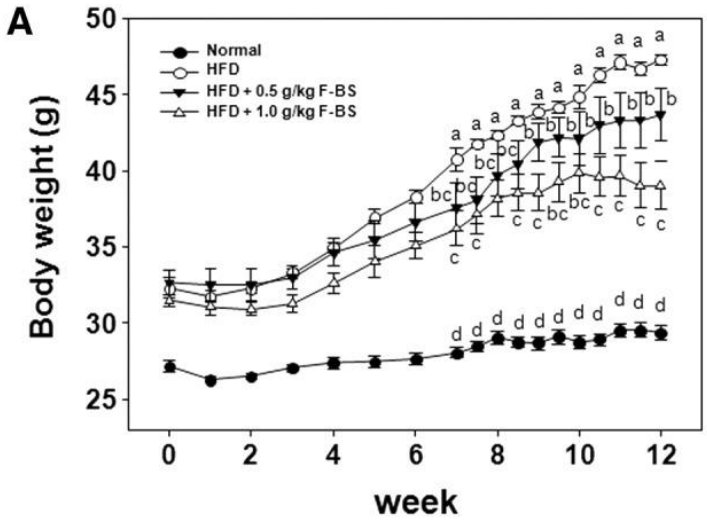
[a] $p < 0.01$; [b] $p < 0.05$ from paired t-test or for Wilcoxon signed rank test (triglycerides), as statistical significance within group differences (baseline vs. endpoint)

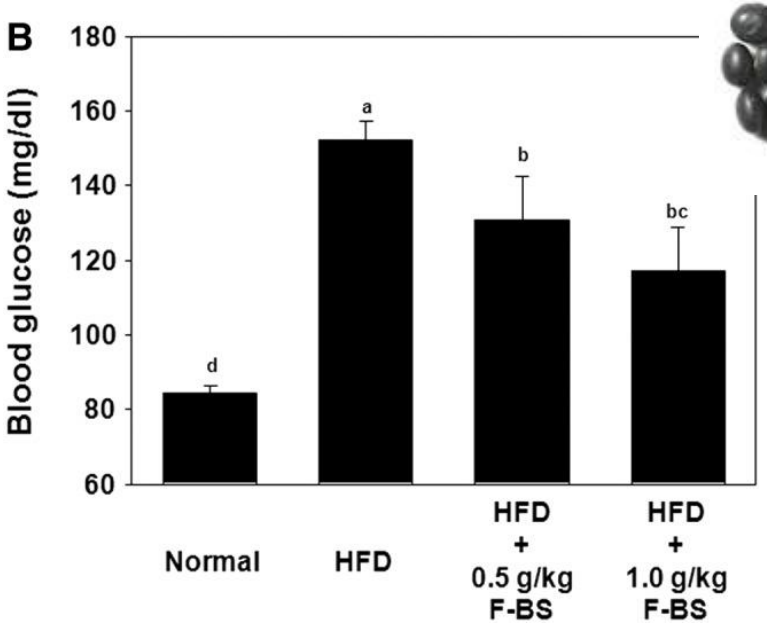
[c] p-value from Student's t-test or Mann–Whitney U-test (triglycerides), as statistical significance between diet differences (C-diet vs. L-diet)

BP blood pressure; *BMI* body mass index; *HDL-c* high-density lipoprotein; *HOMA-IR* homeostatic model of assessment of insulin resistance; *LDL-c* low-density lipoprotein; *TC* total cholesterol; *WC* waist circumference

