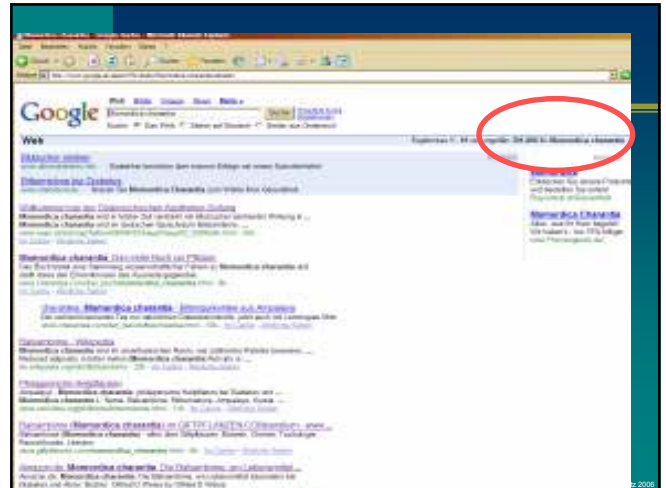


Antidiabetic plants

- Marles, R. & Farnsworth, N. R. (1995) Antidiabetic plants and their active constituents. *Phytomedicine* 2:137-189.
 - Über 100 Pflanzen
 - *Momordica charantia* ist eine der wichtigen Substanzen

(c) H. Klotz 2006



(c) H. Klotz 2006



“Snacks“ in Thailand

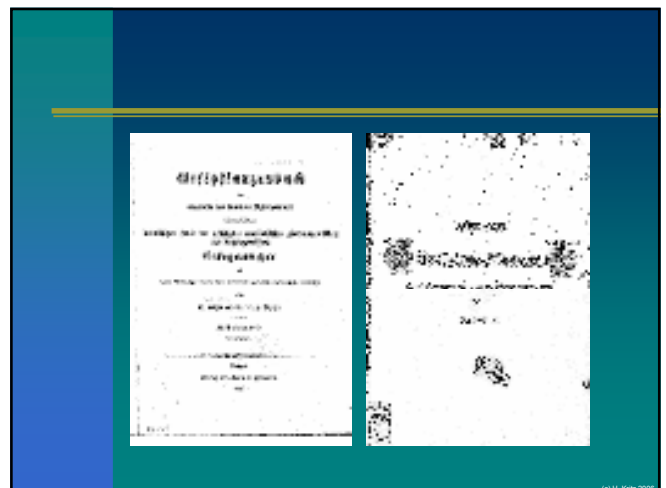


(c) H. Klotz 2006

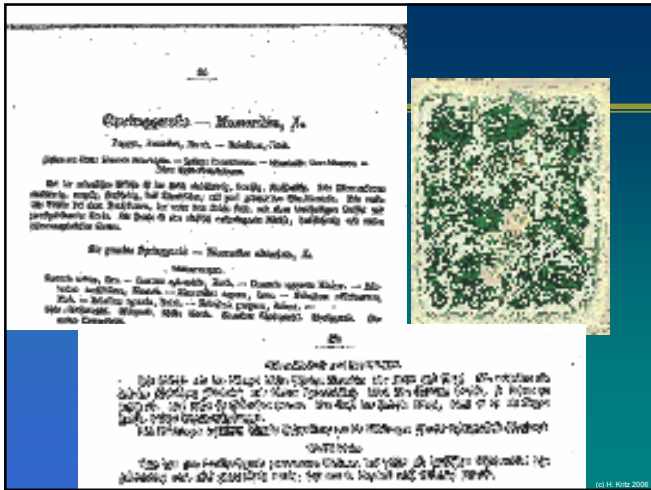
Mala kinok- *Momordica charantia*



(c) H. Klotz 2006



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US- Synonymdatenbank Momordica

Symbol	Scientific Name	Common Name
COLA	<i>Cucurbit lamarum</i> (Thunb.) Probstmann & Hervey var. <i>Andrieuxii</i>	Andrieux melon
FOCU	<i>Momordica charantia</i> L.	Bitter melon
FOCU	<i>Momordica charantia</i> L. f. <i>Charantia</i>	Bitter melon
FOCU	<i>Momordica charantia</i> L. f. <i>Charantia</i>	Bitter melon
FOCU	<i>Momordica charantia</i> L. f. <i>Charantia</i>	Bitter melon
FOCU	<i>Momordica charantia</i> L. f. <i>Charantia</i>	Bitter melon
FOCU	<i>Momordica charantia</i> L. f. <i>Charantia</i>	Bitter melon
FOCU	<i>Momordica charantia</i> L. f. <i>Charantia</i>	Bitter melon

<http://plants.usda.gov/java/nameSearch?keywordquery=momordica&mode=science>



Momordica charantia L.- (Cucurbitaceae) Bittergurke – Balsambinre- Bittermelone

- Bitter melon, bitter apple, bitter gourd, bitter cucumber, balsam pear, balsam apple, carella fruit (US)
- Mala khinok (Thai),
- fu kwa (China), ampalaya (Philippinen)
- Weitere Namen:
- Balsamo, Balsamapfel (Verwechslung mit M. balsamina)
- carilla gourd, charantin, chinli-chih, cundeamor,
- Karela, kakara, kuguazi, k'u-kua,
- lai margose,
- MAP30, *Momordica angustipala*, momordique, betamomocharin
- pavakkachedi, pepino montero, p'u-t'ao,
- sorosi, sushavi, vegetable insulin,
- Wild cucumber, African cucumber

Momordica charantia – Aktive Komponenten

- **Charantin**
– (Beta.sitosterol.Beta-D Glucosid+ Alpha 5,13 Stigmadien-3-O-Beta-D-Glucosid)
- polypeptide p
- MAP 30 (Momordica anti protein)
- Momorcharin (alpha/beta Glykoproteine) RIP
- und Vicine (Kontraindikation: G6PDH Mangel - Favismus)

