

BENEFICIOS EN LA SALUD POR EL CONSUMO DE HARINA DE GRILLO

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NUTRIENTES



MACRONUTRIENTES

CARBOHIDRATOS

PROTEÍNA

LÍPIDOS



MICRONUTRIENTES

VITAMINAS

MINERALES

FIBRA

NUTRIENTES en HARINA DE GRILLO

¡CONDICIONAL!



MACRONUTRIENTES

CARBOHIDRATOS

PROTEÍNA (Aa esenciales)

LÍPIDOS → Poliinsaturados



MICRONUTRIENTES

VITAMINAS → B12

MINERALES → Zn, Fe, Ca

FIBRA --> Cereales integrales

ANÁLISIS NUTRICIONAL

HARINA DE GRILLO



¡TRIPTOFANO!

PARÁMETRO	CANTIDAD (G/100G)
PROTEÍNA	61,45
CARBOHIDRATO	6,74
LÍPIDOS	16,85
VALOR ENERGÉTICO	424 (Kcal/100g)

POLIINSATURADOS

ANÁLISIS NUTRICIONAL

“BACON”



PARÁMETRO	CANTIDAD (g/100g)
PROTEÍNA	5,02
CARBOHIDRATOS	0,8
LÍPIDOS	19
VALOR ENERGÉTICO	201,5 (Kcal/100g)



COMPARATIVAS

- TERNERA
- POLLO
- BACON

COMPARATIVA - TERNERA

PARÁMETRO	Ternera (g/100g)	Harina (g/100g)
PROTEÍNA	29	61,45
CARBOHIDRATOS	0	6,74
LÍPIDOS	3	16,85
VALOR ENERGÉTICO	110 (Kcal/100 g)	424 (Kcal/100 g)

COMPARATIVA - POLLO

PARÁMETRO	Pollo (g/100g)	Harina (g/100g)
PROTEÍNA	23	61,45
CARBOHIDRATOS	0	6,74
LÍPIDOS	1,2	16,85
VALOR ENERGÉTICO	105 (Kcal/100 g)	424 (Kcal/100 g)

PARÁMETRO	Bacon (g/100g)	"Bacon" (g/100g)
PROTEÍNA	8,7	5,02
CARBOHIDRATOS	0,9	0,8
LÍPIDOS	57,5	19
VALOR ENERGÉTICO	546 (Kcal/100g)	201,5 (Kcal/100g)

COMPARATIVA - BACON



BENEFICIOS POTENCIALES

- GASTROINTESTINALES
 - Quitinas, AG-cadena corta, AG-cadena media, glucosaminoglucanos
 - Acción prebiótica → *FIBRA*
- ANTIOXIDANTE Y ANTIINFLAMATORIO
 - TNF alfa --> Artritis Reumatoide
- GANANCIA DE MASA MUSCULAR
 - Ancianos + ENTRENAMIENTO DE FUERZA
- SALUD CARDIOVASCULAR
 - Perfil lipídico → **PUFA**

