Ordine dei Medici Chirurghi e degli Odontoiatri della Provincia di Bergamo

Ente sussidiario dello Stato

LA FITOTERAPIA NELLA GESTIONE E PREVENZIONE DELLA SINDROME METABOLICA

Dott. Alexander Bertuccioli

Medico Chirurgo

Biologo nutrizionista perfezionato in nutrizione in condizioni fisiologiche

Chinesiologo dell'attività motoria preventiva ed adattata

Chimico farmaceutico ind. Prodotti Salutistici

Professore (a.c.) Scienze e tecniche dietetiche applicate

Professore (a.c.) Laboratorio di valutazione antropometrica

Dipartimento di Scienze Biomolecolari - DISB - Scuola di Scienze Biomediche, Università degli Studi di Urbino "Carlo Bo"

Comitato scientifico – FIF – AIFeM – AIPT – AWI – Fisioclinics - ESNS Fellows

PROGRAMMA

- Il paziente Dismetabolico
- Gli strumenti nutraceutici

IL PAZIENTE DISMETABOLICO

I concetti essenziali

MALATTIE MODERNE…?

GIUDICI 3:16,21,22

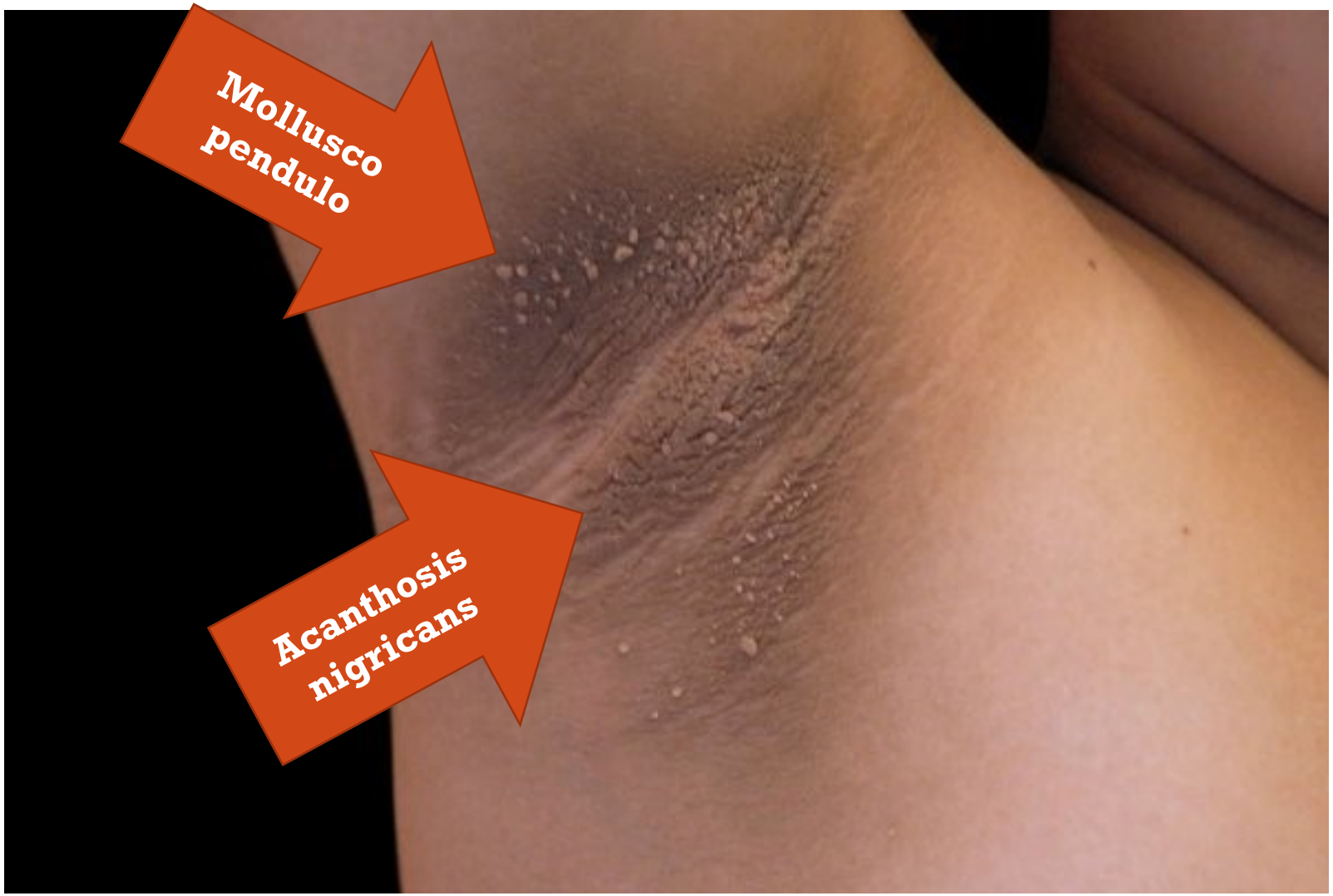
- 16) Nel frattempo Èud si era fatto una spada a doppio taglio lunga un cubito (cubito corto c.a 38 cm) e se l'era cinta sotto la veste, sulla coscia destra.
- 21) Allora Èud con la mano sinistra prese la spada dalla coscia destra e gliela conficcò nel ventre
- 22)Con la lama penetrò anche l'impugnatura, e il grasso del ventre si richiuse su di essa, dato che Èud non ritrasse la spada; e a Èglon vennero fuori le feci

La malattia è nota sin dal XVIII secolo, quando nel 1761, Giovanni Battista Morgagni descrisse l'associazione tra l'obesità viscerale e del mediastino, l'ipertensione arteriosa, la gotta e le apnee del sonno

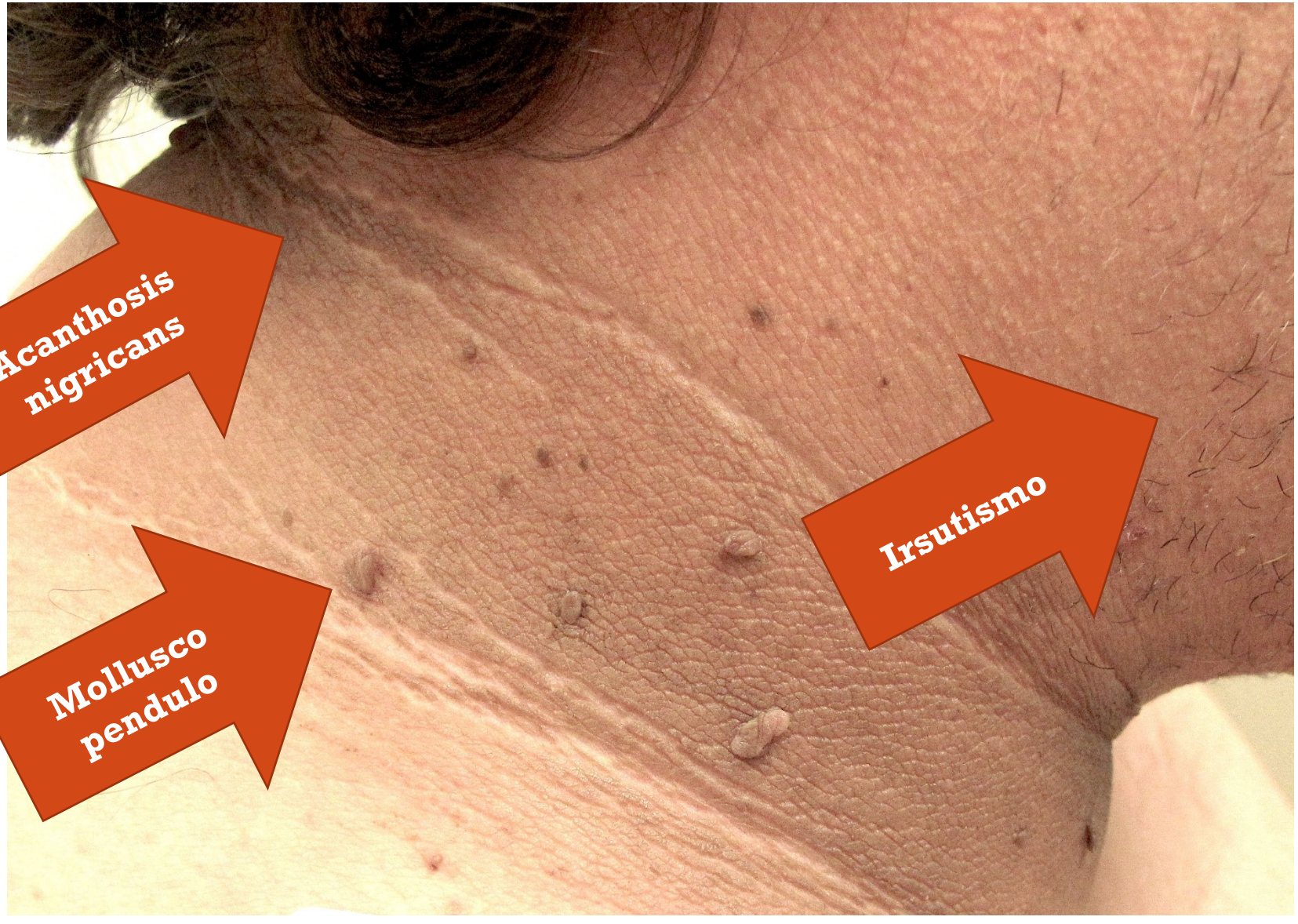
FENOTIPO DEL PAZIENTE

SEGNI

SEGNI



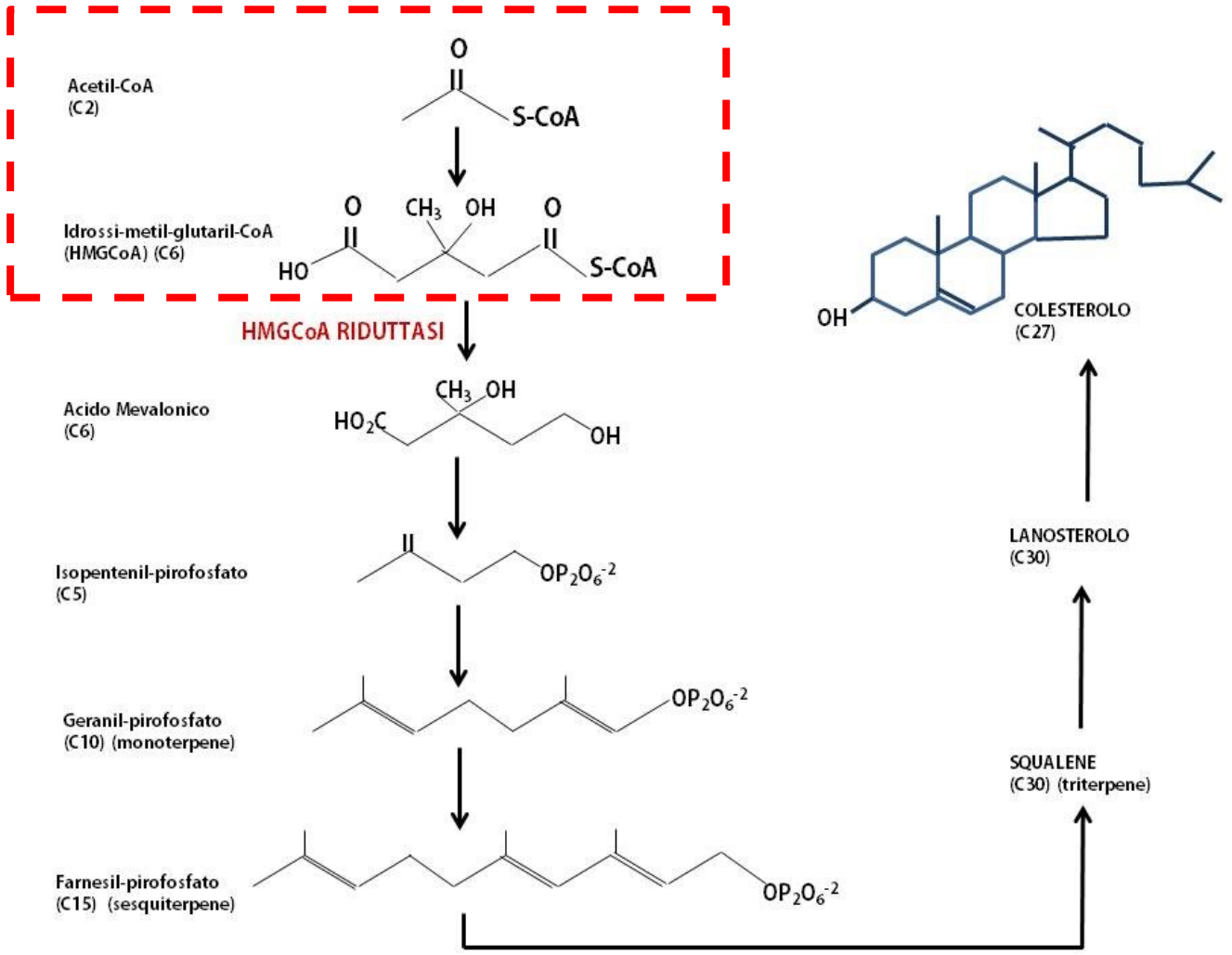
SEGNI



L'ELEMENTO CARDINE IN NUTRIZIONE

ECCESSO GLUCIDI DA GLICOLISI

ECCESSO LIPIDI DA B-OSSIDAZIONE



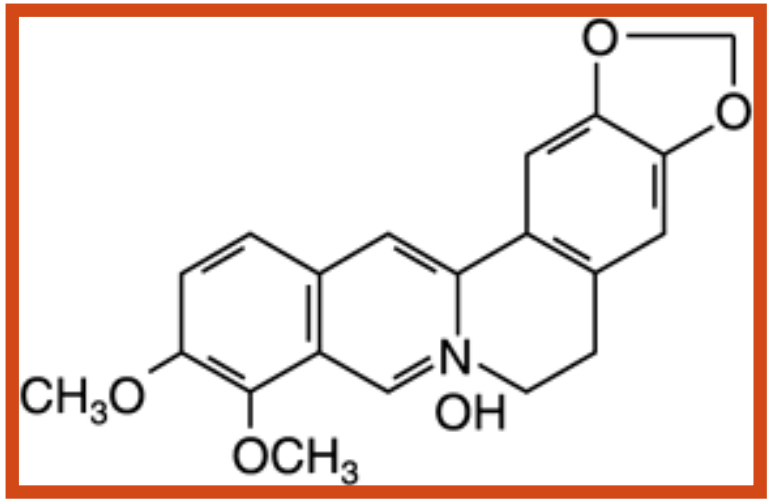
GLI STRUMENTI NUTRACEUTICI

E LE SOLUZIONI AI PROBLEMI

BERBERIS ARISTATA

BERBERINA

LA BERBERINA: è un **alcaloide isochinolinico** estratto da Berberis aristata (o Coptis chinensis) che negli ultimi anni ha riscosso l'interesse della comunità scientifica per le sue innumerevoli potenzialità salutistico – terapeutiche.



BERBERINA – QUADRO LIPIDICO

UP-REGOLAZIONE DEI RECETTORE PER LE LDL

Kong W, Wei J, Abidi P, Lin M, Inaba S, Li C, Wang Y, Wang Z, Si S, Pan H, Wang S, Wu J, Wang Y, Li Z, Liu J, Jiang JD. Berberine is a novel cholesterol-lowering drug working through a unique mechanism distinct from statins. Nature Medicine. 2004 Dec;10(12):1344-51.

DOWN-REGOLAZIONE PCSK9

Li H, Dong B, Park SW, Lee HS, Chen W, Liu J. Hepatocyte nuclear factor 1alpha plays a critical role in PCSK9 gene transcription and regulation by the natural hypocholesterolemic compound berberine J Biol Chem. 2009 Oct 16;284(42):28885-95. Epub 2009 Aug 17.

Cameron J, Ranheim T, Kulseth MA, Leren TP, Berge KE. Berberine decreases PCSK9 expression in HepG2 cells. Atherosclerosis. 2008 Dec;201(2):266-73.

FAVORISCE IL METABOLISMO GLUCO-LIPIDICO MODULANDO L'ESPRESSIONE DI PPAR ALFA E DI PPAR GAMMA

Zhou JY, Zhou SW, Zhang KB, Tang JL, Guang LX, Ying Y, Xu Y, Zhang L, Li DD. Chronic effects of berberine on blood, liver glucolipid metabolism and liver PPARs expression in diabetic hyperlipidemic rats.Biol Pharm Bull 2008 Jun ;31(6):1169-76.