Momordica charantia Gen. Name: Pentanedial (Expt 02681)

Alpha-Momorcharin inhibitor: Ribosome inactivating protein (RIP)

Ho, W.K., Liu, S.C., Shaw, P.C., Yeung, H.W., Ng, T.B. and Chan, W.Y.
Cloning of the cDNA of alpha-momorcharin: a ribosome inactivating protein
Biochim. Biophys. Acta 1088 (2), 311-314 (1991)
<http://redpoll.pharmacy.uab.edu.ca/drugbank/cgi-bin/getCard.cgi?CARD=EXPT02681.txt>

Mala khinok *Momordica charantia* Thailand

Habitus

- krautige ausdauernde Pfl.
- Stengel: gefurcht, dünn
- Länge:
 - Hauptspross: bis 15 m
 - Seitenspross: bis 7 m
- Ranken: an jedem neuen Trieb
-> ermöglichen das Hochklettern
an Bäumen, Sträuchern und
Gräsern
- jährlicher Zuwachs: 5-10 m



(c) H. Kritz 2006

Mala khinok *Momordica charantia* Thailand

Blüte

- 5-zählig
- leuchtend gelb



(c) H. Kritz 2006

Mala khinok *Momordica charantia* Thailand

Laubblätter

- 5-fach gelappt
- dünn
- schwach behaart
- 2-10 cm lange Blattstiele
- gegenständige
Bebblätterung



(c) H. Kritz 2006

Mala khinok *Momordica charantia* Thailand

Früchte:

- unreif: grün
- reif: leuchtend orange
- bis 300 g schwer
- rote klebrige Samen



Mara khinok gae

(c) H. Kritz 2006

Mala khinok *Momordica charantia* Thailand



(c) H. Kritz 2006

Grover JK, Yadav SP. Pharmacological actions and potential uses of *Momordica charantia*: a review. J Ethnopharmacol. 2004 Jul;93(1):123-132

- antiviral,
- antibacterial,
- anti-HIV, (MAP 30)
- anticancer,
- immunomodulatory properties,
- attention has always been focused on its blood glucose-lowering effect

(c) H. Kritz 2006

Momordica Caranthis – erste Beschreibung

- Li, Shizhen (1999) Ben Cao Gan Mu—1578. 1999 Ren Ming Wei Sheng Press Beijing, China
- Pons JA, Stevenson D: The effect of *Momordica charantia* in **diabetes mellitus**. Puerto Rico Journal of Public Health and Tropical Medicine 1943; 19:196-215.

(c) H. Kritz 2006

Momordica-“vegetable insulin“

- Baldwa VS, Bhandra CM, Pangaria A et al. Clinical trials in patients with diabetes mellitus of an insulin-like compound obtained from plant source. *Upsala J Med Sci* 1977; 82:39-41.
 - 14 Typ I und Typ II Diabetiker
 - ❖ Subkutane Injektion 1.8 mg/40 E
 - ❖ Mittlerer BZ Abfall von 295 auf 210 mg/dl.
 - ❖ Studiendesign fraglich

(c) H. Kritz 2006

Diabetes mellitus-“vegetable insulin“

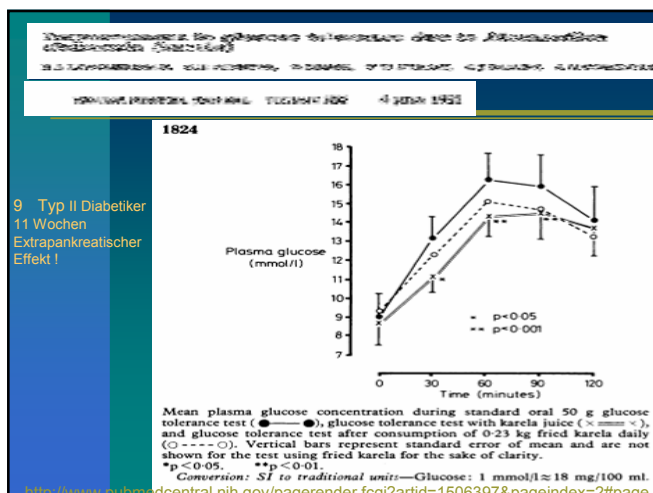
- **Hypoglycemic effect of the seeds of *Momordica charantia***
Omar SH, Ansari Z, Nehal M. *Fitoterapia*. 2006 Sep 26
 - A hypoglycemic active principle (MCK(3)P(8)) obtained from a fraction of the ethanolic extract of *Momordica charantia* seeds, given by **intrapertoneal injection** to alloxan-diabetic rats at a dose of 15 mg/kg, showed a significant effect.

(c) H. Kritz 2006

Momordica und Diabetes

- Akhtar, M. S., Athar, M. A. & Yaqub, M. (1981) Effect of *Momordica charantia* on blood glucose level of normal and alloxan-diabetic rabbits. *Planta Med*. 42:205-212. [\[Medline\]](#)
- Leatherdale, B. A., Panesar, R. K., Singh, G., Atkins, T. W., Bailey, C. J. & Bignell, A. H. C. (1981) Improvement in glucose tolerance due to *Momordica charantia* (Karela). *Br. Med. J*. 282:1823-1824. [\[Medline\]](#)

(c) H. Kritz 2006



Momordica charantia - Typ II Diabetes

- Welihinda J, Karunanayake EH, Sheriff MH et al. Effect of *Momordica charantia* on the glucose tolerance in maturity onset diabetes. *J Ethnopharmacol*. 1986; 17:277-82.
 - 18 patients with newly diagnosed type 2 diabetes mellitus.
 - The subjects were each given 100 mL of bitter melon fruit juice 30 minutes before glucose loading for a GTT.
 - The results were compared with the subjects' own responses to a GTT on a previous day, when water was administered as a control.
 - Thirteen (73%) of the patients showed moderate, significant improvements in GTT
- Fragliches Design, keine Randomisierung