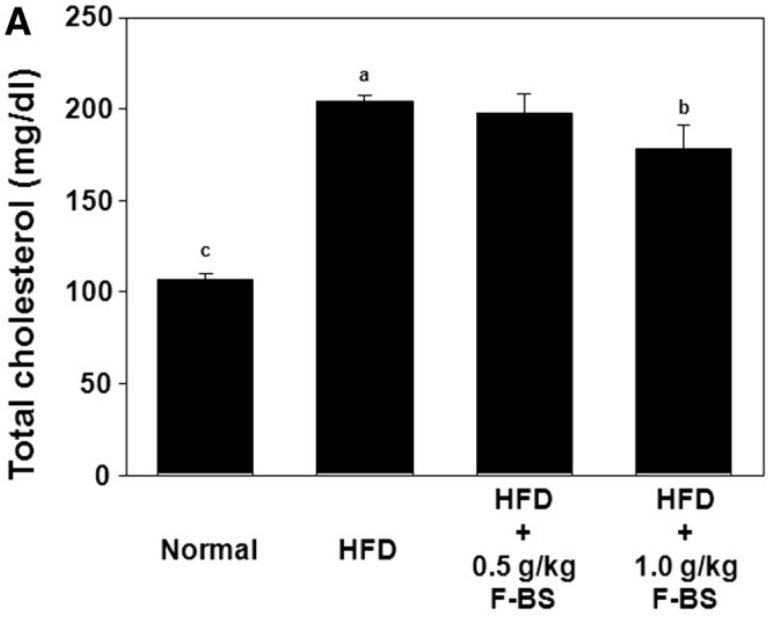
Hermsdorff HM et al., Eur J Nutr (2011) 50:61–69

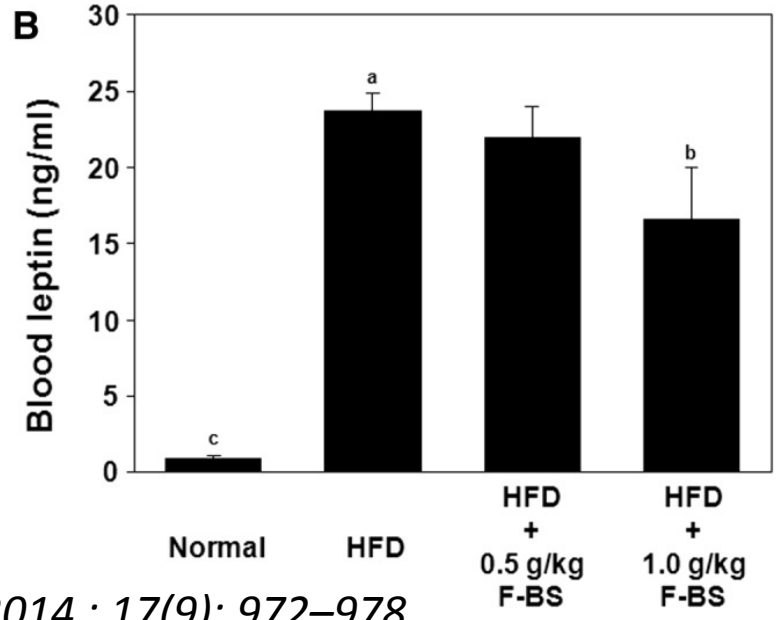
Antiobesidad











OH HG et al., J Med Food. 2014 ; 17(9): 972–978.

Efectos de Legumbres en funciones metabólicas

Variables†	Intervention					
	HDEL			HDWL (change percent)		
	$P_{T2, T1}$	$P_{T3, T2}$	$P_{T3, T1}$	$P_{T2, T1}$	$P_{T3, T2}$	$P_{T3, T1}$
WC (cm)	0.000↓ (3.1±0.5)	0.003↓ (1.5±0.4)	0.000↓ (4.6±0.5)	0.000↓ (4.3±0.8)	0.002↓ (1.6±0.4)	0.000↓ (5.9±0.9)
SBP (mmHg)	0.06↓ (4±9)		0.009↓ (8±11)		0.000↓ (3.1±0.5)	
DBP (mmHg)					0.017↑ (5±1.7)	
FBS (mg/dl)					0.03↑ (3±2.3)	
TG (mg/dl)		0.009↓ (9±13)	0.05↓ (12±17)		0.01↑ (22±8)	
HDL-C (mg/dl)						
Insulin (µIU/ml)	0.039↑ (31±49)			0.03↑ (39±15.6)		
HOMA-IR	0.002↑ (35±41)	0.031↓ (29±76)		0.049↑ (38±16)		
AST (U/l)		0.000↓ (30±26)				
ALT (U/l)		0.038↓ (46±73)				