BERBERINA

Atherosclerosis 243 (2015) 449–461

Contents lists available at ScienceDirect

Atherosclerosis

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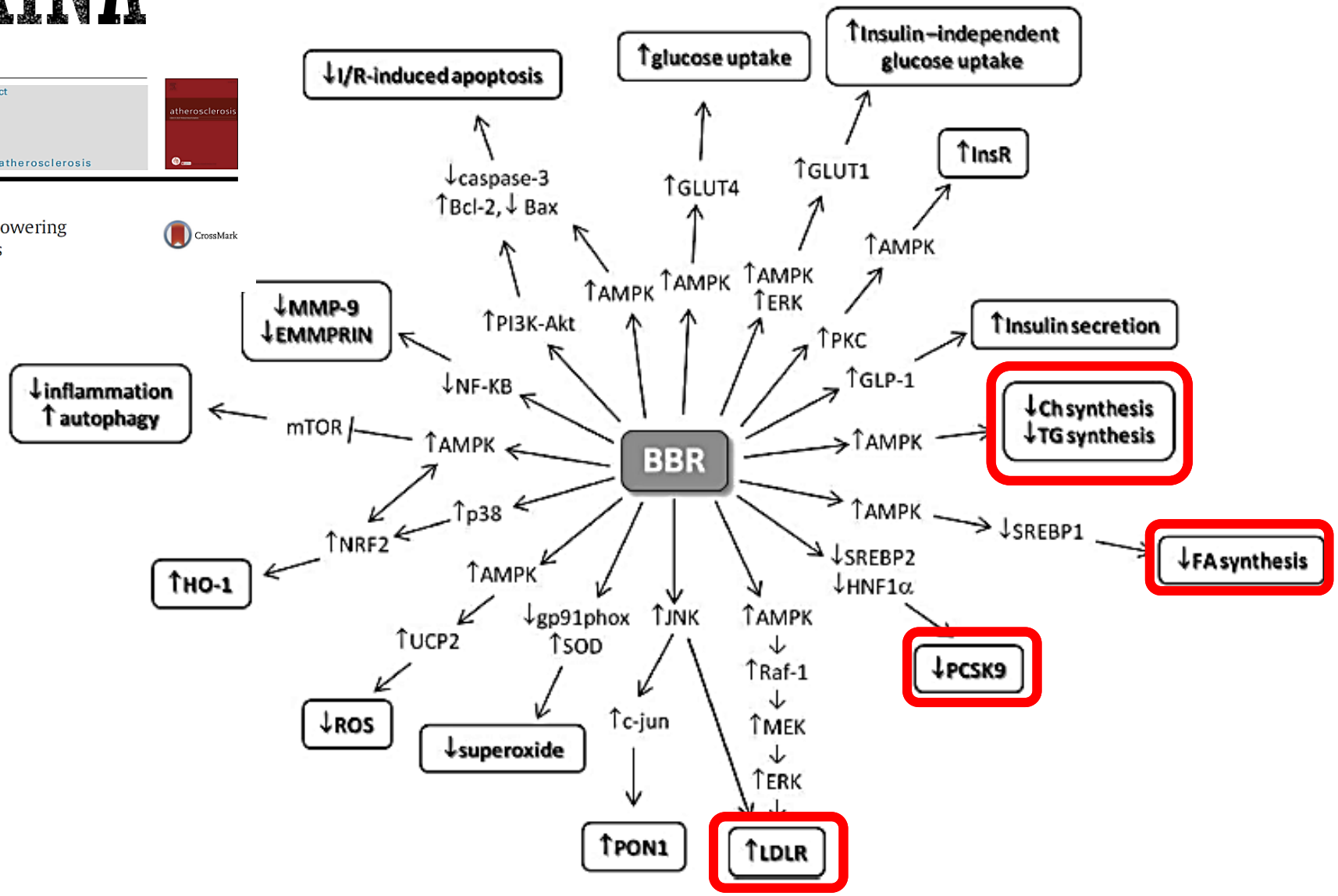
Review article

Berberine, a plant alkaloid with lipid- and glucose-lowering properties: From *in vitro* evidence to clinical studies

Angela Pirillo [a, b, *], Alberico Luigi Catapano [b, c]



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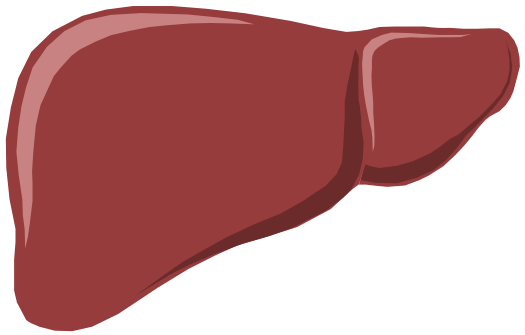
CONDIZIONI FISIOLOGICHE



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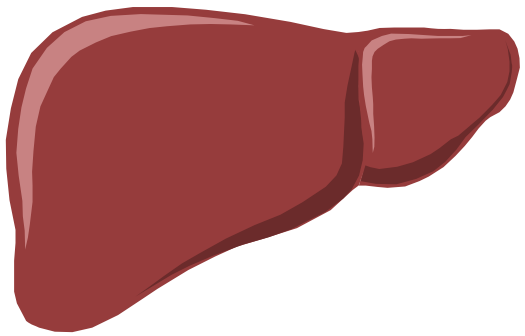
RIDUZIONE DEI LIVELLI
DI LDL
(INTERVENTO PCSK9)



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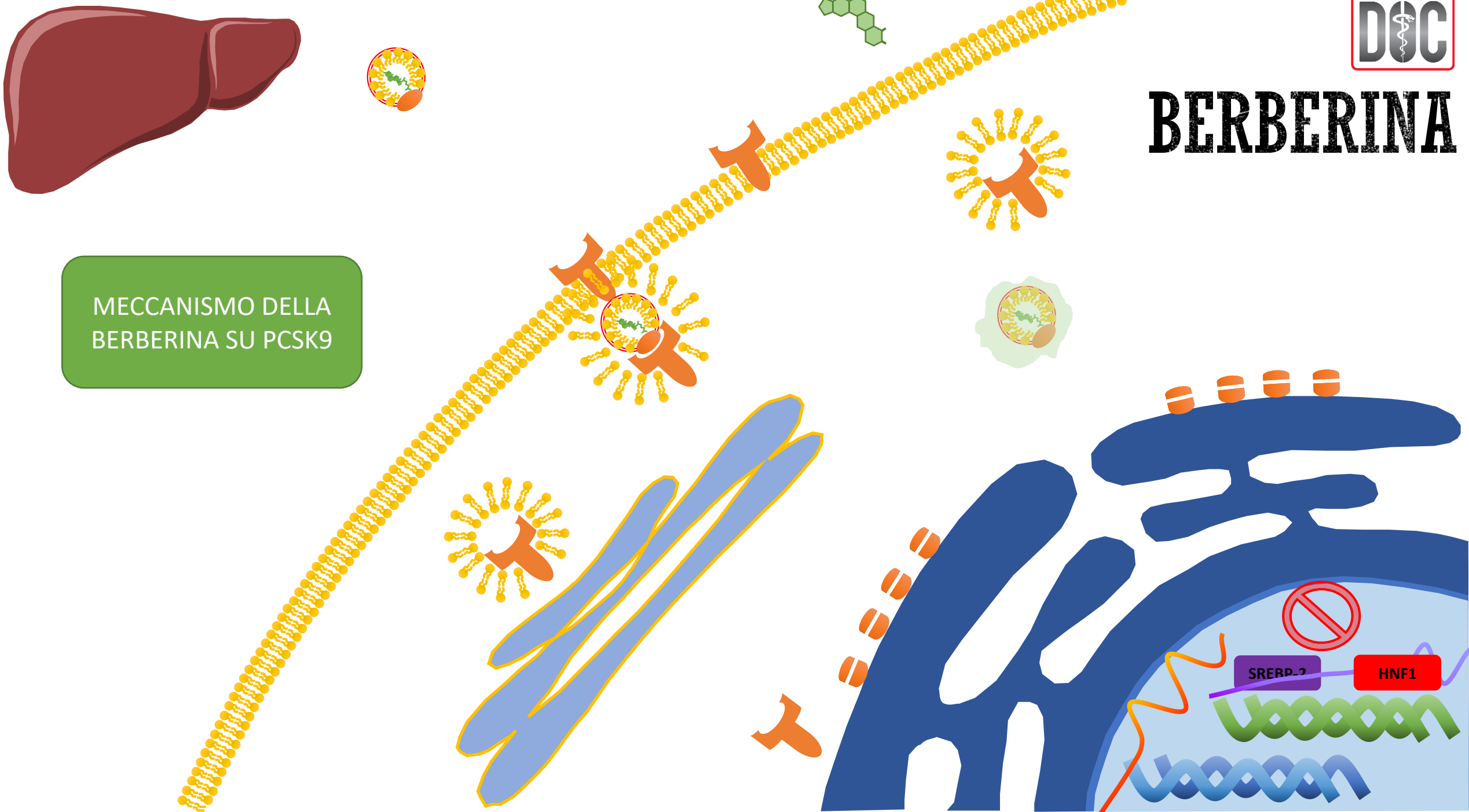
MECCANISMO DELLA BERBERINA SU PCSK9



BERBERINA

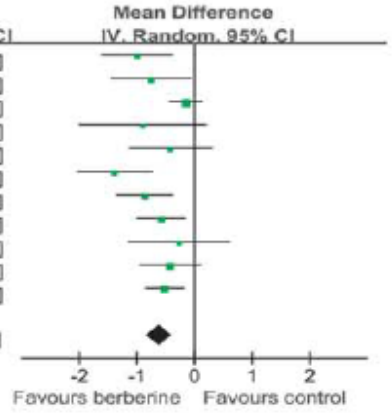
The Effects of Berberine on Blood Lipids: A Systemic Review and Meta-Analysis of Randomized Controlled Trials

Authors Hui Dong[1]*, Yan Zhao[2], Li Zhao[1]*, Fuer Lu[1]

TC (mmol/L)

Study or Subgroup	Berberine Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Kong 2004	-1	1.42	63	0	1.35	28	8.1%	-1.00 [-1.61, -0.39]
Li 2007	-0.81	1.82	51	-0.06	1.7	50	7.0%	-0.75 [-1.44, -0.06]
Cao 2007	-0.3	0.61	30	-0.15	0.48	30	15.7%	-0.15 [-0.43, 0.13]
Ju 2007	-0.54	1.88	45	0.36	3.14	42	3.4%	-0.90 [-2.00, 0.20]
Wang 2008	-0.95	1.34	30	-0.54	1.51	31	6.6%	-0.41 [-1.13, 0.31]
Kong 2008	-1.96	1.27	23	-0.57	0.78	16	7.6%	-1.39 [-2.03, -0.75]
Zhang 2008	-0.96	1.36	58	-0.1	1.21	52	10.6%	-0.86 [-1.34, -0.38]
Zheng 2009	-1.66	1.03	33	-1.08	0.62	33	12.2%	-0.58 [-0.99, -0.17]
Ye 2010	-0.99	2.07	40	-0.72	1.94	40	4.9%	-0.27 [-1.15, 0.61]
Zhou 2011	-0.92	1.34	60	-0.5	1.58	60	9.6%	-0.42 [-0.94, 0.10]
Wei 2012	-1.2	0.65	31	-0.68	0.62	28	14.4%	-0.52 [-0.84, -0.20]
Total (95% CI)			464			410	100.0%	-0.61 [-0.83, -0.39]

Heterogeneity: Tau² = 0.06; Chi² = 19.62, df = 10 (P = 0.03); I² = 49%
Test for overall effect: Z = 5.37 (P < 0.00001)

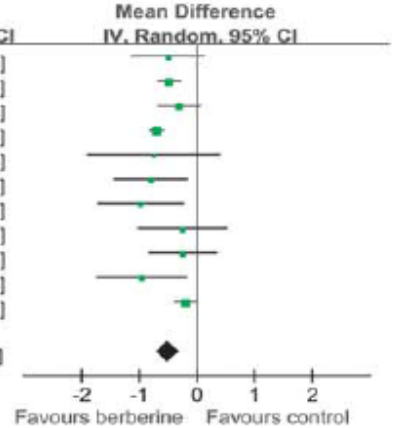


- 25%

TG (mmol/L)

Study or Subgroup	Berberine Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Kong 2004	-0.6	1.78	63	-0.1	1.21	28	6.2%	-0.50 [-1.13, 0.13]
Li 2007	-0.42	0.47	51	0.06	0.51	50	16.7%	-0.48 [-0.67, -0.29]
Cao 2007	-0.36	0.78	30	-0.05	0.64	30	11.6%	-0.31 [-0.67, 0.05]
Ju 2007	-0.68	0.27	45	0.02	0.26	42	18.9%	-0.70 [-0.81, -0.59]
Wang 2008	-1.17	2.24	30	-0.42	2.3	31	2.4%	-0.75 [-1.89, 0.39]
Kong 2008	-1.06	0.71	23	-0.26	1.14	16	6.2%	-0.80 [-1.43, -0.17]
Zhang 2008	-0.9	2.33	58	0.08	1.58	52	4.9%	-0.98 [-1.72, -0.24]
Zheng 2009	-0.82	1.76	33	-0.57	1.38	33	4.6%	-0.25 [-1.01, 0.51]
Ye 2010	-0.93	0.26	40	-0.68	1.87	40	6.8%	-0.25 [-0.84, 0.34]
Zhou 2011	-1.35	2.17	60	-0.39	2.17	60	4.5%	-0.96 [-1.74, -0.18]
Wei 2012	-0.4	0.37	31	-0.2	0.32	28	17.2%	-0.20 [-0.38, -0.02]
Total (95% CI)			464			410	100.0%	-0.50 [-0.69, -0.31]

Heterogeneity: Tau² = 0.04; Chi² = 28.97, df = 10 (P = 0.001); I² = 65%
Test for overall effect: Z = 5.25 (P < 0.00001)



- 20%

BERBERINA – QUADRO GLUCIDICO

INIBIZIONE DELL'ALFA-GLUCOSIDASI, RIDURRE IL TRASPORTO DEL GLUCOSIO ATTRAVERSO L'EPITELIO INTESTINALE.

Pan GY, Huang ZJ, Wang GJ, Fawcett JP, Liu XD, Zhao XC, Sun JG, Xie YY. The antihyperglycaemic activity of berberine arises from a decrease of glucose absorption.Planta Med. 2003 Jul;69(7):632-6.

MODULA L'ATTIVITÀ DI AMPK CON UN MECCANISMO METFORMINO SIMILE

Zhou L, Yang Y, Wang X, Liu S, Shang W, Yuan G, Li F, Tang J, Chen M, Chen J. Berberine stimulates glucose transport through a mechanism distinct from insulin.. Metabolism. 2007 Mar;56(3):405-12.