(c) H. Kritz 2006

Momordica – Typ II Diabetes

- Srivastava Y. Antidiabetic and adaptogenic properties of *Momordica charantia* extract: an experimental and clinical evaluation. *Phytother Res.* 1993; 7:285-9.
 - study involving 12 patients with type 2 diabetes mellitus over 21 days.
 - Each subject received one of two bitter melon preparations:
 - ✦ (1) an aqueous extract, prepared by boiling 100 g of chopped bitter melon in 200 mL of water until the volume was reduced to 100 mL, given daily as a single morning dose, and
 - ✦ (2) 5 g of dried fruit powder given three times daily.
 - After three weeks of therapy, patients in the powder group ($n = 5$) showed a nonsignificant 25% reduction in the mean blood glucose level. In the aqueous extract group ($n = 7$), a significant 54% reduction in the mean blood glucose level was observed, and the mean HbA1c level fell from 8.37% to 6.95% ($p < 0.01$).
- Schlechtes Design, keine Kontrollgruppe.

(c) H. Klotz 2006

Neue Sichtweise der Wirkstoffe

- *Momordica charantia*: Constituents and Antidiabetic Screening of the Isolated Major Compounds".
 - Liva Harinantenaina, Michi Tanaka, Shigeru Takaoka, Munehiro Oda, Orié Mogami, Masayuki Uchida and Yoshinori Asakawa *Chem. Pharm. Bull.*, Vol. 54, 1017-1021 (2006)
 - three new cucurbitane triterpenoids
 - 5 β ,19-epoxy-3 β ,25-dihydroxycucurbita-6,23(E)-diene (4),
 - and 3 β ,7 β ,25-trihydroxycucurbita-5,23(E)-dien-19-al (5) have been tested and have shown blood hypoglycaemic effects in the diabetes-induced male ddY mice strain at 400 mg/kg.
 - The two aglycones of charantin did not show any hypoglycaemic effects

two dimensional NMR spectroscopic

(c) H. Klotz 2006

Lipid-Wirkungen- Momordica

- lowered serum cholesterol,
 - Platel, K., Shurpalekar, K. S. & Srinivasan, K. (1993) Influence of bitter gourd (*Momordica charantia*) on growth and blood constituents in albino rats. *Die Nahrung* 37:156-160. [\[Medline\]](#) (Cholesterinsenkung, keine Blutzuckersenkung bei normalen Ausgangswerten).
- Lowered hepatic total cholesterol and triglyceride in normal rats
 - Jayasooriya, A. P., Sakono, M., Yukizaki, C., Kawano, M., Yamamoto, K. & Fukuda, N. (2000) Effects of *Momordica charantia* powder on serum glucose levels and various lipid parameters in rats fed with cholesterol-free and cholesterol-enriched diets. *J. Ethnopharmacol.* 72:331-336. [\[Medline\]](#)
- and elevated HDL cholesterol
 - Ahmed, I., Lakhani, M. S., Gillett, M., John, A. & Raza, H. (2001) Hypotriglyceridemic and hypocholesterolemic effects of anti-diabetic *Momordica charantia* (Karela) fruit extract in streptozotocin-induced diabetic rats. *Diabetes Res. Clin. Pract.* 51:155-161. [\[Medline\]](#)

(c) H. Klotz 2006

Adipositas und Momordica

- Trotz Beschreibung der blutzuckersenkenden und lipidsenkenden Wirkungen erst seit 2003 entsprechende Arbeiten!

(c) H. Klotz 2006

Adipositas und Momordica

- Chen Q, Chan LL, Li ET. Bitter melon (*Momordica charantia*) reduces adiposity, lowers serum insulin and normalizes glucose tolerance in rats fed a high fat diet. *J Nutr.* 2003;133:1088-1093

(c) H. Klotz 2006

Bitter Melon (*Momordica charantia*) Reduces Adiposity, Lowers Serum Insulin and Normalizes Glucose Tolerance in Rats Fed a High Fat Diet

Qichen Chen, Lili Chan, and E. T. Li

Food and Nutrition Research Program, Department of Zoology, The University of Hong Kong, Shag Hong, The People's Republic of China

Journal of Nutrition 133:1088-1093, 2003

- oral glucose tolerance was improved in rats fed a high fat (HF; 30%) diet supplemented with freeze-dried BM juice ($P < 0.05$)
- Rats switched to the HF+BM diet gained less weight and had less visceral fat than those fed the HF diet ($P < 0.05$).
- The addition of BM did not change apparent fat absorption
- BM supplementation to the HF diet improved insulin resistance, lowered serum insulin and leptin but raised serum free fatty acid concentration ($P < 0.05$).

This study reveals for the first time that BM reduces adiposity in rats fed a HF diet. BM appears to have multiple influences on glucose and lipid metabolism that strongly counteract the untoward effects of a high fat diet.

Volltext

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TABLE 2 Effects of dietary n-3 PUFA supplementation on growth and food intake of female rats fed low-fat (LF) or high-fat (HF) diets (Experiment 1)²²

	Low fat diet (LF)			High fat diet (HF)		
	LF	LF + 1.9% BM	HF	HF + 0.375% BM	HF + 0.75% BM	HF + 1.5% BM
n	5	4	8	9	9	8
Body weight at wk 7, g	280 ± 6 ^a	280 ± 11 ^a	341 ± 16 ^b	341 ± 15 ^b	340 ± 15 ^b	341 ± 18 ^b
Body weight at wk 15, g	337 ± 15 ^a	311 ± 10 ^a	465 ± 47 ^b	445 ± 32 ^b	435 ± 20 ^b	439 ± 20 ^b
Weight gain, g/6 wk	57 ± 11 ^a	31 ± 6 ^a	124 ± 32 ^b	103 ± 18 ^b	78 ± 7 ^b	67 ± 12 ^b
Energy intake, MJ/6 wk	22.7 ± 1.4	19.8 ± 0.8	25.0 ± 2.0	24.0 ± 1.2	23.3 ± 0.6	22.8 ± 1.0
Energy efficiency, g gain/MJ	2.4 ± 0.3 ^a	1.6 ± 0.3 ^b	4.8 ± 0.7 ^d	4.1 ± 0.5 ^{cd}	3.3 ± 0.2 ^{bcd}	2.8 ± 0.4 ^{bc}

¹ Female rats were given either LF (n = 9) or HF (n = 34) diets for 6 wk before random assignment to their respective groups.
² Data taken from the following sources: *Journal of Applied Physiology*, *Journal of Applied Physiology*, *Journal of Applied Physiology*, *Journal of Applied Physiology*, *Journal of Applied Physiology*, *Journal of Applied Physiology*.