Values are means±SD. HDEL=Hypocaloric diet enriched in legumes, T1=Before intervention, T2=Three weeks after the start of the intervention, T3=Six weeks after the start of the intervention, WC=Waist circumference, SBP=Systolic blood pressure, DBP=Diastolic blood pressure, FBS=Fasting blood sugar, TG=Triglyceride, HDL=High density lipoprotein, HOMA-IR=Homeostasis model of insulin resistance, AST=Aspartate aminotransferase, ALT=Alanine aminotransferase, HDWL=Hypocaloric diet without legumes, SD=Standard deviation, ↑=Increase of variable value, ↓=Decrease of variable value. †Paired *t* test was used for HDL-C in the rest of variables Wilcoxon was used for data analysis

Alizadeh M et al., Int J Prev Med. 2014; 5(6): 710–720.

Legumbres Antiinflamatorias

3

	Legume-free TLC diet		Non-soya legume-based TLC diet		P (between the two intervention diets)
	Mean	SE	Mean	SE	
n	31		31		
hs-CRP (mg/l)					
Baseline	3·9	1·2	4·0	1·2	0·94
End of the trial	2·9*	0·9	2·2*	0·83	0·03
Change	−1·3	1·1	−1·7	1·2	0·01
IL-6 (pg/ml)					
Baseline	14·8	1·2	14·8	1·2	0·66
End of the trial	11·0*	1·2	8·2**	1·2	0·03
Change	−1·2	1·0	−1·6	1·1	0·01
TNF-α (pg/ml)					
Baseline	8·1	1·1	8·1	1·1	0·665
End of the trial	6·3*	1·1	4·8**	1·1	0·038
Change	−1·3	1·1	−1·8	1·1	0·018
Weight (kg)					
Baseline	74·5	1·4	74·1	1·4	0·649
End of the trial	74·6	1·3	73·7	1·3	0·152
Change	0·08	0·2	−0·3	0·9	0·66

TLC, therapeutic lifestyle changes; hs-CRP, high-sensitivity C-reactive protein.
Mean value was significantly different from that at baseline: * $P<0.05$, ** $P<0.001$ (paired Student's *t* test).
† The control diet was the legume-free TLC diet. The non-soya legume-based TLC diet was the same as the control diet, except that two servings of red meat were replaced with different cooked legumes such as lentils, chickpeas, peas and beans over a period of 3 d per week. End point and baseline treatment values were used to calculate the change in each variable.

Hosseinpour-Niazi S et al. British Journal of Nutrition (2015), 114, 213–219

Table II. Changes in body weight, plasma total cholesterol and oxidative markers in respo hypocaloric diets with and without legumes content.

	Control diet ($n = 15$)		
	Baseline	Endpoint	*p*-value
Body weight (kg)	92.5 ± 13.2	87.7 ± 13.0	<0.001
Total cholesterol (mg/dl)	181 ± 35	173 ± 32	0.140
Oxidized LDL (U/l)	109 ± 56	121 ± 67	0.260
MDA (μM)	1.83 ± 0.76	1.70 ± 0.89	0.148
8-Isoprostane $F_{2\alpha}$ (ng/mg creatinine)	0.58 ± 0.31	0.41 ± 0.34	0.073
AOP (mM)	0.53 ± 0.10	0.50 ± 0.09	0.226

4

Legume-based diet ($n = 15$)		
Baseline	Endpoint	*p*-value
94.4 ± 16.1	87.0 ± 14.7	<0.001
215 ± 37	182 ± 27	<0.001
121 ± 78	99 ± 46	0.091
2.46 ± 0.54	2.14 ± 0.64	0.015
0.76 ± 0.48	0.47 ± 0.44	0.035
0.50 ± 0.11	0.50 ± 0.08	0.993

Crujeiras AB et al. Free Radical Research, 2007; 41(4): 498–506

Sustitución de carne roja por legumbres

Table 2. Means of cardiometabolic factors at baseline and after 8 weeks of intervention in type 2 diabetic patients[a]