INCREMENTA L'ESPRESSIONE DI RNA MESSAGGERO DEL RECETTORE DELL'INSULINA Zhang H, Wei J, Xue R, Wu JD, Zhao W, Wang ZZ, Wang SK, Zhou ZX, Song DQ, Wang YM, Pan HN, Kong WJ, Jiang JD. Berberine lowers blood glucose in type 2 diabetes mellitus patients through increasing insulin receptor expression.Metabolism. 2010 Feb;59(2):285-92

FAVORISCE L'ESPRESSIONE DEI RECETTORI-CANALE GLUT4

Liu L.Z., Cheung S.C., Lan L.L. , Ho S.K., Xu H.X., Chang J.C., Tong, P.C. Berberine modulates insulin signaling transduction in insulin-resistant cells. Mol Cell Endocrinol. 2010 Apr 12;317 (1-2):148-53

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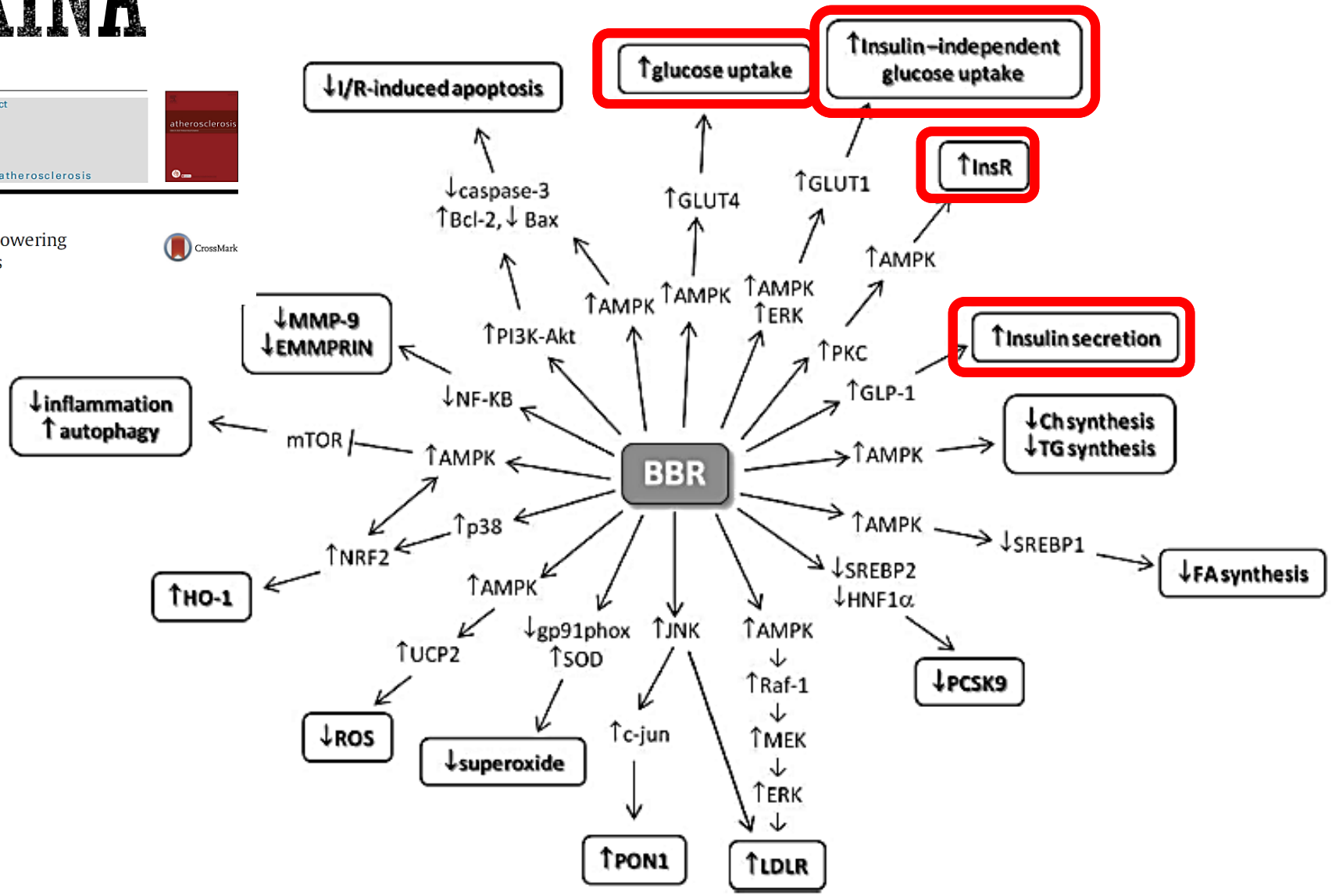
Review article

Berberine, a plant alkaloid with lipid- and glucose-lowering properties: From *in vitro* evidence to clinical studies

Angela Pirillo [a, b, *], Alberico Luigi Catapano [b, c]



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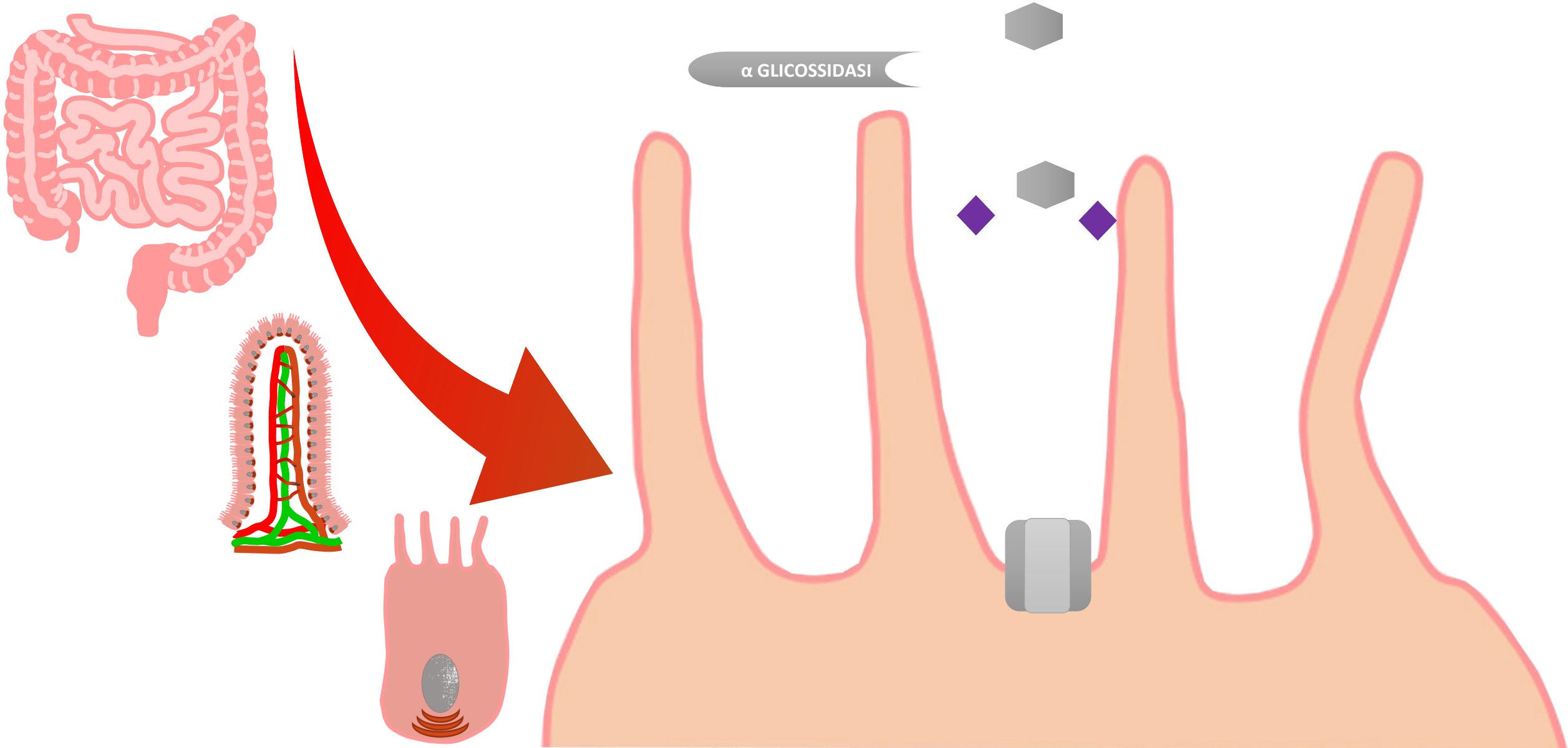

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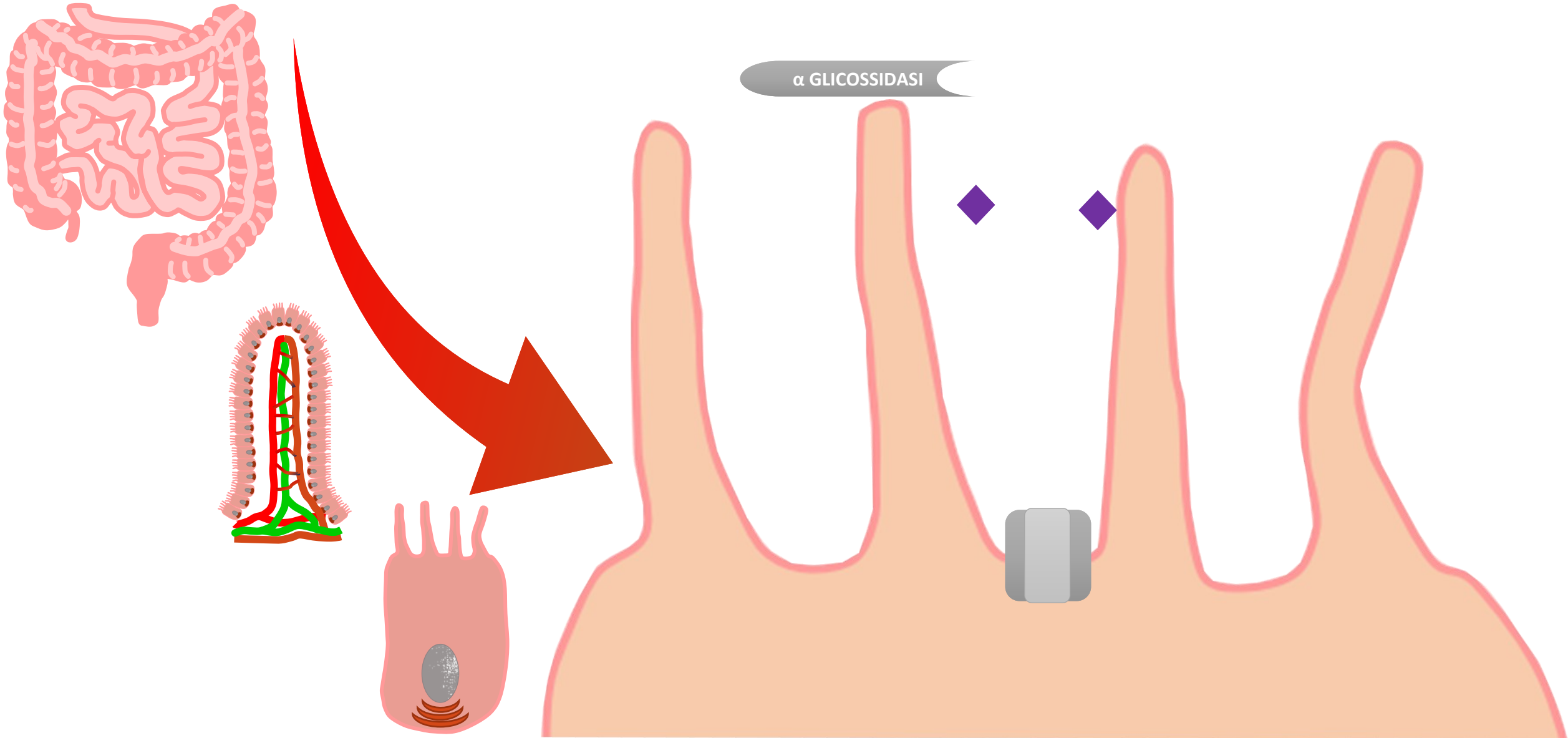
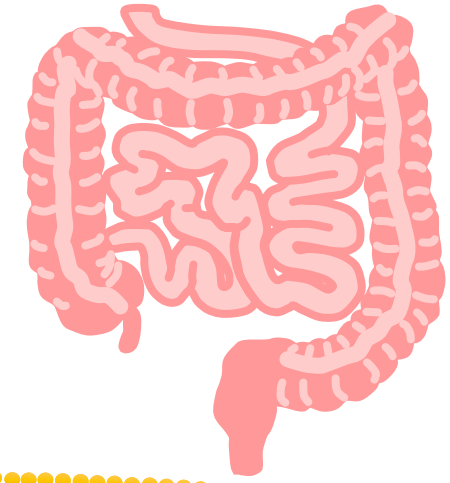
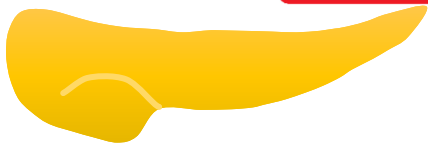
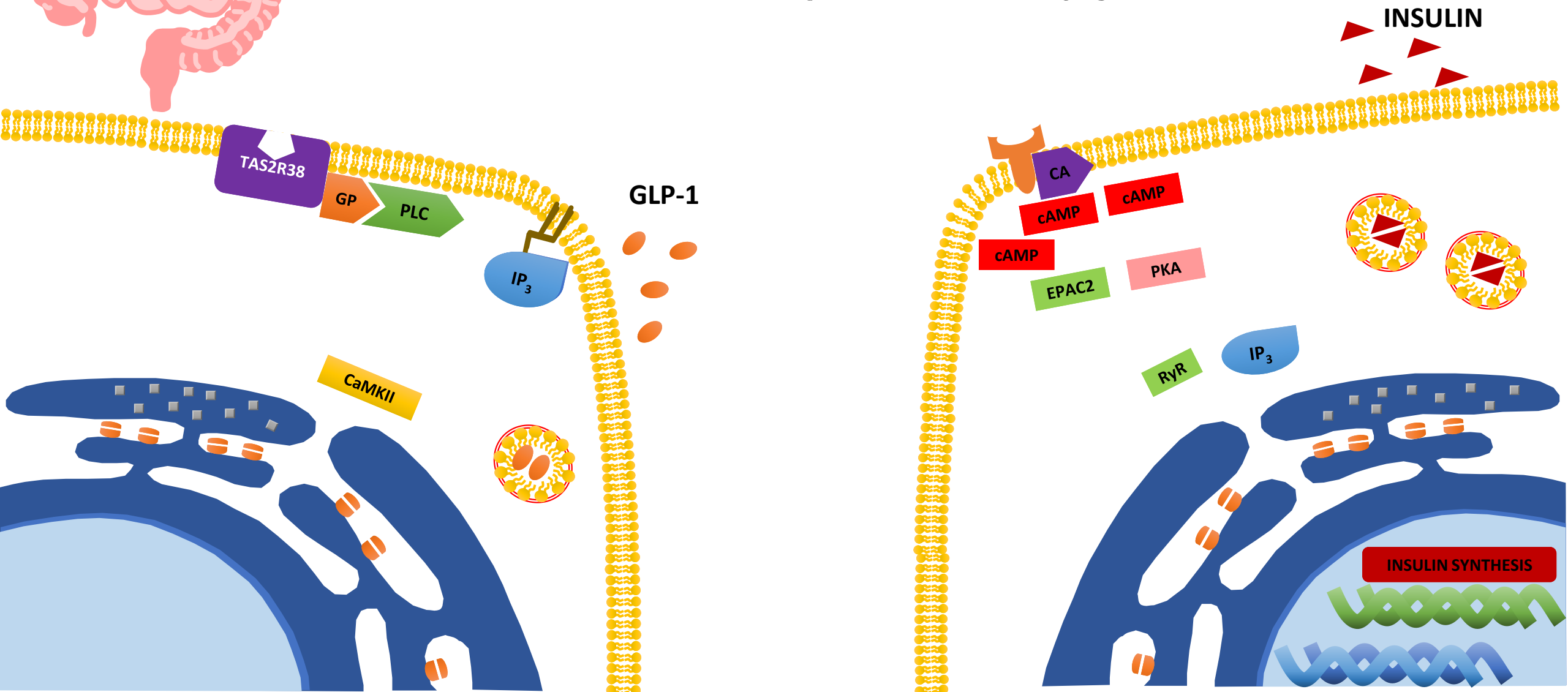