Reduktion des viszeralen Fetts → Reduktion der Insulinresistenz

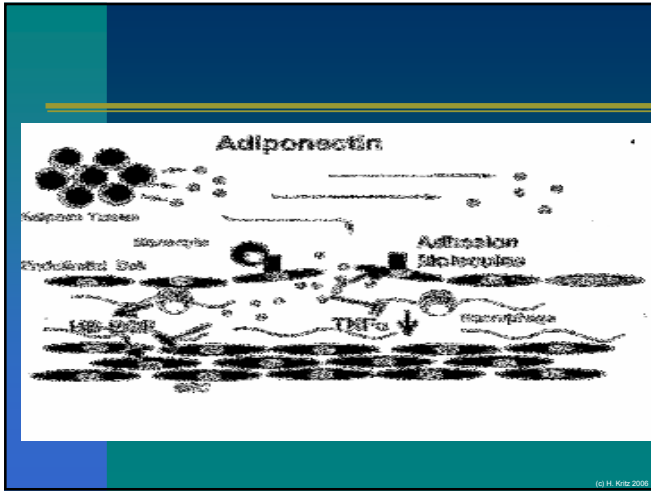
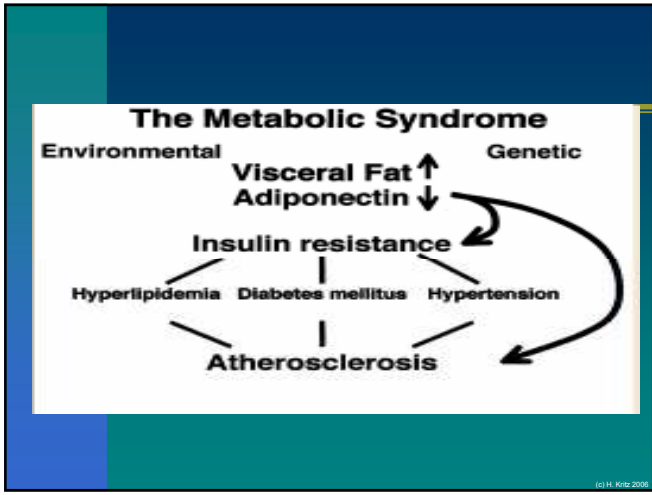
	Low fat diet (LF)			High fat diet (HF)		
	LF	LF + 1.9% BM	HF	HF + 0.375% BM	HF + 0.75% BM	HF + 1.5% BM
n	5	4	8	9	9	8
Visceral fat, g	100 ± 10 ^a	100 ± 10 ^a	150 ± 10 ^b	150 ± 10 ^b	150 ± 10 ^b	150 ± 10 ^b
Adiponectin, μg/ml	100 ± 10 ^a	100 ± 10 ^a	50 ± 5 ^b	50 ± 5 ^b	50 ± 5 ^b	50 ± 5 ^b
Insulin resistance, μg/ml	100 ± 10 ^a	100 ± 10 ^a	200 ± 20 ^b	200 ± 20 ^b	200 ± 20 ^b	200 ± 20 ^b
Insulin sensitivity, μg/ml	100 ± 10 ^a	100 ± 10 ^a	50 ± 5 ^b	50 ± 5 ^b	50 ± 5 ^b	50 ± 5 ^b
Insulin, μg/ml	100 ± 10 ^a	100 ± 10 ^a	200 ± 20 ^b	200 ± 20 ^b	200 ± 20 ^b	200 ± 20 ^b

bessere Wirkung bei fettreicher Kost
² Data taken from the following sources: *Journal of Applied Physiology*, *Journal of Applied Physiology*, *Journal of Applied Physiology*, *Journal of Applied Physiology*, *Journal of Applied Physiology*, *Journal of Applied Physiology*.

TABLE 3 Effects of a low-fat (LF) diet with or without dietary n-3 PUFA on visceral and subcutaneous adipose tissue in male rats previously assigned to a high-fat (HF) diet (Experiment 2)²³

	LF	HF	HF-LF	HF-LF-PUFA	HF-PUFA
n	7	8	8	8	8
Visceral adipose weight, g	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a
Subcutaneous adipose weight, g	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a
Food intake, g/week	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a
Energy intake, MJ/week	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a
Energy efficiency, g gain/MJ	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a
Adiponectin, μg/ml	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a
Insulin, μg/ml	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a
Insulin resistance, μg/ml	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a	100 ± 10 ^a

² Data taken from the following sources: *Journal of Applied Physiology*, *Journal of Applied Physiology*, *Journal of Applied Physiology*, *Journal of Applied Physiology*, *Journal of Applied Physiology*, *Journal of Applied Physiology*.



Involvement of uncoupling proteins (UCPs) might produce such a generalized effect on energy homeostasis.