BENEFICIOS POTENCIALES

Source	Model	Dose	Effects	Reference
Gb glycosaminoglycan (GbG) extracted from <i>Gryllus bimaculatus</i> (field cricket)	Freund's adjuvant (CFA)-treated male SD rats (a paw edema model) were fed a GbG-containing diet for 14 days.	2 and 10 mg/kg GbG treatment given in phosphate buffered saline	GbG treatment inhibited C-reactive protein (CRP) and rheumatoid factor, and suppressed a number of inflammatory biomarkers.	Ahn et al. 2014
GbG extracted from <i>Gryllus bimaculatus</i> (field cricket)	14-week-old male Wistar rats were fed a high-fat diet with GbG supplements for 1 month.	5 mg/kg GbG treatment and 10 mg/kg GbG treatment given in phosphate buffered saline	GbG treatment inhibited CRP, causing a reduction in edema. Abdominal and epididymal fat were reduced in rats receiving GbG treatment. Total cholesterol, phospholipids, and glucose levels were reduced in the GbG groups in a dose-dependent manner. GbG had an antihyperlipidemic effect in the rats.	Ahn et al. 2016
GbG extracted from <i>Gryllus bimaculatus</i> (field cricket)	12-week-old male diabetic (Db) mice were fed a normal rodent diet with GbG supplements for 1 month.	5 mg/kg GbG treatment given in phosphate buffered saline	GbG treatment reduce blood glucose levels within the first week of treatment. Alkaline phosphatase and LDL cholesterol levels were inhibited in rats receiving GbG treatment. Diabetic mice receiving GbG treatment had reduced protein carbonyl content and hepatocellular biomarker levels. GbG increased the anti-oxidative activities of superoxide dismutase, catalase, and glutathione peroxidase.	Ahn et al. 2019
<i>Hermetia illucens</i> (black soldier fly) larvae meal	Laying hens were fed either <i>H. illucens</i> larvae meal or soybean meal for 21 weeks.	108.31 ± 3.11 g/d/hen of <i>H. illucens</i> larvae meal was given to the insect meal group and 125.80 ± 1.96 g/d/hen of soybean meal was given to the soybean meal group	Significant increases in microbial diversity were found in the guts of hens receiving the insect meal. Significant increases were found in short chain fatty acid production in hens receiving the insect meal. Reductions in feed intake, serum cholesterol, and triglycerides were observed in hens receiving insect-based diets.	Borelli et al. 2017

BENEFICIOS POTENCIALES

<i>Tenebrio molitor</i> (mealworm) larvae meal	30-day-old male Shaver brown broiler chickens were fed either <i>T. molitor</i> larvae meal or soybean meal for 32 days.	<i>T. molitor</i> larvae meal and soybean meal were isoproteic and isoenergetic and only differed in protein source, with the insect-based diet containing 296.5 kg/ton of <i>T. molitor</i> larvae and the soybean diet containing 446.5 kg/ton of soybean meal	Feed conversion ratio improved after day 45 in broilers receiving the insect-based diet. A lower albumin-to-globulin ratio was observed in broilers who were fed the insect-based diet, suggesting an increase in immune response.	Bovera et al. 2015
<i>Hermetia illucens</i> (black soldier fly) partially defatted larvae meal	Rainbow trout were fed either a control diet of fishmeal (Hi0), a 25% <i>H. illucens</i> larvae meal and 75% fishmeal diet (Hi25), or a 50% <i>H. illucens</i> larvae meal and 50% fishmeal diet (Hi50) for 78 days.	Hi0 received 60 g/100 g dry matter of fishmeal, Hi25 received 20 g/100 g dry matter of <i>H. illucens</i> larvae meal and 45 g/100 g dry matter of fishmeal, and Hi50 received 40 g/100 g dry matter of <i>H. illucens</i> larvae meal and 30 g/100 g dry matter of fishmeal	Microbial diversity, structure, and composition increased in rainbow trout receiving the insect-based diet. Organosomatic indices and fillet yields were the same in rainbow trout receiving the insect-based diet, as in those receiving the control diet.	Bruni et al. 2018
<i>Tenebrio molitor</i> (mealworm), <i>Musca domestica</i> (housefly) larvae and <i>Zophobas morio</i> (superworm)	144 early-weaned piglets received a maize and soybean-based diet supplemented with plasma protein powder or insects for 56 days.	5% powder of <i>Tenebrio molitor</i> , <i>Musca domestica</i> larvae and <i>Zophobas morio</i>	Diarrhea rates in all of the insect groups from Days 15 through 28 were decreased compared with those in the control group. Decreased albumin protein levels were observed in <i>Zophobas morio</i> meal group after 56 days compared to the control.	Ji et al. 2016
<i>Hermetia illucens</i> (black soldier fly) larvae	24-week-old laying hens were fed either <i>H. illucens</i> larvae meal or soybean meal for 21 weeks.	17% <i>H. illucens</i> larvae meal was given to the insect meal group and 23.5% of soybean meal was given to the soybean meal group	Cholesterol and triglycerides were lower in hens fed with <i>H. illucens</i> larvae meal. Blood levels of calcium were higher in insect-fed hens.	Marono et al. 2017