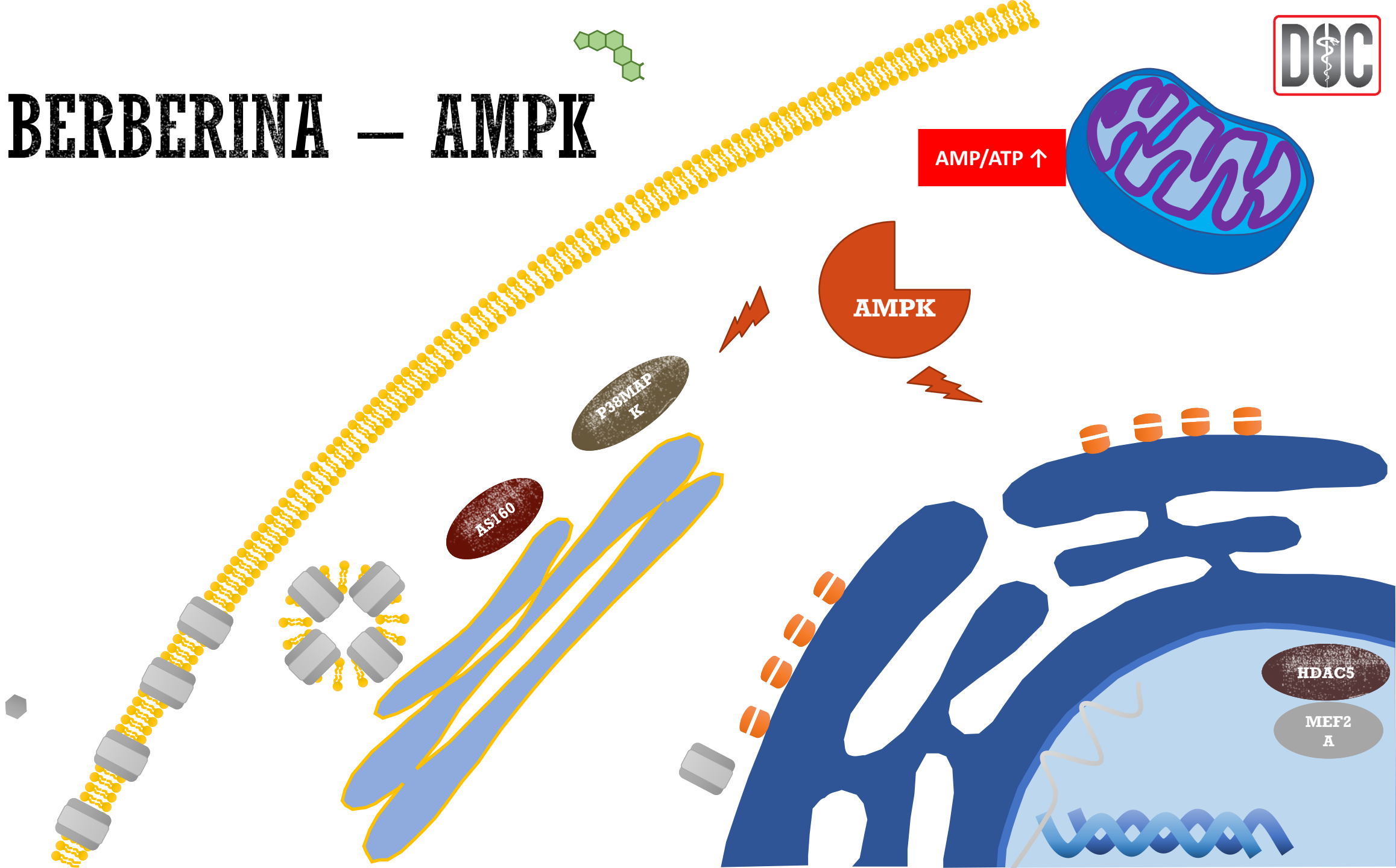
BERBERINA – GLP1- INSULINA







BERBERINA – AMPK



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ScienceDirect
Metabolism Clinical and Experimental 57 (2008) 1029–1037

Metabolism
Clinical and Experimental
www.metabolismjournal.com

Combination of simvastatin with berberine improves the lipid-lowering efficacy

Wei-Jia Kong[a,1], Jin Wei[b,1], Zeng-Yan Zuo[a], Yue-Ming Wang[a], Dan-Qing Song[a], Xue-Fu You[a], Li-Xun Zhao[a], Huai-Ning Pan[b], Jian-Dong Jiang[a,*]

[a]*Department of Pharmacology, Institute of Medicinal Biotechnology, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100050, China*
[b]*Department of Internal Medicine, Nanjing First Hospital, Nanjing 210006, China*

Received 15 October 2007; accepted 15 January 2008

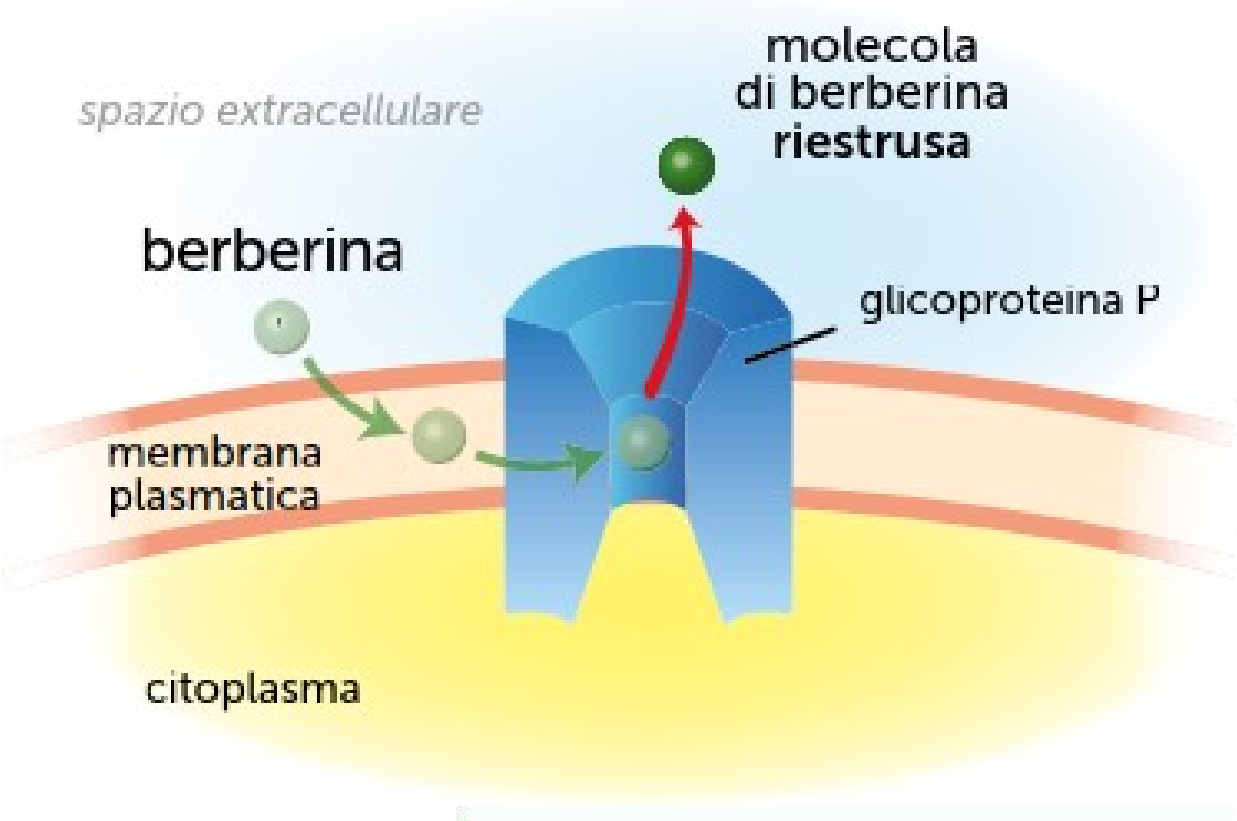
Table 2
Lipid-lowering efficacies of the combination therapy using BBR and SIMVA in hypercholesterolemic patients

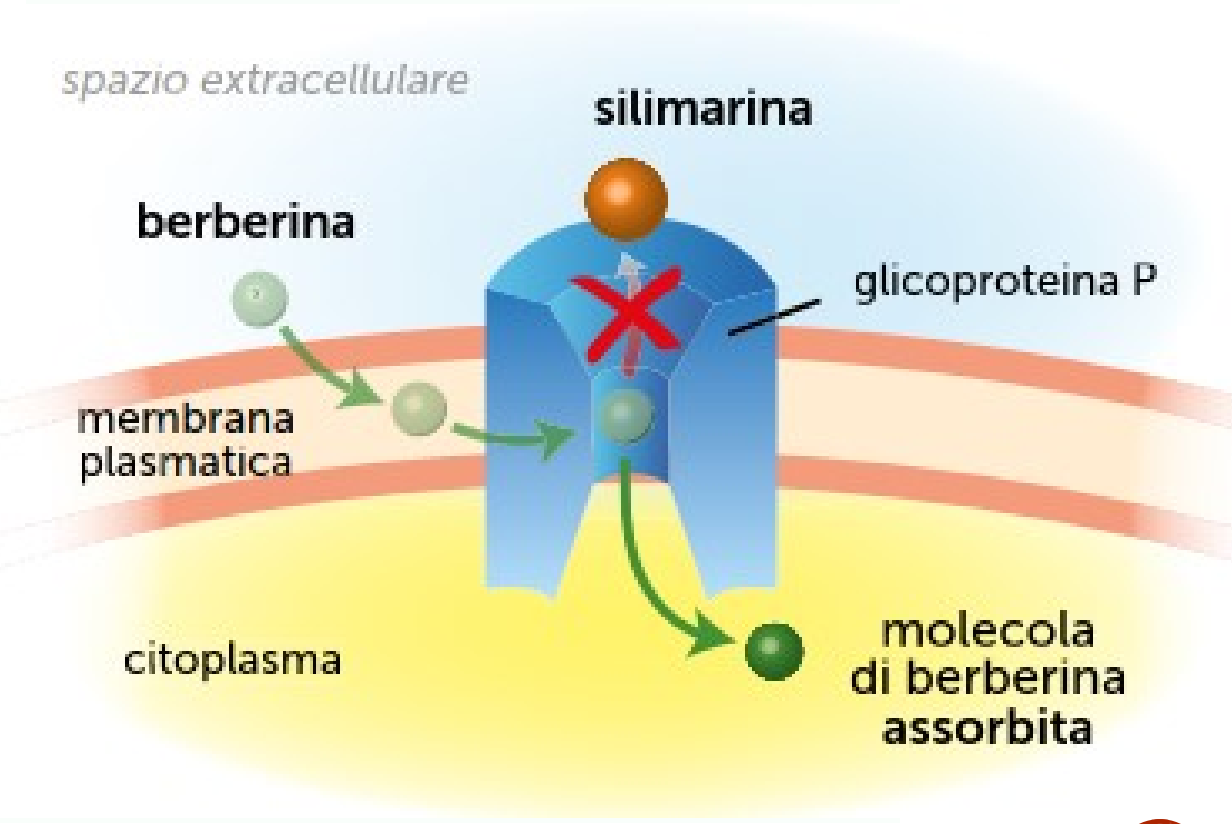
Measurement (reference range)	Treatment	BBR + SIMVA (n = 23)	SIMVA (n = 16)	BBR (n = 24)
LDL-c	Before	4.36 ± 0.97	4.28 ± 1	3.81 ± 0.56
(<3.1 mmol/L)	After	2.97 ± 0.93***	3.67 ± 0.8**	2.9 ± 0.7***
	% Change	31.8 ± 3.6†, ‡	14.3 ± 4.6	23.8 ± 3.6
TC	Before	6.73 ± 0.98	6.56 ± 0.5	6.17 ± 0.56
(<5.2 mmol/L)	After	4.77 ± 0.82***	5.99 ± 0.6**	4.82 ± 0.65***
	% Change	29.1 ± 2.4†,‡	9.1 ± 1.5	21.8 ± 1.6
TG	Before	2.72 ± 0.61	2.28 ± 0.9	1.94 ± 1.05
(<1.7 mmol/L)	After	1.66 ± 0.35***	2.02 ± 0.7*	1.51 ± 0.77**
	% Change	38.9 ± 6.5†,‡	11.4 ± 3.5	22.1 ± 10
HDL-c	Before	1.46 ± 0.55	1.15 ± 0.5	1.21 ± 0.34
(>1.0 mmol/L)	After	1.34 ± 0.35	1.18 ± 0.4	1.14 ± 0.3
	% Change	8.2 ± 6.8	2.6 ± 0.9	5.8 ± 1.7

Hypercholesterolemic patients were treated with BBR 1 g/d, SIMVA 20 mg/d, or their combination orally for 2 months. Before and after treatment, fasting blood samples were taken for the measurement of serum LDL-c, TC, TG, and HDL-c levels. Percentage changes of serum lipids from baselines to end points were calculated. Values are mean ± SEM of all of the patients in each group. For percentage changes in LDL-c, TC, and TG, $P < .01$ among groups by 1-way ANOVA.
*$P < .05$, **$P < .01$, ***$P < .001$ vs that of before treatment by paired t test.
†$P < .05$ vs that of BBR alone, ‡$P < .01$ vs that of SIMVA alone by the Newman-Keuls test.

BERBERINA

La co-somministrazione della berberina con un inibitore della P-glycoprotein (es. Silimarina estratta da *Silybum marianum*) ne aumenta l'assorbimento aumentandone la biodisponibilità (+4-8%).





Pirillo A & Catapano AL, Atherosclerosis 2015,243:449-461; Maeng HJ et al, J Pharm Sci 2002,91:2614-2621; Shitan N et al, Biosci Biotechnol Biochem 2007,71:242-245; Pan GY et al, Pharmacol Toxicol 2002,91:193-197.

BERBERINA

Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy Dovepress
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SHORT REPORT

Pilot study on the additive effects of berberine and oral type 2 diabetes agents for patients with suboptimal glycemic control

This article was published in the following Dove Press journal:
Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy
16 July 2012
Number of times this article has been viewed

Francesco Di Pierro[1]
Nicola Villanova[2]
Federica Agostini[2]
Rebecca Marzocchi[2]
Valentina Soverini[2]
Giulio Marchesini[2]

[1]Scientific Department, Velleja Research, Milano, [2]Diseases of Metabolism, S Orsola Malpighi Hospital, Bologna, Italy

Background: Suboptimal glycemic control is a common situation in diabetes, regardless of the wide range of drugs available to reach glycemic targets. Basic research in diabetes is endeavoring to identify new actives working as insulin savers, use of which could delay the introduction of injectable insulin or reduce the insulin dose needed. Commonly available as a nutraceutical, berberine is a potential candidate.

Methods and results: Because its low oral bioavailability can be overcome by P-glycoprotein inhibitors like herbal polyphenols, we have tested the nutraceutical combination of *Berberis aristata* extract and *Silybum marianum* extract (Berberol®) in type 2 diabetes in terms of its additive effect when combined with a conventional oral regimen for patients with suboptimal glycemic control. After 90 days of treatment, the nutraceutical association had a positive effect on glycemic and lipid parameters, significantly reducing glycosylated hemoglobin, basal insulin, homeostatic model assessment of insulin resistance, total and low-density lipoprotein cholesterol, and triglycerides. A relevant effect was also observed in terms of liver function by measuring aspartate transaminase and alanine transaminase. The product had a good safety profile, with distinctive gastrointestinal side effects likely due to its acarbose-like action.

Conclusion: Although further studies should be carried out to confirm our data, Berberol could be considered a good candidate as an adjunctive treatment option in diabetes, especially in patients with suboptimal glycemic control.

Keywords: berberine, silymarin, glycosylated hemoglobin, diabetes

Table 2 Effect of adjunctive Berberol therapy after 90 days of treatment in 22 patients with type 2 diabetes and suboptimal glycemic control

Parameter	t = 0	t = 90	Δ%	*P* value
HbA_{1c} (%)	8.0 ± 0.82	7.15 ± 1.09	−10.6	0.003
TC (mg/dL)	191 ± 40	151 ± 37	−21	0.002
LDL-C (mg/dL)	107.6 ± 36	87 ± 34	−19.2	0.013
HDL-C (mg/dL)	46.0 ± 10.7	44.0 ± 10.9	−4.35	ns
Triglycerides (mg/dL)	170 ± 81	95 ± 45	−44.1	0.012
FG (mg/dL)	149.5 ± 21.3	122 ± 44.02	−18.4	ns
BI (μU/mL)	22.7 ± 11.8	15.5 ± 7.9	−34.4	0.04
Body mass index (kg/m²)	34.4 ± 6.5	34.1 ± 9.9	−0.3	ns
Weight (kg)	101.3 ± 23.6	100.6 ± 24.1	−0.7	ns
Waistline (cm)	116.9 ± 14.7	116.2 ± 14.5	−0.4	ns
HOMA-R	6.9 ± 3.6	5.1 ± 3.6	−26.1	0.04

Notes: All values are expressed as the median ± standard deviation at baseline (t = 0) and after 90 days (t = 90) of daily therapy. Δ% corresponds to the difference (percent) between t = 0 and t = 90.

Abbreviations: BI, basal insulin; FG, fasting glucose; HOMA-R, homeostatic model assessment of insulin resistance (FG × BI/405); LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; HbA_{1c}, glycosylated hemoglobin; ns, not statistically significant; TC, total cholesterol.