	Control diet[b]	Legume-based TLC diet[c]	P[c]
n	31	31	
BMI (kg/m²)			
Baseline	27.8 ± 0.6	27.7 ± 0.6	0.51
End of trial	27.9 ± 0.6	27.2 ± 0.6	0.01
Change	0.06 ± 0.4	−0.4 ± 1.7	0.18
Waist circumference (cm)			
Baseline	98.5 ± 1.6	97.1 ± 2.5	0.10
End of trial	97.1 ± 1.4	95.2 ± 2.8	0.37
Change	−1.3 ± 2.9	−3.5 ± 1.8	0.33
SBP (mm Hg)			
Baseline	13.6 ± 0.4	12.5 ± 0.2	0.51
End of trial	13.2 ± 0.3	12.0 ± 0.3	0.01
Change	−0.4 ± 0.3	−0.4 ± 0.3	0.90
DBP (mm Hg)			
Baseline	8.1 ± 0.3	7.8 ± 0.1	0.32
End of trial	7.7 ± 0.2	7.5 ± 0.3	0.65
Change	−0.4 ± 0.3	−0.4 ± 0.3	0.69
FBG (mg/dl)			
Baseline	147.6 ± 9.6	143.3 ± 10.0	0.14
End of trial	128.1 ± 8.9[d]	114.5 ± 7.3[d]	0.001
Change	−19.5 ± 5.5	−28.7 ± 6.7	< 0.001
Fasting insulin (μlU/ml)			
Baseline	7.5 ± 0.7	8.1 ± 0.6	0.426
End of trial	6.0 ± 0.5[d]	4.5 ± 0.3[d]	0.011
Change	−1.5 ± 0.5	−3.5 ± 0.4	0.006
TG (mg/dl)			
Baseline	144.0 ± 10.5	151.0 ± 9.9	0.28
End of trial	124.5 ± 10.5[d]	122.6 ± 10.6[d]	0.03
Change	−19.5 ± 6.4	−38.5 ± 6.6	0.02
HDL-C (mg/dl)			
Baseline	48.6 ± 2.7	47.3 ± 2.4	0.34
End of trial	46.9 ± 2.6	48.0 ± 2.6	0.44
Change	−1.7 ± 1.3	0.64 ± 1.2	0.29
LDL-C (mg/dl)			
Baseline	97.8 ± 5.4	100.1 ± 5.6	0.39
End of trial	89.1 ± 5.2[d]	79.4 ± 5.0[d]	0.04
Change	−8.7 ± 2.7	−15.6 ± 5.1	0.02
Total cholesterol (mg/dl)			
Baseline	179.2 ± 6.6	174.4 ± 7.2	0.41
End of trial	161.5 ± 7.0[d]	156.1 ± 6.3[d]	0.50
Change	−17.7 ± 4.9	−18.3 ± 5.4	0.51

S Hosseinpour-Niazi et al., European Journal of Clinical Nutrition ***(2015)*** *69,* ***592–597;***

Te atreves a un viaje INNOVADOR… Mas allá del plato de legumbres….