- The UCP level can be influenced by many factors including sympathetic activation and the adipocytokine, adiponectin
 - Qi Y, Takahashi N, Hileman SM, Patel HR, Berg AH, Pajvani UB, Scherer PE, Ahima RS. Adiponectin acts in the brain to decrease body weight. *Nat Med.* 2004;10:524-529
- UCP in BAT could be induced by cold exposure as well as an HF diet
 - Rippe C, Berger K, Mei J, Lowe ME, Erlanson-Albertsson C. Effect of long-term high-fat feeding on the expression of pancreatic lipases and adipose tissue uncoupling proteins in mice. *Pancreas.* 2003 Mar;26(2):e36-e42. [Medline](#)
- Himms-Hagen J. Does brown adipose tissue (BAT) have a role in the physiology or treatment of human obesity?. *Rev Endocr Metab Disord.* 2001 Oct;2(4):395-401

© 2005 American Society for Nutrition J. Nutr. 135:2517-2523, November 2005

Biochemical and Molecular Actions of Nutrients

Reduced Adiposity in Bitter Melon (*Momordica charantia*)-Fed Rats Is Associated with Increased Lipid Oxidative Enzyme Activities and Uncoupling Protein Expression¹

Lauren L. Y. Chan, Qixuan Chen, Adi G. G. Go, Emily K. Y. Lam and Edmund T. S. Li²

Food and Nutritional Science Program, Department of Zoology, The University of Hong Kong, Hong Kong, The People's Republic of China

²To whom correspondence should be addressed. E-mail: etli@hknucc.hku.hk

<http://jn.nutrition.org/cgi/content/full/135/11/2517#T1>

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To explore the antiobesity effect of freeze-dried bitter melon (BM) juice,

- activities of mitochondrial lipid oxidative enzymes
- the expression of uncoupling proteins and their transcription coactivator peroxisome proliferator-activated receptor- coactivator-1 (PGC-1)
- were determined in diet-induced obese (DIO) rats (high-fat (HF) diet)

(c) H. Kitz 2006

Lauren L.Y. Chan et al.: J Nutr. 135, 2517-2523, 2005

Bitter melon supplemented rats had

- LOWER
 - energy efficiency (g weight gained/kJ consumed),
 - visceral fat mass,
 - serum glucose, and insulin resistance index,
 - Hepatic and skeletal muscle triglyceride concentrations
- HIGHER
 - activities of hepatic and muscle mitochondrial carnitine palmitoyl transferase-I (CPT-I) and acyl-CoA dehydrogenase (AD)
 - serum adiponectin concentration
 - ✦ uncoupling protein 1 in brown adipose tissue
 - ✦ uncoupling protein 3 in red gastrocnemius muscle
 - expression of the transcription coactivator PGC-1 in both tissues
- than unsupplemented rats ($P < 0.05$)

The present results suggest that decreased adiposity in BM-supplemented rats may result from lower metabolic efficiency, a consequence of increased lipid oxidation and mitochondrial uncoupling.

(c) H. Kitz 2006

Momordica -> UCP1+3/PGC 1 alpha

FIGURE 2 mRNA expression in BAT and gastrocnemius muscle of male Sprague-Dawley rats fed HF diets supplemented with 0, 1, or 1.25% BM (Expt. 3). Representative samples illustrating mRNA levels of UCP1 in BAT, UCP3 in gastrocnemius (G), and PGC-1 α in BAT and G measured by RT-PCR.

(c) H. Kitz 2006

Momordica -> UCP1+3

(c) H. Kitz 2006

Momordica -> UCP1+3/PGC 1 alpha

TABLE 1. Relative activity of UCP1 in BAT and UCP3 in gastrocnemius muscle of PGC-1 α in BAT and G in male Sprague-Dawley rats fed HF diets supplemented with 0, 1, or 1.25% BM (Expt. 3).

Gene	Tissue	0%	1%	1.25%
UCP1	BAT	100 ± 10.0*	85 ± 10.0*	75 ± 10.0*
UCP3	Gastrocnemius	100 ± 10.0*	95 ± 10.0*	85 ± 10.0*
PGC-1 α	BAT	100 ± 10.0*	120 ± 10.0*	130 ± 10.0*
PGC-1 α	Gastrocnemius	100 ± 10.0*	110 ± 10.0*	120 ± 10.0*

* Values are mean ± SEM, n = 6. Different values are significantly different ($P < 0.05$).

² Data are relative to the values of 0% BM.

Lauren L.Y. Chan et al.: J Nutr. 135, 2517-2523, 2005

(c) H. Kitz 2006

Peroxisome proliferator-activated receptor (PPAR) activation

- Chao CY, Huang CJ. Bitter gourd (*Momordica charantia*) extract activates peroxisome proliferator-activated receptors and upregulates the expression of the acyl CoA oxidase gene in H4IIEC3 hepatoma cells. *J Biomed Sci.* 2003 Nov;10(6 Pt 2):782-791. [\[Medline\]](#)

(c) H. Klotz 2006

PPAR alpha Aktivierung

- Fractionation and identification of 9c, 11t, 13t-conjugated linolenic acid as an activator of PPARalpha in bitter gourd (*Momordica charantia* L.).
 - Chuang CY, Hsu C, Chao CY, Wein YS, Kuo YH, Huang CJ.; *J Biomed Sci.* 2006 Sep 6;

(c) H. Klotz 2006

Inhibition of TG synthesis and apolipoprotein B secretion

- Nerurkar PV, Pearson L, Efir JT, Adeli K, Theriault AG, Nerurkar VR. Microsomal triglyceride transfer protein gene expression and apoB secretion are inhibited by bitter melon in HepG2 cells. *J Nutr.* 2005;135:702-706. [\[Abstract/Free Full Text\]](#)

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- Bitter melon appears to have great potential for use as a dietary adjunct
 - in body weight management.
 - In addition to the improvement in glucose tolerance,
 - the lipid-lowering effect would be
 - beneficial for obese patients with nonalcoholic steatohepatitis.