L'ASSOCIAZIONE BERBERINA + SILIMARINA HA EFFETTI POSITIVI COME ADD ON THERAPY SIA SUL PROFILO GLUCIDICO (IN PAZIENTI NON A TARGET) CHE SU QUELLO LIPIDICO

BERBERINA

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Clinical Nutrition

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Original article

The role of a fixed *Berberis aristata/Silybum marianum* combination in the treatment of type 1 diabetes mellitus

Giuseppe Derosa [a, b, *], Angela D'Angelo [a], Pamela Maffioli [a, c]

[a] Department of Internal Medicine and Therapeutics, University of Pavia, and Fondazione IRCCS Policlinico S. Matteo, Pavia, Italy
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[c] PhD School in Experimental Medicine, University of Pavia, Pavia, Italy

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Keywords:
Berberis aristata
Insulin consumption
Silybum marianum
Type 1 diabetes mellitus

SUMMARY

Aim: To evaluate if the addition of *Berberis aristata/Silybum marianum* (Berberol®) leads to a reduction of insulin dose and to an improvement of glycemic control in patients with type 1 diabetes mellitus.
Material and methods: 85 type 1 diabetic patients were enrolled and randomized to take placebo or *B. aristata/S. marianum* 588/105 mg, 1 tablet at lunch and 1 tablet at dinner, for six months. We evaluated if there was a reduction of insulin dose necessary to reach an adequate glycemic control. We also evaluated at the study start, and after 6 months: body mass index (BMI), glycated hemoglobin, fasting plasma glucose (FPG), post-prandial glucose (PPG), lipid profile.
Results: We observed a reduction of total insulin consumption in *B. aristata/S. marianum*, both compared to baseline and to placebo. Regarding insulin administration at meals, we recorded that the group treated with *B. aristata/S. marianum* used less insulin at meals, and at bedtime. Glycated hemoglobin decreased with *B. aristata/S. marianum* compared to baseline, but not compared to placebo. There was a decrease of FPG, and PPG with *B. aristata/S. marianum* both compared to baseline and to placebo. Regarding lipid profile, we recorded a decrease of total cholesterol, triglycerides, and LDL-cholesterol and an increase of HDL-cholesterol with *B. aristata/S. marianum*, both compared to baseline and to placebo.
Conclusions: The addition of *B. aristata/S. marianum* to insulin therapy in patients with type 1 diabetes mellitus leads to a reduction of the insulin dose necessary to have an adequate glycemic control.

Table 3
Total insulin consumption at the baseline.

	Placebo	Berberol
Unit of insulin		
Total	2.890 ± 182	2.884 ± 178
Breakfast	538 ± 60	544 ± 62
Lunch	564 ± 62	558 ± 56
Dinner	645 ± 75	639 ± 72
Bedtime	1080 ± 109	1068 ± 101
Type of insulin		
Rapid-acting insulin analogs	41	44
Lispro	21	23
Aspart	9	11
Glulisine	11	10
Long-acting insulin analogs	35	36
Lispro protamine	19	18
Glargine	10	13
Detemir	6	5

Table 4
Total insulin consumption at the end of the study.

	Placebo	Berberol
Unit of insulin		
Total	2.876 ± 174	2.460 ± 152*
Breakfast	528 ± 54	469 ± 44*°
Lunch	561 ± 62	408 ± 32**^
Dinner	649 ± 75	543 ± 59**^
Bedtime	1061 ± 109	918 ± 91*°
Type of insulin		
Rapid-acting insulin analogs	39	42
Lispro	21	22
Aspart	8	10
Glulisine	10	10
Long-acting insulin analogs	33	34
Lispro protamine	18	17
Glargine	9	12
Detemir	6	5

*$p < 0.05$ vs. baseline; **$p < 0.01$ vs. baseline; ° $p < 0.05$ placebo; ^$p < 0.01$ vs. placebo.

BERBERINA

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REVIEW

WILEY

Metabolic effect of berberine–silymarin association: A meta-analysis of randomized, double-blind, placebo-controlled clinical trials

Federica Fogacci[1] | Davide Grassi[2,4] | Manfredi Rizzo[3,4] | Arrigo F.G. Cicero[1,4]

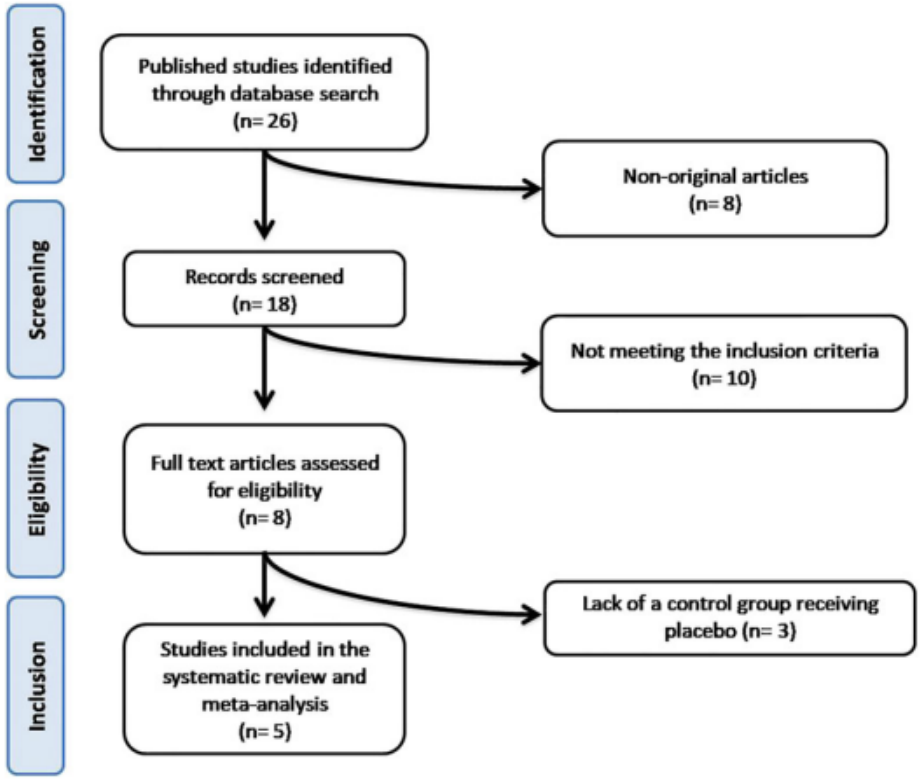


FIGURE 1 Flow chart of the number of studies identified and included into the meta-analysis [Colour figure can be viewed at wileyonlinelibrary.com]

5 STUDI – 497 SOGGETTI
251 TRATTATI CONTRO 246 PLACEBO

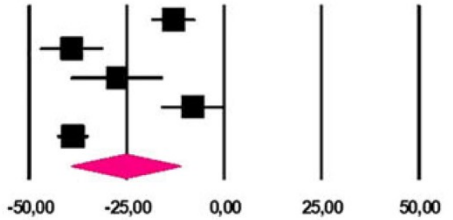
BERBERINA

-29.1 mg/dl

Study name	Difference in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Guarino, G (2017)	-13,000	2,847	8,103	-18,579	-7,421	-4,567	0,000
Derosa, G (2016)	-39,100	4,121	16,980	-47,176	-31,024	-9,489	0,000
Derosa, G (2015)	-27,500	6,026	36,314	-39,311	-15,689	-4,563	0,000
Guarino, G (2015)	-8,000	4,162	17,320	-16,157	0,157	-1,922	0,055
Derosa, G (2013)	-38,800	2,041	4,167	-42,801	-34,799	-19,008	0,000
	-25,308	7,085	50,196	-39,194	-11,422	-3,572	0,000

Statistics for each study

Difference in means and 95% CI



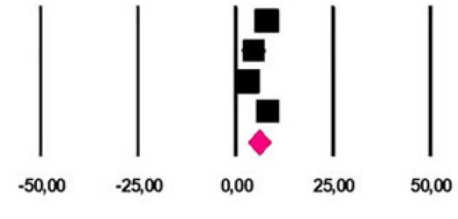
TOTAL CHOLESTEROL

+6 mg/dl

Study name	Difference in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Guarino, G (2017)	8,000	0,924	0,853	6,190	9,810	8,662	0,000
Derosa, G (2016)	4,700	1,562	2,440	1,638	7,762	3,009	0,003
Derosa, G (2015)	3,000	0,875	0,766	1,285	4,715	3,428	0,001
Derosa, G (2013)	8,200	1,182	1,397	5,883	10,517	6,938	0,000
	5,985	1,428	2,039	3,186	8,783	4,191	0,000

Statistics for each study

Difference in means and 95% CI



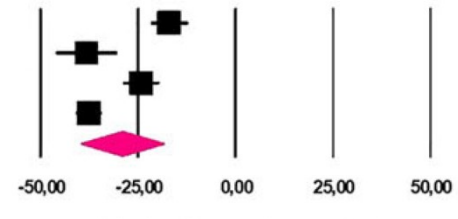
HDL-CHOLESTEROL

-29.1 mg/dl

Study name	Difference in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Guarino, G (2017)	-17,000	2,425	5,882	-21,754	-12,246	-7,009	0,000
Derosa, G (2016)	-38,200	4,004	16,033	-46,048	-30,352	-9,540	0,000
Derosa, G (2015)	-24,200	2,331	5,435	-28,769	-19,631	-10,381	0,000
Derosa, G (2013)	-37,600	1,685	2,839	-40,903	-34,297	-22,314	0,000
	-29,118	5,380	28,948	-39,663	-18,573	-5,412	0,000

Statistics for each study

Difference in means and 95% CI

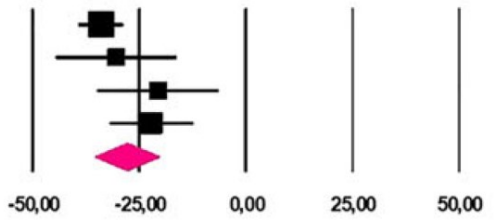


LDL-CHOLESTEROL

BERBERINA

– 28 mg/dl

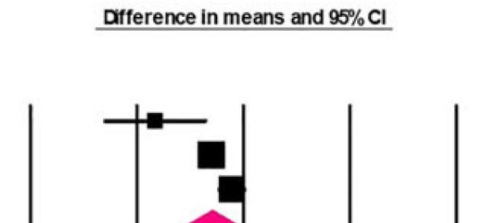
Study name	Difference in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Guarino, G (2017)	-34,000	2,668	7,118	-39,229	-28,771	-12,744	0,000
Derosa, G (2016)	-30,400	7,236	52,362	-44,583	-16,217	-4,201	0,000
Derosa, G (2015)	-20,600	7,284	53,051	-34,876	-6,324	-2,828	0,005
Derosa, G (2013)	-22,100	5,016	25,161	-31,931	-12,269	-4,406	0,000
	-27,957	3,753	14,088	-35,314	-20,601	-7,449	0,000



TRIGLYCERIDES

– 7.5 mg/dl

Study name	Difference in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Derosa, G (2016)	-20,700	6,169	38,057	-32,791	-8,609	-3,355	0,001
Derosa, G (2015)	-7,500	0,995	0,990	-9,450	-5,550	-7,537	0,000
Derosa, G (2013)	-2,700	1,669	2,787	-5,972	0,572	-1,617	0,106
	-7,453	2,810	7,897	-12,961	-1,945	-2,652	0,008



FASTING PLASMA GLUCOSE

BERBERINA

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Berberine and Dyslipidemia: Different Applications and Biopharmaceutical Formulations Without Statin-Like Molecules—A Meta-Analysis

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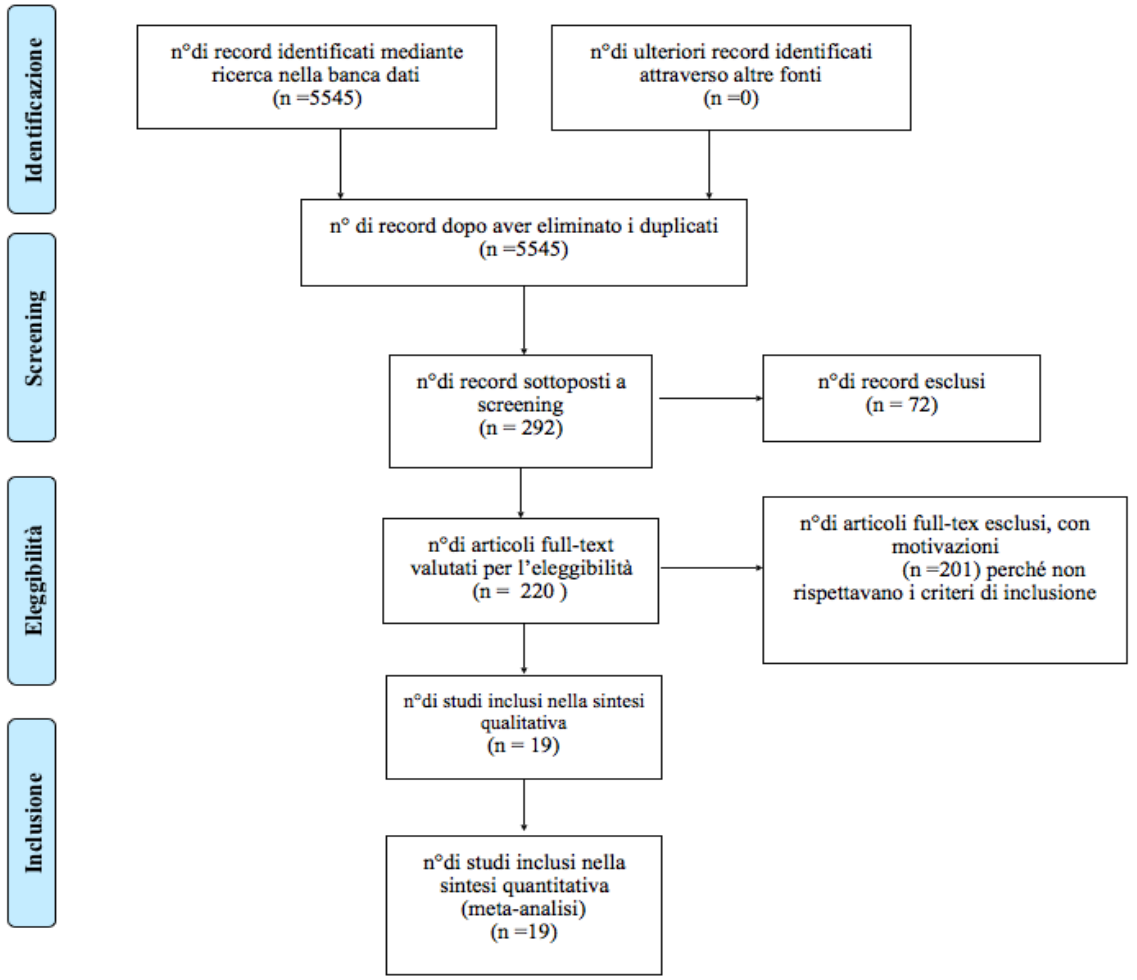
[2]*Department of Biomolecular Sciences, Service of Biostatistics, University of Urbino Carlo Bo, Urbino, Italy.*
[3]*School of Biosciences and Veterinary Medicine, University of Camerino, Camerino, Italy.*

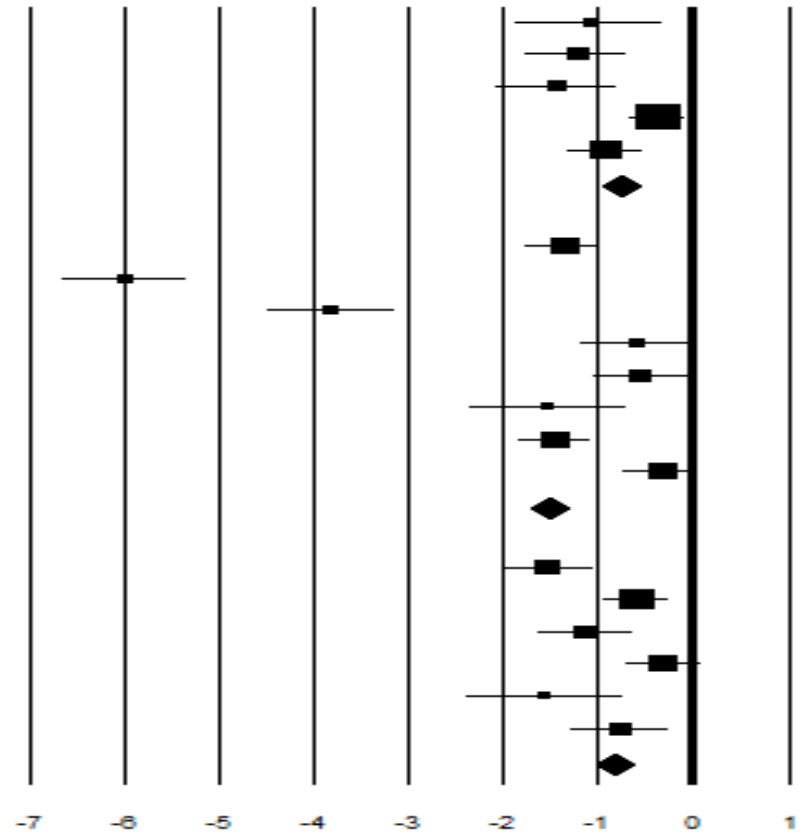
ABSTRACT The aim of this study was to analyze the efficacy of berberine taken alone or in other formulations (with silymarin or other mixtures) on dyslipidemia through a systematic review of the literature and a meta-analysis. A systematic investigation was conducted on 19 studies that were selected based on inclusion and exclusion criteria. Both controlled trials ($n=12$) and cross-sectional trials ($n=7$) were included. The following formulations were examined: berberine used alone ($n=5$), berberine combined with silymarin ($n=8$), and other mixture containing berberine ($n=6$). A meta-analysis was performed using a fixed-effects model and meta-regression. Total cholesterol (TC), low-density lipoprotein (LDL) cholesterol, high-density lipoprotein (HDL) cholesterol, and triglycerides were considered. Moreover, possible associations of each parameter with age and the dose and duration of the treatment were analyzed. The data obtained showed a significant reduction in TC and LDL cholesterol for each formulation. A reduction in triglycerides was also observed for both TC and LDL but with a smaller impact. As regards HDL, a slight increase was observed, but it was not statistically significant. The formulation of berberine in association with silymarin was found to have the greatest impact on TC, LDL, HDL, and triglycerides. The greater efficacy of the formulation consisting of berberine associated with silymarin can probably be accounted for by the fact that the latter increases the bioavailability of berberine. However, it is necessary to carry out further clinical studies to better define the efficacy of the treatment and which patients show the best response.