Nutrir con Innovación Alimentaria











SanyGran
A la vanguardia
en alimentación



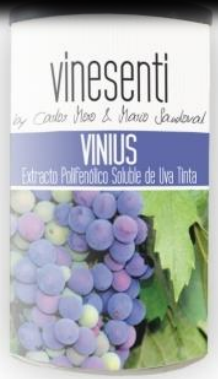


Nutrir con Innovación Alimentaria

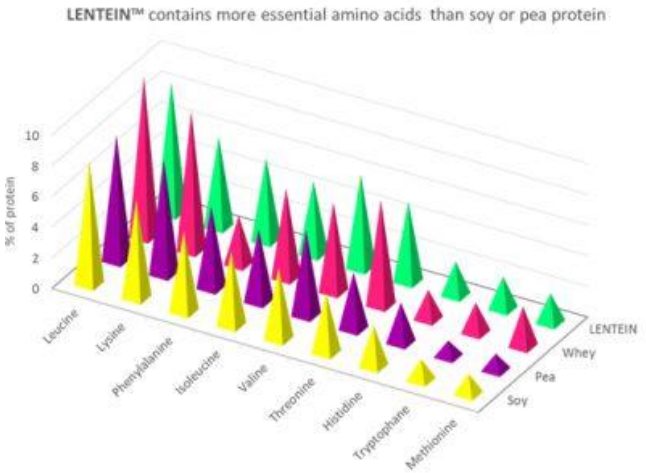


















Nutrir con Innovación Alimentaria













+120 años

Educando personas

Nutrir con Innovación Alimentaria

















Nuevo contexto para la industria

SOCIEDAD

Desarrollan un nuevo tipo de guisante que facilita la digestión de proteínas

ABC / MADRID | Día 24/08/2015 - 18.07h

▸ El hallazgo de esta nueva legumbre tiene grandes apluicaciones en la alimantación y en la fabricación de piensos