(c) H. Klotz 2006

Bitter melon (*Momordica charantia*): A review of efficacy and safety

Shroff R, Ghosh S, Ghosh S, Ghosh S, Ghosh S, Ghosh S

Am J Health-Syst Pharm. 2003; 60:356-9

[Volltext](#)

(c) H. Klotz 2006

Nebenwirkungen

- Kinder: Hypoglykämisches Koma in 2 Fallberichten (*Momordica* Tee)
- Gastrointestinal (Lectin): fraglich
- Spermatogenese: bei Mäusen und Hunden nach 60 Tagen, beim Menschen kein Effekt
- Hämatologie: Favismus bei 6-PDH Mangel
- Leber: Anstieg der Gamma GT bei Tieren, nicht bei Menschen.
- Kopfschmerzen: Unbestätigt
- Schwangerschaft: ev. erhöhte Abortrate
- Additiver Effekt: Tolbutamid, Chlopropamid. fraglich

(c) H. Klotz 2006

Momordica charantia TTM– Atherosklerose Marker Studie

H. Sinzinger, H. Kritz

Wilhelm-Auerswald Atheroskleroseforscherguppe, Wien
Lipiducate, Donau-Universität Wien

(c) 2006 H. Sinzinger, H. Kritz. Jegliche Verwendung nur nach Rücksprache mit den Autoren

Momordica charantia TTM– Atherosklerose Marker Studie

- 1200 mg/ Tag Momordica carantha
 - (Crude Powder TTM)
 - 3x1 Kapsel/ 400 mg/ Tag
- 6 Patienten:
 - 3 m/ 3 w,
 - Nichtraucher, Nichtdiabetiker
 - Gesunde Probanden, 25-36 Jahre
- Atheroskleroseparameter:
 - Vor,
 - nach 3 Wochen
 - und nach 8 Wochen

(c) 2006 H. Sinzinger, H. Kritz. Jegliche Verwendung nur nach Rücksprache mit den Autoren

Parameter

Momordica charantia TTM – Atherosklerose Marker Studie

- Geschlecht, Größe Gewicht, BMI,
- Bauchumfang
- Lipide
 - Chol, TG, HDL, LDL,
 - Chol/HDL, Non-HDL, TG/HDL
- Homocystein, NBZ
- Inflammation:
 - s-CRP, Fibrinogen
- Oxidation:
 - 8-epi-PG-F(2 alpha)
- Thrombozyten: Aggregation auf ADP/Sensitivität auf PG E1
- Endothel: ICAM-1, VCAM-1, zirk. Endothelzellen
- Adipocytokin: Adiponectin

(c) H. Kritz 2006

Patientencharakteristik

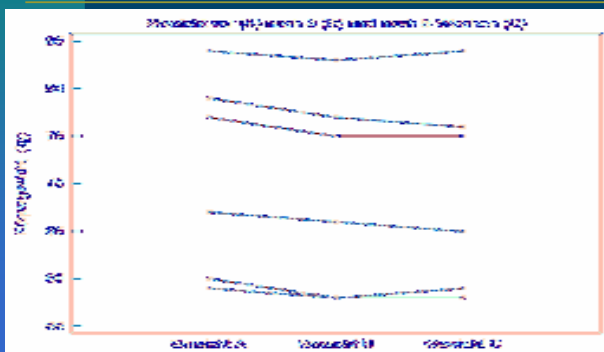
Momordica charantia TTM – Atherosklerose Marker Studie

	Sex	Alter	Grösse	Gewicht	BMI	BU	syst. RR	diastol. RR
1	m	34	181	84	25,6	97	125	80,0
2	w	31	164	59	21,9	87	100	60,0
3	w	36	169	67	23,5	93	110	70,0
4	m	27	176	79	25,5	101	135	90,0
5	w	25	158	60	24,0	90	95	70,0
6	m	39	175	77	25,1	96	140	85,0
MW		32	170,5	71	24,3	94	117,5	75,8
SD		5,4	8,5	10,5	1,4	5,1	18,6	11,1