BERBERINA

EFFETTI SULLE LDL IN RELAZIONE AL TIPO DI FORMULAZIONE

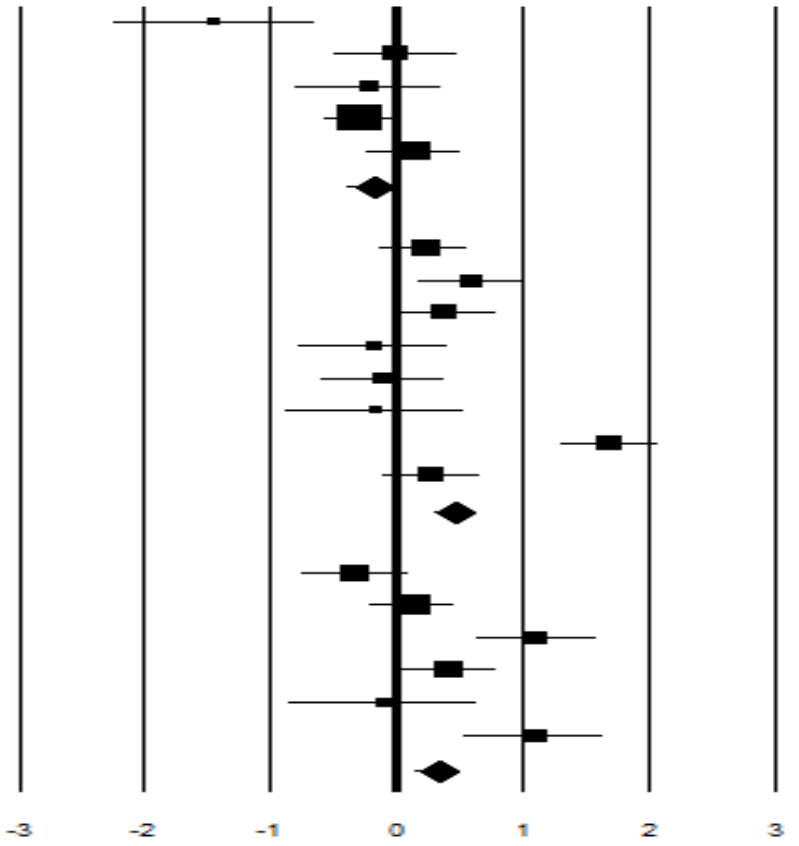
	ES	95% CI
Jun et al. 2008	-1,09	-1,85 , -0,32
Kong et al. 2004	-1,23	-1,76 , -0,69
Kong et al.2 2008	-1,44	-2,07 , -0,80
Lin et al. 2015	-0,37	-0,66 , -0,09
Yifei et al. 2008	-0,91	-1,31 , -0,52
1=berberina sola	-0,76	-0,95 , -0,57
Derosa et al. 2014	-1,36	-1,75 , -0,97
Derosa et al.4 2013	-5,99	-6,65 , -5,33
Derosa et al.5 2013	-3,81	-4,48 , -3,14
Di Pierro et al. 2012	-0,59	-1,19 , 0,02
Di Pierro et al.2 2013	-0,55	-1,05 , -0,05
Di pierro et el.3 2015	-1,52	-2,33 , -0,71
Guarino et al. 2017	-1,46	-1,84 , -1,08
Orio et al. 2013	-0,33	-0,72 , 0,07
2= berberina_silimarina	-1,52	-1,69 , -1,34
Daddato et al 2017	-1,51	-1,99 , -1,03
Dipierro et al.4 2016	-0,60	-0,94 , -0,25
Pirillo et al. 2014	-1,13	-1,62 , -0,64
Sola et al. 2014	-0,31	-0,70 , 0,08
Spigoni et al. 2017	-1,57	-2,39 , -0,75
Wei et al. 2012	-0,77	-1,30 , -0,24
3=miscele	-0,82	-1,01 , -0,63



BERBERINA

EFFETTI SULLE HDL IN RELAZIONE AL TIPO DI FORMULAZIONE

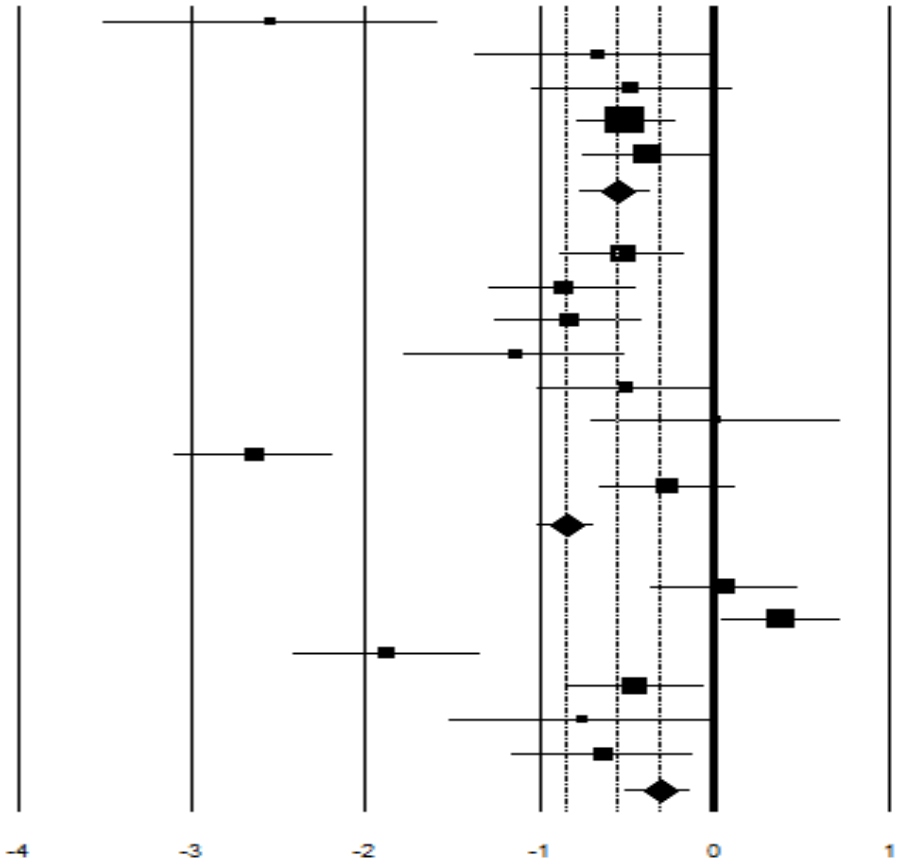
	ES	95% CI
Jun et al. 2008	-1,44	-2,25 , -0,64
Kong et al. 2004	0,00	-0,49 , 0,49
Kong et al.2 2008	-0,22	-0,79 , 0,35
Lin et al. 2015	-0,28	-0,56 , -0,00
Yifei et al. 2008	0,15	-0,22 , 0,53
1=berberina sola	-0,19	-0,38 , -0,00
Derosa et al. 2014	0,22	-0,13 , 0,57
Derosa et al.4 2013	0,59	0,17 , 1,00
Derosa et al.5 2013	0,40	-0,01 , 0,80
Di Pierro et al. 2012	-0,19	-0,78 , 0,41
Di Pierro et al.2 2013	-0,11	-0,60 , 0,38
Di pierro et el.3 2015	-0,17	-0,88 , 0,55
Guarino et al. 2017	1,70	1,31 , 2,09
Orio et al. 2013	0,29	0,11 , 0,68
2= berberina_silimarina	0,46	0,30 , 0,61
Daddato et al 2017	-0,33	-0,75 , 0,10
Dipierro et al.4 2016	0,13	-0,21 , 0,48
Pirillo et al. 2014	1,12	0,63 , 1,60
Sola et al. 2014	0,41	0,02 , 0,81
Spigoni et al. 2017	-0,11	-0,85 , 0,64
Wei et al. 2012	1,10	0,55 , 1,65
3=miscele	0,34	0,16 , 0,52



BERBERINA

EFFETTI SUI TRIGLICERIDI IN RELAZIONE AL TIPO DI FORMULAZIONE

	ES	95% CI
Jun et al. 2008	-2,54	-3,51 , -1,58
Kong et al. 2004	-0,67	-1,37 , 0,03
Kong et al.2 2008	-0,47	-1,04 , 0,11
Lin et al. 2015	-0,50	-0,79 , -0,22
Yifei et al. 2008	-0,37	-0,75 , 0,00
1=berberina sola	-0,56	-0,76 , -0,37
Derosa et al. 2014	-0,52	-0,88 , -0,17
Derosa et al.4 2013	-0,87	-1,29 , -0,44
Derosa et al.5 2013	-0,83	-1,25 , -0,41
Di Pierro et al. 2012	-1,14	-1,78 , -0,51
Di Pierro et al.2 2013	-0,51	-1,01 , -0,01
Di pierro et el.3 2015	0,01	-0,70 , 0,73
Guarino et al. 2017	-2,64	-3,10 , -2,18
Orio et al. 2013	-0,26	-0,66 , 0,13
2= berberina_silimarina	-0,84	-1,01 , -0,68
Daddato et al 2017	0,06	-0,37 , 0,48
Dipierro et al.4 2016	0,40	0,05 , 0,74
Pirillo et al. 2014	-1,87	-2,42 , -1,33
Sola et al. 2014	-0,45	-0,84 , -0,06
Spigoni et al. 2017	-0,75	-1,51 , 0,02
Wei et al. 2012	-0,64	-1,16 , -0,11
3=miscele	-0,31	-0,50 , -0,13



BERBERINA – SICUREZZA CVD

ESISTONO OLTRE 24 STUDI CHE DIMOSTRANO GLI EFFETTI CARDIOVASCOLARI POSITIVI ESERCITATI DALLA BERBERINA

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BERBERINA – SICUREZZA CVD

ESISTONO OLTRE 24 STUDI CHE DIMOSTRANO GLI EFFETTI CARDIOVASCOLARI POSITIVI ESERCITATI DALLA BERBERINA

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BERBERIS ARISTATA

+

MONASCUS PURPUREUS

BERBERINA + MONACOLINA

JOURNAL OF MEDICINAL FOOD
J Med Food 23 (6) 2020, 658–666

DOI: 10.1089/jmf.2019.0168

Efficacy of Nutraceutical Combination of Monacolin K, Berberine, and Silymarin on Lipid Profile and PCSK9 Plasma Level in a Cohort of Hypercholesterolemic Patients

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[1]*IRCCS Ospedale Policlinico San Martino, Genoa, Italy.*
[2]*Department of Internal Medicine, University of Genoa, Genoa, Italy.*
[3]*Department of Food and Drug, University of Parma, Parma, Italy.*
[4]*Scientific Department, Velleja Research, Milan, Italy.*

ABSTRACT The guidelines for the treatment of dyslipidemias include the use of nutraceuticals (NUTs) in association with lifestyle modifications to achieve therapeutic goals. In NUT pill, different substances may be associated; in this study we investigated a combined NUT containing monacolin K (MonK)+KA (1:1), berberine (BBR), and silymarin. The aim of the study was to evaluate low-density lipoprotein cholesterol (LDL-C) reduction in 53 patients suffering from polygenic hypercholesterolemia, characterized by a low/intermediate cardiovascular risk calculated with SCORE algorithm. The effects on lipid profile of 2-month treatment with NUT containing MonK+KA (1:1), BBR, and sylimarin, were compared with Atorvastatin (ATO) 10 mg administrated in a matched control group. Serum proprotein convertase subtilisin/kexin type 9 (PCSK9) levels and the cholesterol loading capacity (CLC) were determined at baseline and at the end of the study in NUT-treated group; variations were assessed. NUT was effective as lipid-lowering agent with a wide interindividual response variability (mean LDL-C from 170.8 ± 19.9 to 123.8 ± 20.0 with a change of –47.0 ± 21.5 mg/dL; $P < .001$) and the effect was similar to that induced by ATO. The use of NUT significantly modified PCSK9 levels ($P < .01$) and CLC ($P < .001$), ultimately suppressing the serum-mediated foam cell generation directly measured on human macrophages. NUT reduces LDL-C levels with an effect similar to what is induced by 10 mg of ATO and *ex vivo* improves the functional profile of lipoproteins with antiatherogenic action.