Publicidad
VOLVIÓ SUPER 7

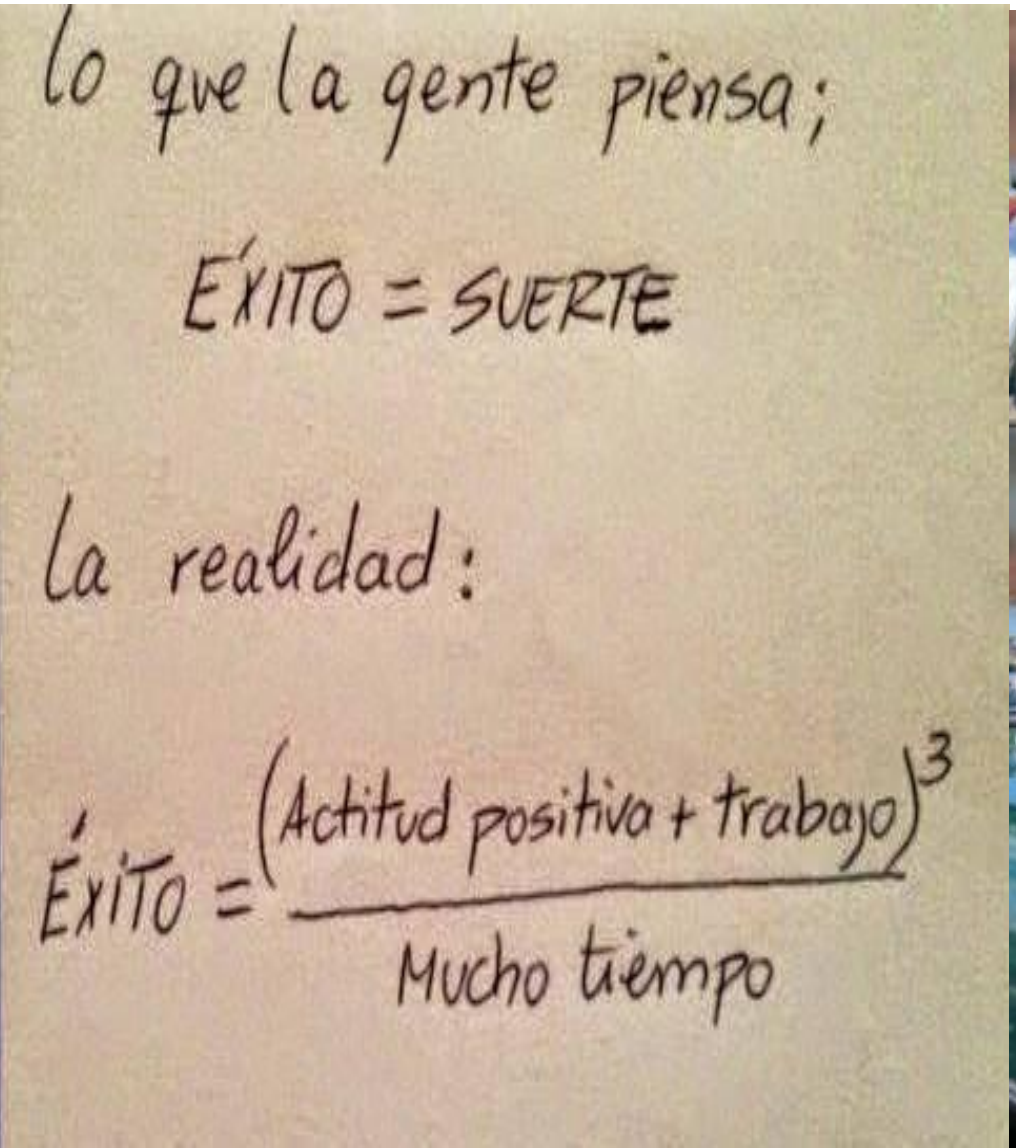


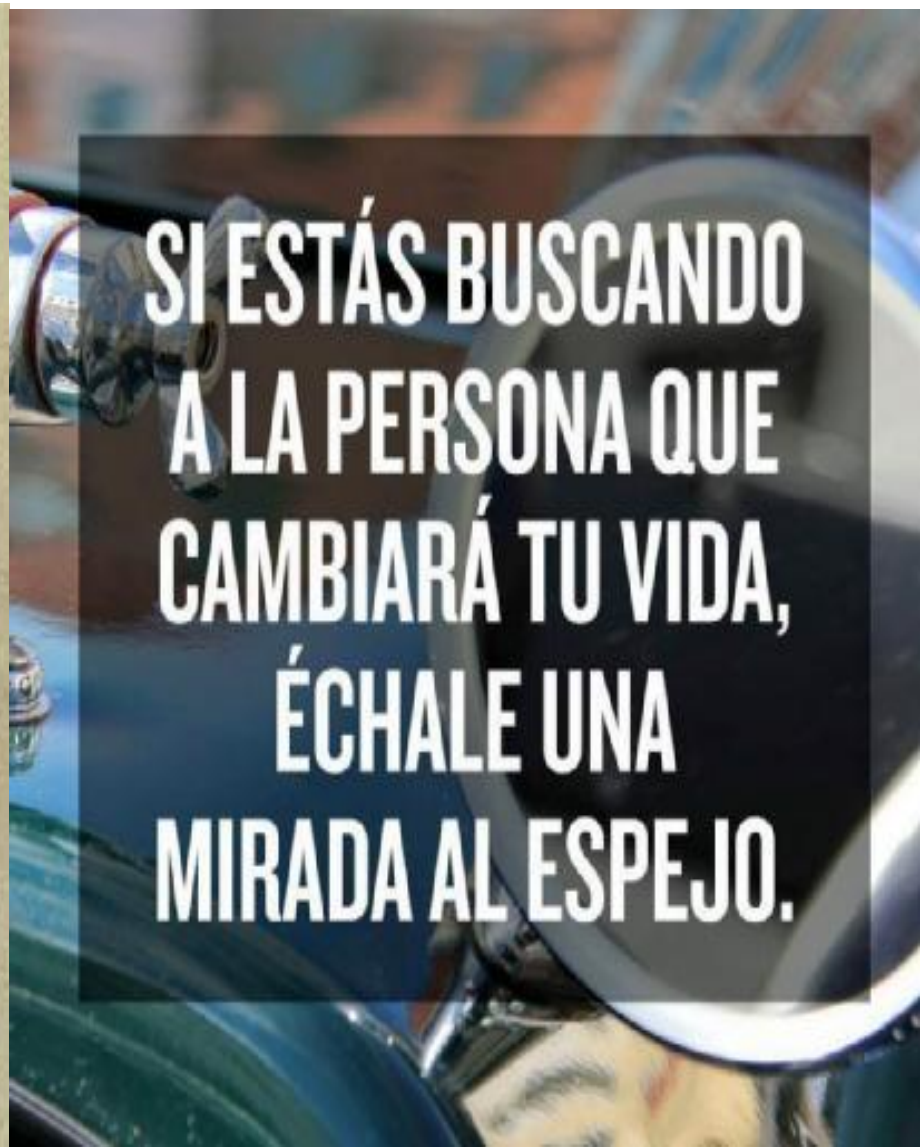
Vegan®

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Educando personas

Take-Home Message





gracias





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Legumbres: fuente de salud





drprietohontoria@gmail.com

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