(c) H. Kritz 2006

Gewichtsverlauf

Momordica charantia TTM – Atherosklerose Marker Studie

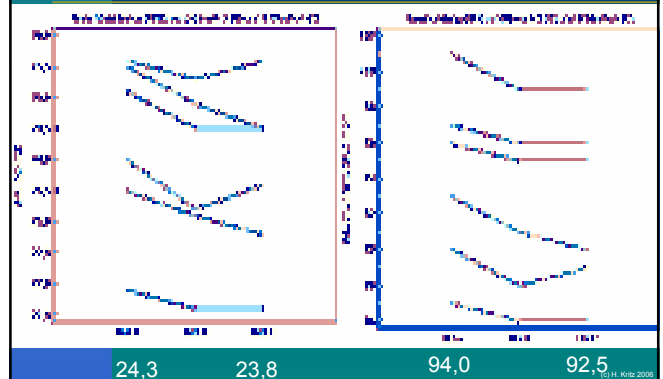


A= vor, B= nach 3 Wochen, C= nach 8 Wochen

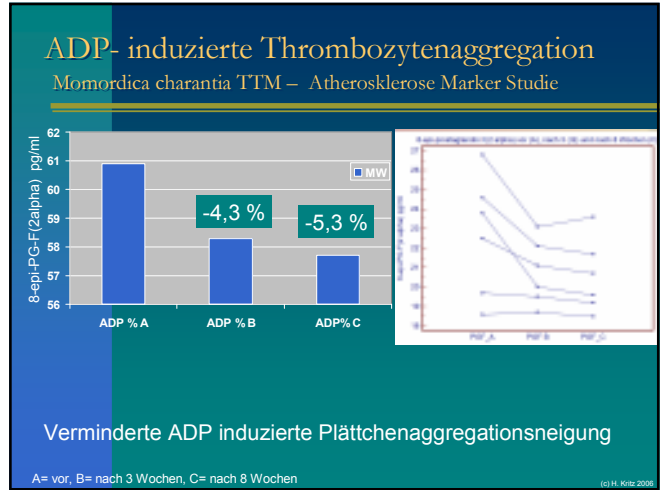
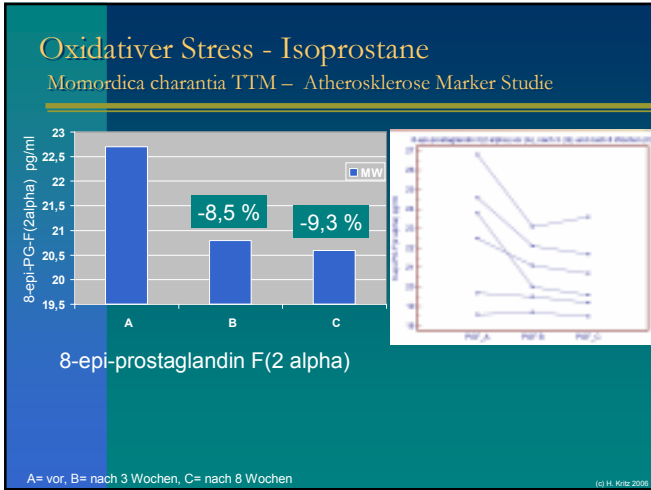
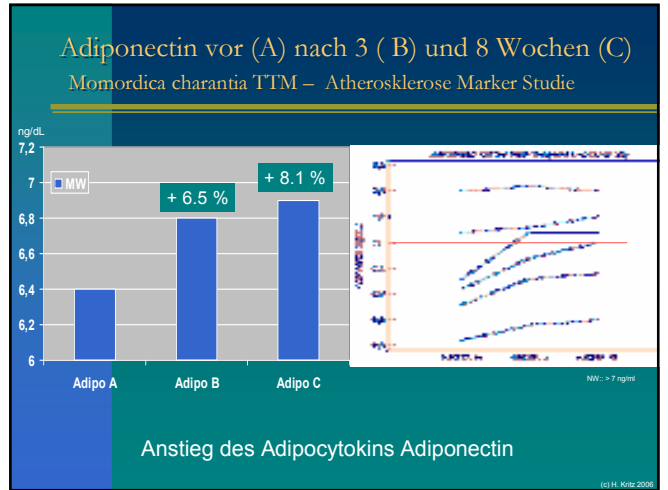
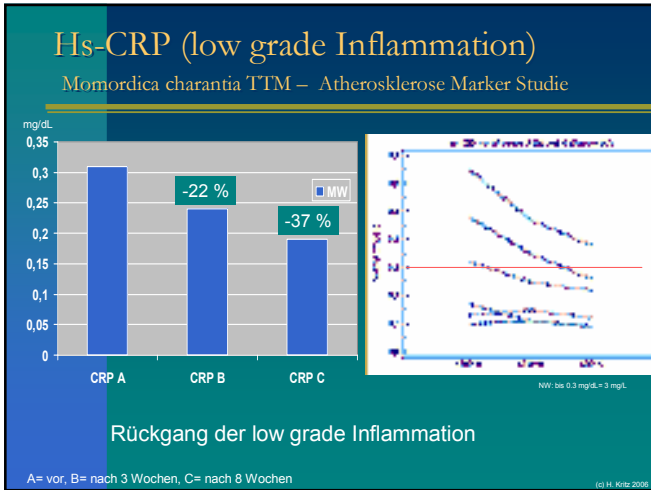
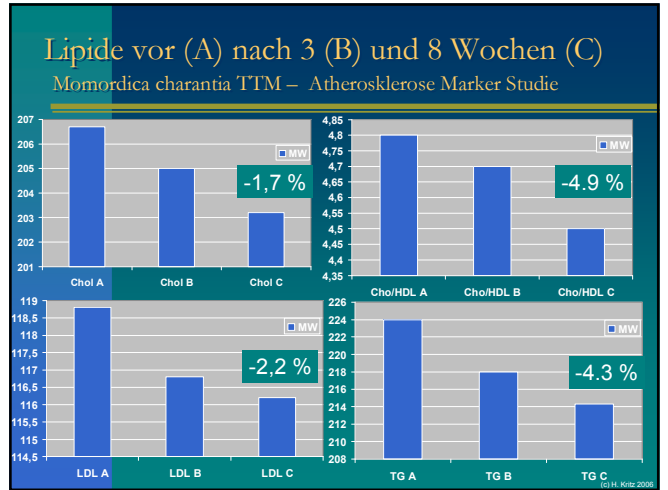
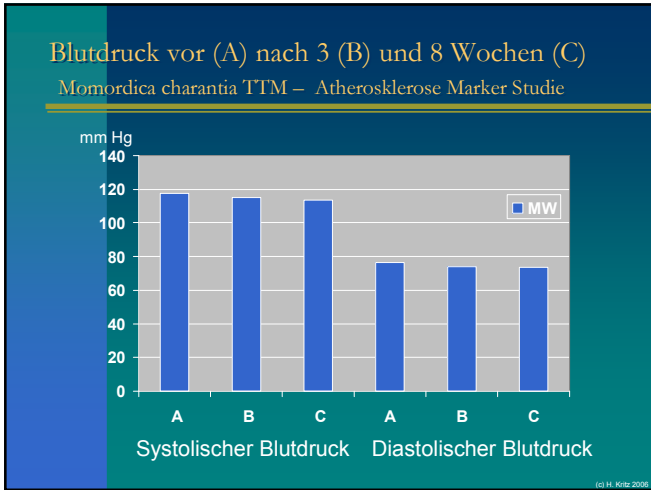
(c) H. Kritz 2006

BMI und BU vor (A) nach 3 (B) und 8 Wochen (C)