BERBERINA + MONA

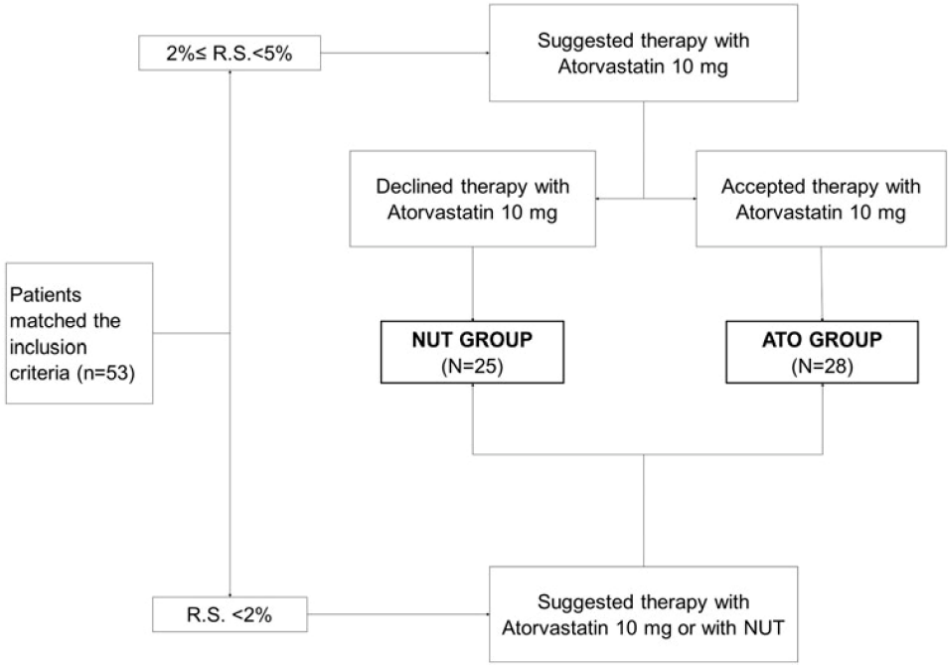

FIG. 1. CONSOR
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their decision, they
ATO or NUT groups
RS <2% was sugge
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erence, they were as
NUT groups. AT
NUT, nutraceutical;

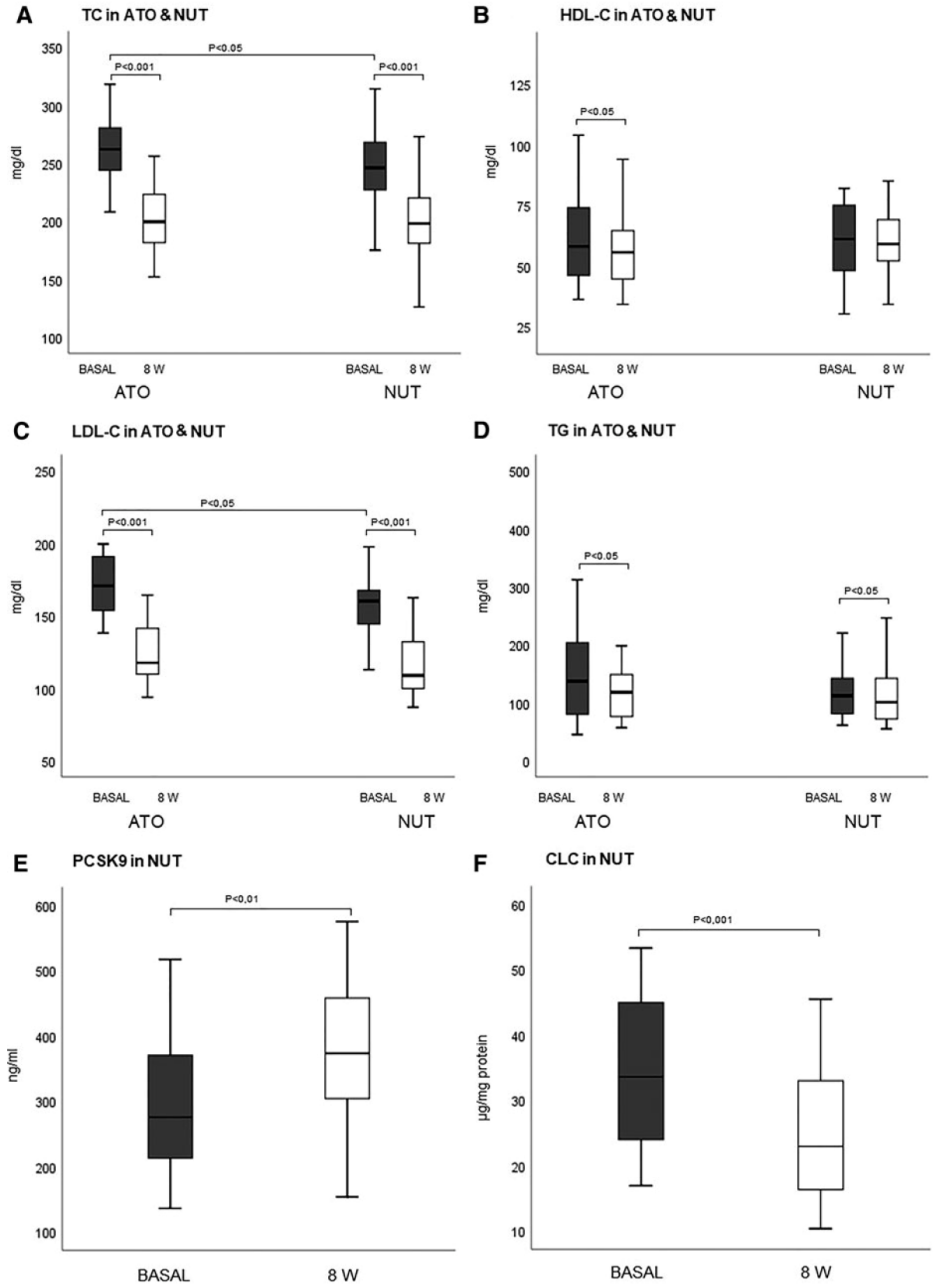


FIG. 2. Baseline and follow-up after treatment of lipid parameters, PCSK9, and CLC in ATO Group and NUT Group. **(A)** Baseline and follow-up TC in ATO and NUT groups. **(B)** Baseline and follow-up HDL-C in ATO and NUT groups. **(C)** Baseline and follow-up LDL-C in ATO and NUT groups. **(D)** Baseline and follow-up TG in ATO and NUT groups. **(E)** Baseline and follow-up PCSK9 in NUT group. **(F)** Baseline and follow-up CLC NUT group. Data are expressed as mean ± standard deviation. CLC, cholesterol loading capacity; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; PCSK9, proprotein convertase subtilisin/kexin type 9; TC, total cholesterol; TG, triglycerides; W, weeks.

FIBRE E STEROLI VEGETALI

FIBRE E STEROLI VEGETALI

Plantago ovata

***Amorphophallus konjac* root**

Cyamopsis tetragonoloba (Guar Gum)

FIBRE E STEROLI VEGETALI

Da un punto di vista funzionale, **le fibre si classificano** come:

a) fibre lineari, insolubili in acqua
poco fermentescibili, effetto lassativo modesto di tipo meccanico (es.: crusca);

b) fibre lineari, solubili in acqua e non viscose
fermentescibili e prebiotiche, prive di effetto lassativo (es.: inulina);

c) fibre lineari, solubili in acqua, viscose e fermentescibili
poco prebiotiche, aumentano la viscosità del chimo rallentando l'assorbimento dei nutrienti, non hanno effetto lassativo (es.: GGD, Beta-glucani da avena);

d) fibre lineari, solubili in acqua, rigonfianti, viscose, non fermentescibili
a livello gastrico gonfiano e promuovono sazietà di tipo meccanico; non prebiotiche, aumentano la viscosità del chimo rallentando l'assorbimento dei nutrienti, possono avere effetto lassativo (psillio, glucomannano).

FIBRE E STEROLI VEGETALI

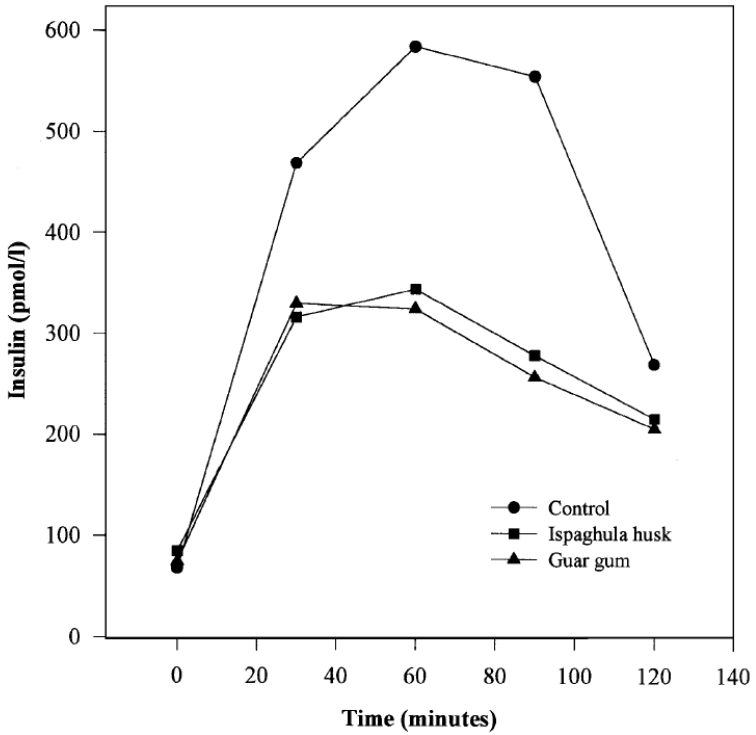
European Journal of Clinical Nutrition (2001) 55, 235-243
 0954-3007/01 $15.00
www.nature.com/ejcn

Effects of *ispaghula husk* and guar gum on postprandial glucose and insulin concentrations in healthy subjects

M Sierra[1]*, JJ Garcia[1], N Fernández[1], MJ Diez[1], AP Calle[1], AM Sahagún[1] and the Farmafibra Group†

[1]*Department of Pharmacology, Toxicology and Nursing, University of León, León, Spain*

Results: A significant decrease in mean serum insulin concentrations was observed from 30 to 90 min in the presence of both fibers. The area under the insulin curve was significantly reduced by 36.1% for *ispaghula husk* and 39.4% for guar gum. The area under the glucose curve was reduced by 11.1% (significant difference) for *ispaghula husk* and 2.6% for guar gum (no significant difference).
Conclusions: According to the results obtained in this study, the administration of *ispaghula husk* may be beneficial due to its ability to reduce glucose postprandial concentration and especially insulin requirements. Individualization of the treatment would be advisable due to large individual variations observed in glycemic and insulinemic postprandial responses.



Mean serum insulin concentrations in 10 healthy subjects after a 50 g oral glucose load with or without fiber.

L'area sotto la curva dell'insulina è ridotta del 36,1% per l'*ispaghula husk* e del 39,4% per la gomma guar.

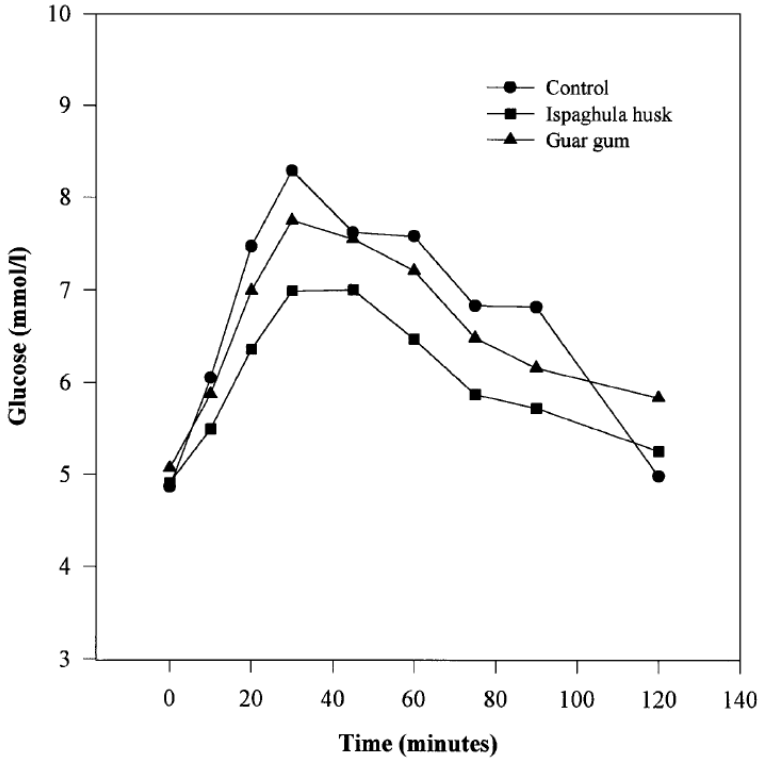


Figure 1 Mean serum glucose concentrations in 10 healthy subjects after a 50 g oral glucose load with or without fiber.

L'area sotto la curva del glucosio ridotta dell'11,1% per l'*ispaghula husk* e del 2,6% per la gomma guar

FIBRE E STEROLI VEGETALI

Br J Nutr. 2011 Nov;106(9):1349-52.
Viscosity rather than quantity of dietary fibre predicts cholesterol-lowering effect in healthy individuals.

Despite the smaller quantity consumed, the high-viscosity fibre lowered LDL-C to a greater extent than lower-viscosity fibres

J Clin Lipidol. 2008 Apr;2(2):S4-S10.
Dietary agents that target gastrointestinal and hepatic handling of bile acids and cholesterol.
Jones PJ.

Dietary soluble fiber represents another means of reducing intestinal cholesterol uptake, through enhanced bile-acid clearance through the gut

FIBRE E STEROLI VEGETALI

Pinus maritimus (Bark)

I fitosteroli sono composti lipofili della famiglia dei triterpeni, ampiamente distribuiti nel regno vegetale, le cui proprietà ipocolesterolemizzanti sono note fin dagli anni '50 (1). Essi hanno una struttura analoga a quella del colesterolo costituita da un anello tetraciclico e da una lunga catena laterale flessibile in corrispondenza dell'atomo di carbonio C-17. Dal colesterolo differiscono per la presenza di gruppi metilici o etilici nella catena laterale in corrispondenza del carbonio C-24 (Figura 1). Nei vegetali sono presenti anche steroli saturi, denominati stanoli, che sono caratterizzati dall'assenza del doppio legame in posizione Δ-5 sull'anello sterolico e sono meno abbondanti in natura dei corrispondenti insaturi (Figura 1) (2,3). Nella dizione comune il termine fitosteroli viene solitamente utilizzato per indicare complessivamente steroli e stanoli.

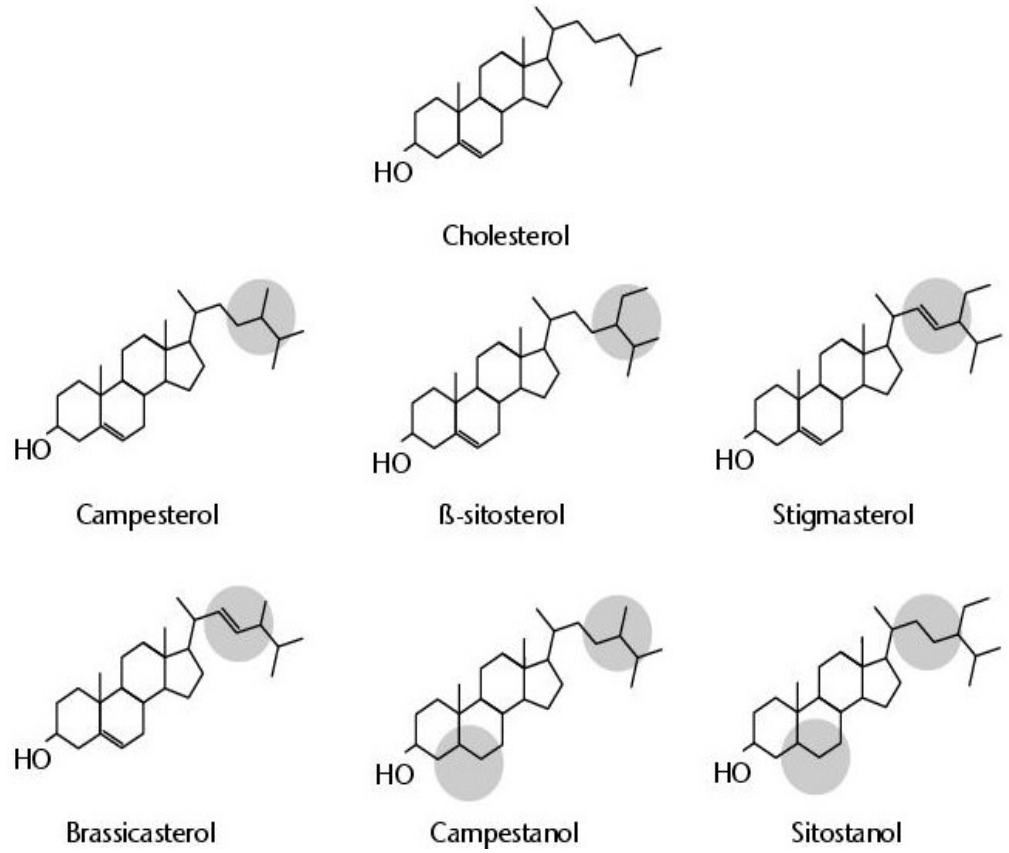
I fitosteroli non possono essere sintetizzati per via endogena nell'uomo e derivano quindi esclusivamente dalla dieta. Sebbene siano stati identificati più di 250 fitosteroli diversi, i più comuni sono il sitosterolo, il campesterolo e lo stigmasterolo, che rappresentano in media rispettivamente il 65, 30 e 3% dell'apporto dietetico (4).

FIBRE E STEROLI VEGETALI

beta-sitosterolo (50-65%)
campesterolo (30-33%)
stigmasterolo (3-4%)

fitostanolo + campestanolo (5%)

Quanto funzionano i fitosteroli?