BENEFICIOS POTENCIALES

Whole cricket powder	A randomized, double-blind, crossover trial, with two 14-day intervention periods and a 14-day washout period between treatments for a total duration of 42 days.	20 healthy adults, aged 18–65 received the cricket breakfast meal (25 g/day dried, roasted cricket powder) for 14 days	Cricket consumption was tolerable and nontoxic at the studied dose. Increases in probiotic bacterium <i>Bifidobacterium animalis</i> and decrease in plasma TNF- α were found.	Stull et al. 2018
Insect protein isolate from lesser mealworm (<i>Alphitobius diaperinus</i>)	A randomized cross-over study, with three different protein supplementations on four separate days. Blood samples were collected at 0 min, 20 min, 40 min, 60 min, 90 min, and 120 min after ingestion of the intervention beverage.	6 healthy young men consumed a drink containing 25 g of crude protein (~100 kcal) either as whey isolate (28.7 g powder), soy isolate (27.8 g powder), insect isolate (30.5 g powder), or placebo (0 kcal) dissolved in 400 mL water.	Insect protein isolate was able to increase the concentration of all essential amino acids, leucine, and BCAAs in the blood 120 minutes following consumption.	Vangsoe, Joergensen, et al. 2018
Insect protein from lesser mealworm (<i>Alphitobius diaperinus</i>)	A randomized, controlled, single-blinded trial consisting of eight weeks of resistance training four days/week, performed as a whole-body split routine.	18 healthy young males ingested either an insect-protein bar containing 0.4 g protein/kg or an isocaloric carbohydrate bar within 1 h after each training and 1 h before night sleep on training days.	Muscle strength and fat-free and bone-free mass both increased in subjects who consumed an insect protein supplement with 8 weeks of resistance training. However, no significant difference in these markers was found in subjects who consumed the insect protein supplement and those who consumed an isocaloric carbohydrate supplement.	Vangsoe, Joergensen, et al. 2018
<i>Tenebrio molitor</i> (mealworm) and <i>Zophobas morio</i> (super mealworm) larvae probiotics	One-day old Ross-308 male broiler chicks was orally challenged with <i>Salmonella enteritidis</i> and <i>E. coli</i> .	0.4% <i>Tenebrio molitor</i> (mealworm) or <i>Zophobas morio</i> (super mealworm) larvae probiotics was supplemented to the basal diet	Dry mealworm and super mealworm larvae probiotics increased average daily gain, IgG and IgA levels, reduced feed conversion ratio and mortality, and effectively helped to reduce the infection of <i>E. Coli</i> and <i>Salmonella</i> in broiler chickens.	Islam and Yang 2017

A close-up photograph of a soccer ball with black and white hexagonal panels hitting a white goal net. The ball is positioned on the left side of the frame, and the net extends diagonally towards the top right. The background is a blurred green field.

APLICACIÓN NUTRICIÓN DEPORTIVA

- **CUBRIR REQUERIMIENTOS PROTEICOS**
 - Daño muscular / crecimiento muscular
- **EFFECTO ANTIOXIDANTE Y ANTIINFLAMATORIO**
 - Fútbol → Estrés oxidativo y radicales libres
- **ACCIÓN PREBIÓTICA**
 - Relación microbiota – sistema inmune

LIMITACIONES

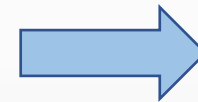


NOVEDAD



EVIDENCIA

- DISEÑO DE ESTUDIOS
- ESTUDIOS EN RATONES



ACEPTACIÓN

- CULTURAL



¿Alguna pregunta?

MUCHAS GRACIAS