Momordica charantia TTM – Atherosklerose Marker Studie

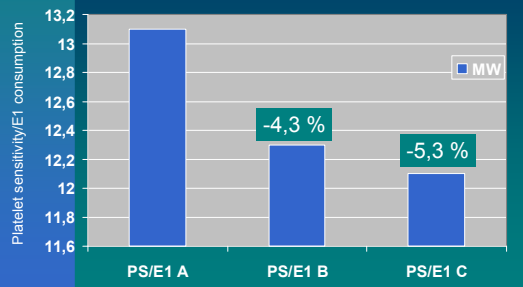


(c) H. Kritz 2006



Plättchensensitivität / PG E 1 Verbrauch

Momordica charantia TTM – Atherosklerose Marker Studie



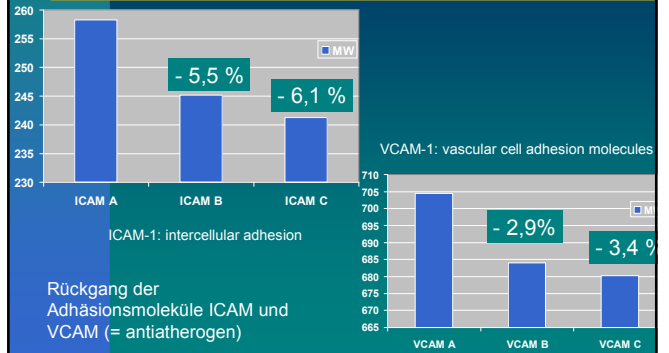
Bessere Plättchensensitivität auf antiaggregatorisches PG E1

A= vor, B= nach 3 Wochen, C= nach 8 Wochen

(c) H. Kitz 2006

Adhäsionsmoleküle (ICAM-1 und VCAM-1)

Momordica charantia TTM – Atherosklerose Marker Studie



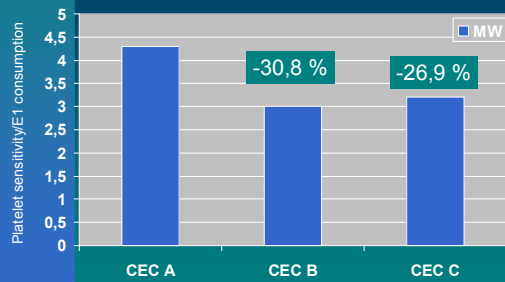
Rückgang der Adhäsionsmoleküle ICAM und VCAM (= antiatherogen)

A= vor, B= nach 3 Wochen, C= nach 8 Wochen

(c) H. Kitz 2006

Zirkulierende Endothelzellen

Momordica charantia TTM – Atherosklerose Marker Studie



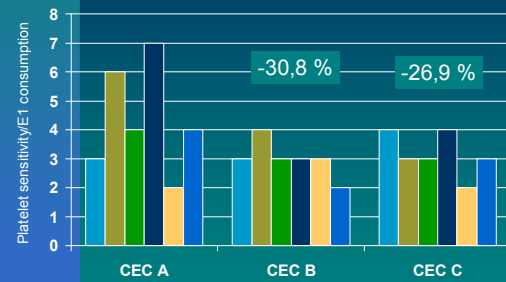
Rückgang der zirkulierenden Endothelzellen

A= vor, B= nach 3 Wochen, C= nach 8 Wochen

(c) H. Kitz 2006

Zirkulierende Endothelzellen

Momordica charantia TTM – Atherosklerose Marker Studie



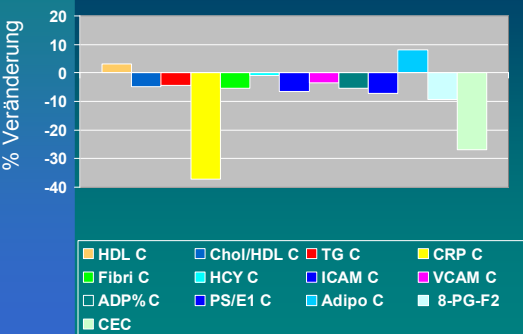
Rückgang der zirkulierenden Endothelzellen

A= vor, B= nach 3 Wochen, C= nach 8 Wochen

(c) H. Kitz 2006

Zusammenfassende Ergebniss (vor/8 Wochen)

Momordica charantia TTM – Atherosklerose Marker Studie



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Zusammenfassung

Momordica charantia TTM – Atherosklerose Marker Studie

- Momordica carantia (Thai) über 8 Wochen zeigt:
 - Rückgang des viszeralen Fetts
 - Anstieg des Adpnectins
 - Lipideffekt (HDL, TG)
 - Antiinflammation
 - Anti-thrombogene Wirkungen
 - Direkte antiatherosklerotische Endothel-Effekte
 - Keine Wirkung auf Blutzucker, Homocystein und Blutdruck bei gesunden Probanden



Alternative zu Rimobanant ?

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Momordiac carantia TTM Studie 2

- 36 Patienten mit
 - Viszerale Fettleibigkeit
 - Prädiabetes (IFG, IGT)
 - Randomisiert doppelblind
 - ❖ 1200 mg Momordia carantia (TTM)
 - ❖ Placebo
- Run in 3 Wochen (fettmodifiziert)
- Kontrolle nach 3, 6, 12, 24 Monaten
- Endothelfunktion, IMT, Leber US vor / nach 12/ 24 Monaten

(c) H. Kritz 2006

Erste Ergebnisse (3 Monate) - Studie 2

- Signifikanter Adiponectin Anstieg (+29 %) und BU Reduktion (- 4 cm).
- Deutlicher CRP Abfall (-34 %)
- Hba1c (7.4 % → 6.6 %)
- RR: 136/92 → 124/84 mm Hg
- Lipidverbesserung:
 - LDL – 8 %,
 - Chol/ HDL – 17 %
 - Triglyceride – 24 %

(c) H. Kritz 2006

- Bitter gourd (Momordica Charantia): A dietary approach to hyperglycemia. Krawinkel MB, Keding GB.
 - Department of International Nutrition, Institute of Nutritional Science, Justus-Liebig-University, Giessen, Germany
- Nutr Rev. 2006 Jul;64(7 Pt 1):331-7.

Mögliche Anwendung bei Prädiabetes-Diabetes

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Vielen Dank für die Aufmerksamkeit