FIBRE E STEROLI VEGETALI

Asia Pac J Clin Nutr 2009;18 (2): 179-186

Original Article

The effects of phytosterols/stanols on blood lipid profiles: a systematic review with meta-analysis

Ting Wu PhD[1], Jia Fu MD[1], Yuexin Yang MD[2], Lishi Zhang MD[1], Junhua Han PhD[2]

The objective of this work is to conduct a systematic review that investigates the efficacy of phytosterols/stanols in lowering lipid concentration in individuals with non-familial hypercholesterolemia. Randomized controlled intervention trials were identified through selected international journal databases and reference lists of relevant publications. Two researchers extracted data from each identified trial and only trials of sufficient quality were included in the review. Main outcomes of interest were differences between treatment and control groups in terms of low density lipoprotein cholesterol, total cholesterol, high density lipoprotein cholesterol and triacylglycerol. Of the studies reviewed, 20 out of 76 studies were of sufficient quality. The results of the systematic review indicated that phytosterols/stanols could significantly decrease low density lipoprotein cholesterol, total cholesterol and triacylglycerol in treatment groups compared with control groups and that the mean differences were [-0.35 mmol/L, 95%CI(-0.47, -0.22), $p<0.00001$], [-0.36 mmol/L, 95%CI(-0.46, -0.26), $p<0.00001$] and [-0.1 mmol/L, 95%CI(-0.16, -0.03), $p=0.004$] respectively. Foods enriched with 2.0 g of phytosterols/stanols per day had a significant cholesterol lowering effect.

Obiettivo di questo lavoro è stato quello di condurre una

revisione sistematica che indaghi l'efficacia di fitosteroli / stanoli nel ridurre la concentrazione dei lipidi in soggetti con ipercolesterolemia non familiare.

I risultati della revisione hanno indicato che i fitosteroli / stanoli vegetali potrebbero ridurre in modo significativo LDL, colesterolo totale e trigliceridi nei gruppi trattati rispetto ai gruppi di controllo.

FIBRE E STEROLI VEGETALI

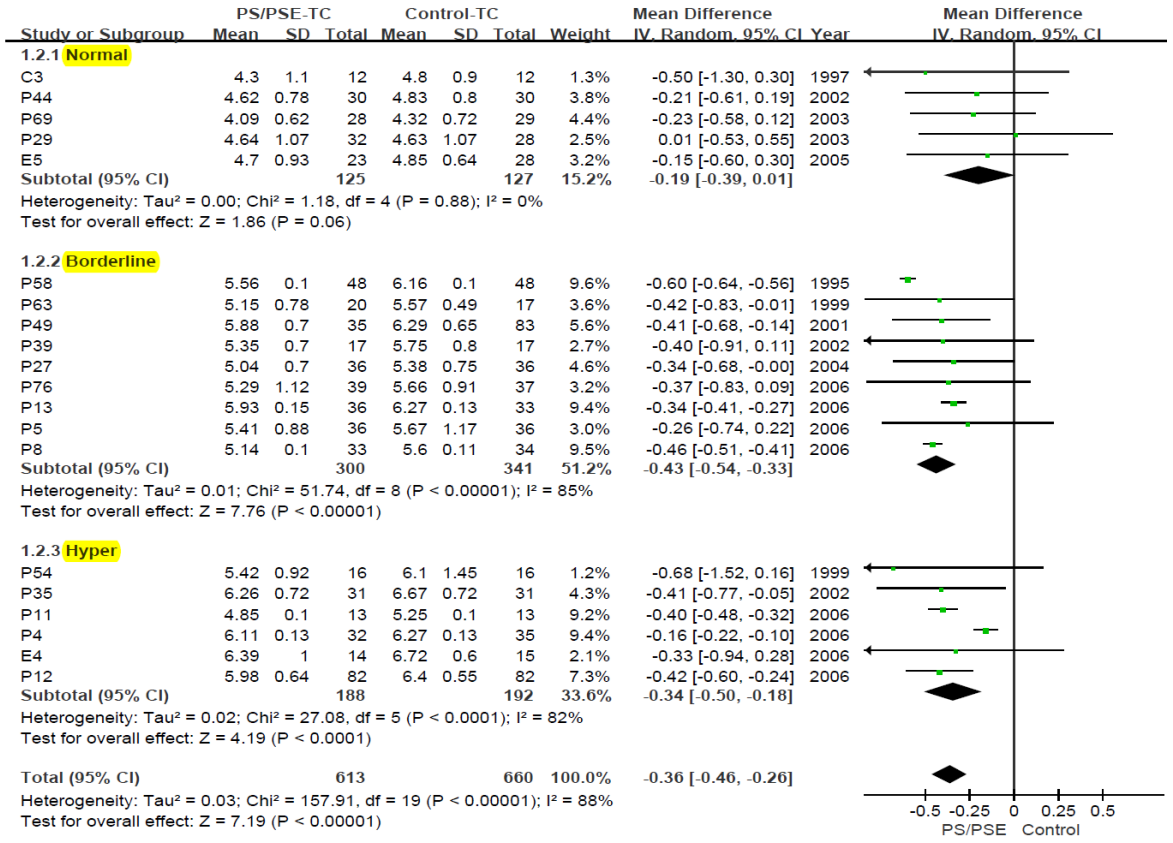


Fig.2. Effects of phytosterols/stanols on total cholesterol concentration of study subjects.

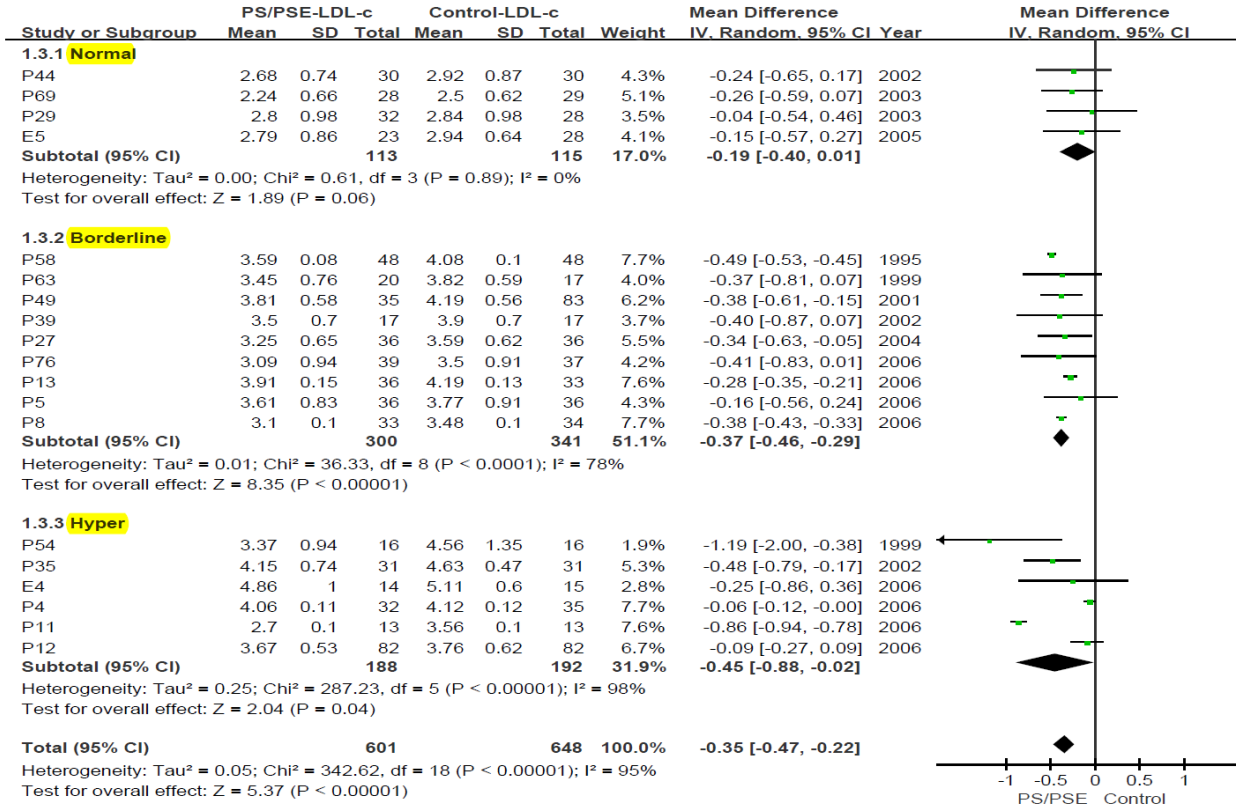


Fig.3. Effects of phytosterols/stanols on LDL cholesterol concentrations of study subjects.

FIBRE E STEROLI VEGETALI

1273 soggetti vs placebo

Trattamento > 3 settimane

Dose: 1.5-2.0 g/die

TC: 5-10%

LDL: 6-15%

HDL: no effetto

TG: 3-6%

FIBRE E STEROLI VEGETALI

Progress in Nutrition 2016; Vol. 18, N. 4: 369-375

ORIGINAL ARTICLE

Role of a proprietary mixture of water-soluble, viscous fibers and phytosterols in managing overweight/obese subjects poorly following a prescribed diet and physical exercise regimen. Preliminary results

Francesco Di Pierro[1], *Giuliana Rapacioli*[2], *Alexander Bertuccioli*[3]

[1] Velleja Research, Milan, Italy, E-mail: f.dipierro@vellejaresearch.com; [2]A.I.O.R., Piacenza, Italy; [3]Department of Biomolecular Sciences, University of Urbino "Carlo Bo", Urbino, Italy.

Summary: *Objective:* We evaluated the use of a mixture of water-soluble, viscous fibers and phytosterols/phytostanols (Fibermet®) in controlling body weight, body mass index, waistline, hip size, basal glycemia, post-prandial glycemia, cholesterol and triglycerides in overweight/obese subjects poorly adherent to follow a low-calorie diet and physical exercise regimen. *Methods:* Enrolled participants (N=50) were divided into a treatment and a control group. The treatment group (N=28) consisted of subjects poorly adherent to follow a low-calorie diet and prescribed physical exercise. The control group (N=22) consisted of subjects closely adherent to prescribed lifestyle changes. Anthropometric measurements and blood analysis were performed at enrolment and at the end of the study (T=28 days). *Results:* All 50 enrolled subjects completed the study. Subjects treated with Fibermet® significantly reduced their body weight and body mass index. Blood analysis revealed significant reductions of about 9% in post-prandial glycemia, total and LDL cholesterol, and triglycerides. Body weight and body mass index were also reduced in the control group (lifestyle intervention). No other parameters were modified by the intervention. *Conclusions:* Our results show that in subjects poorly adherent to hypocaloric diet and lifestyle changes, a mixture of water-soluble, viscous fibers together with phytosterols and phytostanols could help reduce overweight/obesity, post-prandial hyperglycemia and raised cholesterol and triglycerides.

Key words: psyllium, glucomannan, depolymerized guar gum, phytostanols

Table 1. Characteristics of participants (N=50) at enrolment

Treatment	Fibermet® (N=28)	Life style intervention (N=22)	p Value
Males/females	16/12	14/8	n.s.
Age (years)	49.5±11.3	51.6±9.4	n.s.

Values for age are expressed as the median ± standard deviation.
n.s., not significant.

FIBRE E STEROLI VEGETALI

Table 2. Outcomes in subjects (N=28) treated for 28 days with Fibermet®

Parameter	T=0	T=28	Δ%	p Value
BW (kg)	97.9±9.5	94.7±7.2	-3.30%	<0.05
BMI (kg/m²)	33.5±3.2	31.7±3.6	-5.40%	<0.05
WL (cm)	112.8±7.3	109.4±6.9	-3.00%	n.s.
HS (cm)	111.9±4.7	109.7±6.2	-2.00%	n.s.
BG (mg/dL)	112.5±10.3	109.6±8.7	-2.58%	n.s.
PPG (mg/dL)	129.2±10.8	118.3±6.9	-8.44%	<0.05
TC (mg/dL)	218.6±10.3	198.8±7.4	-9.06%	<0.05
LDL-C (mg/dL)	135.9±7.5	121.9±8.3	-9.40%	<0.05
HDL-C (mg/dL)	46.2±4.0	48.9±5.2	+5.80%	n.s.
TG (mg/dL)	173.6±18.9	158.2±15.6	-8.88%	<0.05
AST (U/I)	37.0±6.2	35.2±5.1	-5.87%	n.s.
ALT (U/I)	43.5±5.8	41.1±6.2	-5.50%	n.s.

Values are expressed as the median ± standard deviation.
ALT, alanine aminotransferase; AST, aspartate aminotransferase; BG, basal glycemia; BMI, body mass index; BW, body weight; HS, hip size; LDL-C, low density lipoprotein cholesterol; n.s., not significant; PPG, post-prandial glycemia; TC, total cholesterol; TG, triglycerides; WL, waistline.

FIBRE E STEROLI VEGETALI

Table 3. Outcomes in subjects (N=22) with lifestyle intervention

Parameter	T=0	T=28	Δ%	p Value
BW (kg)	98.5±10.3	93.6±8.8	-5.00%	<0.01
BMI (kg/m²)	34.1±4.2	31.2±4.6	-8.50%	<0.01
WL (cm)	114.2±8.0	109.2±6.1	-4.40%	<0.05
HS (cm)	113.8±5.8	111.1±4.9	-2.70%	n.s.
BG (mg/dL)	114.0±10.5	108.2±9.0	-5.10%	n.s.
PPG (mg/dL)	131.1±8.5	130.8±8.3	-0.30%	n.s.
TC (mg/dL)	220.2±10.9	218.8±8.1	-0.60%	n.s.
LDL-C (mg/dL)	137.5±8.4	138.9±7.4	+1.00%	n.s.
HDL-C (mg/dL)	48.2±4.8	47.5±4.5	-1.50%	n.s.
TG (mg/dL)	169.8±15.1	172.4±10.9	+1.50%	n.s.
AST (U/l)	39.2±6.1	37.1±6.2	-4.40%	n.s.
ALT (U/l)	41.5±5.0	39.8±7.1	-4.10%	n.s.

Values are expressed as the median ± standard deviation.
ALT, alanine aminotransferase; AST, aspartate aminotransferase; BG, basal glycemia; BMI, body mass index; BW, body weight; HS, hip size; LDL-C, low density lipoprotein cholesterol; n.s., not significant; PPG, post-prandial glycemia; TC, total cholesterol; TG, triglycerides; WL, waistline.

FIBRE E STEROLI VEGETALI

In 28 giorni (2 dosi/die)

- 3.2 kg (3.3%)
- 5% BMI
- 8% PPG
- 9% CT
- 9% LDL
- 9% TG

+ 6% HDL

CRITERI PRESCRITTIVI

NUTRITION FOUNDATION OF ITALY

NUTRACEUTICI, INTEGRATORI E ALIMENTI FUNZIONALI NEL CONTROLLO DELLA COLESTEROLEMIA

UNA GUIDA PER IL MEDICO

POSITION PAPER INTERSOCIETARIO

Andrea Poli[a], Carlo M. Barbagallo[b], Arrigo F.G. Cicero[c], Alberto Corsini[d], Enzo Manzato[e], Bruno Trimarco[f], Franco Bernini[g], Francesco Visioli[h], Alfio Bianchi[i], Giuseppe Canzone[j], Claudio Crescini[k], Saula de Kreutzenberg[l], Nicola Ferrara[m], Marco Gambacciani[n], Andrea Ghiselli[o], Carla Lubrano[p], Giuseppe Marelli[q], Walter Marrocco[r], Vincenzo Montemurro[s], Damiano Parretti[t], Roberto Pedretti[u], Francesco Perticone[v], Roberto Stella[w] e Franca Marangoni[a].

CRITERI PRESCRITTIVI

NUTRITION FOUNDATION OF ITALY

Tabella 2

Effetto sulla colesterolemia LDL di alcuni dei principi esaminati nei capitoli precedenti (dato medio rilevato o ricalcolato dalle meta-analisi citate).

Principio Attivo	Dose	Effetto sulla colesterolemia LDL
Steroli e stanoli vegetali	1,5-3,0 g/die	-9,1-18,2 mg/dL[26]
Riso rosso fermentato	3-10 mg/die (titolato in Monacolina K)	-33,4 mg/dL (-27,3-39,6 mg/dL)[33]
Beta-glucano	3,4 g/die	-7,3 mg/dL (-5,4-8,8 mg/dL)[44]
Policosanoli	10-80 mg/die	0,0 mg/dL (-13,8 -13,8 mg/dL)[60]
Berberina	500-1500 mg/die	-25,0 mg/dL (-20,7-29,2 mg/dL)[45]
Proteine della soia	25-50 g/die	-4,8 mg/dL (-2,3-7,3 mg/dL)[52]

CRITERI PRESCRITTIVI

NUTRITION FOUNDATION OF ITALY

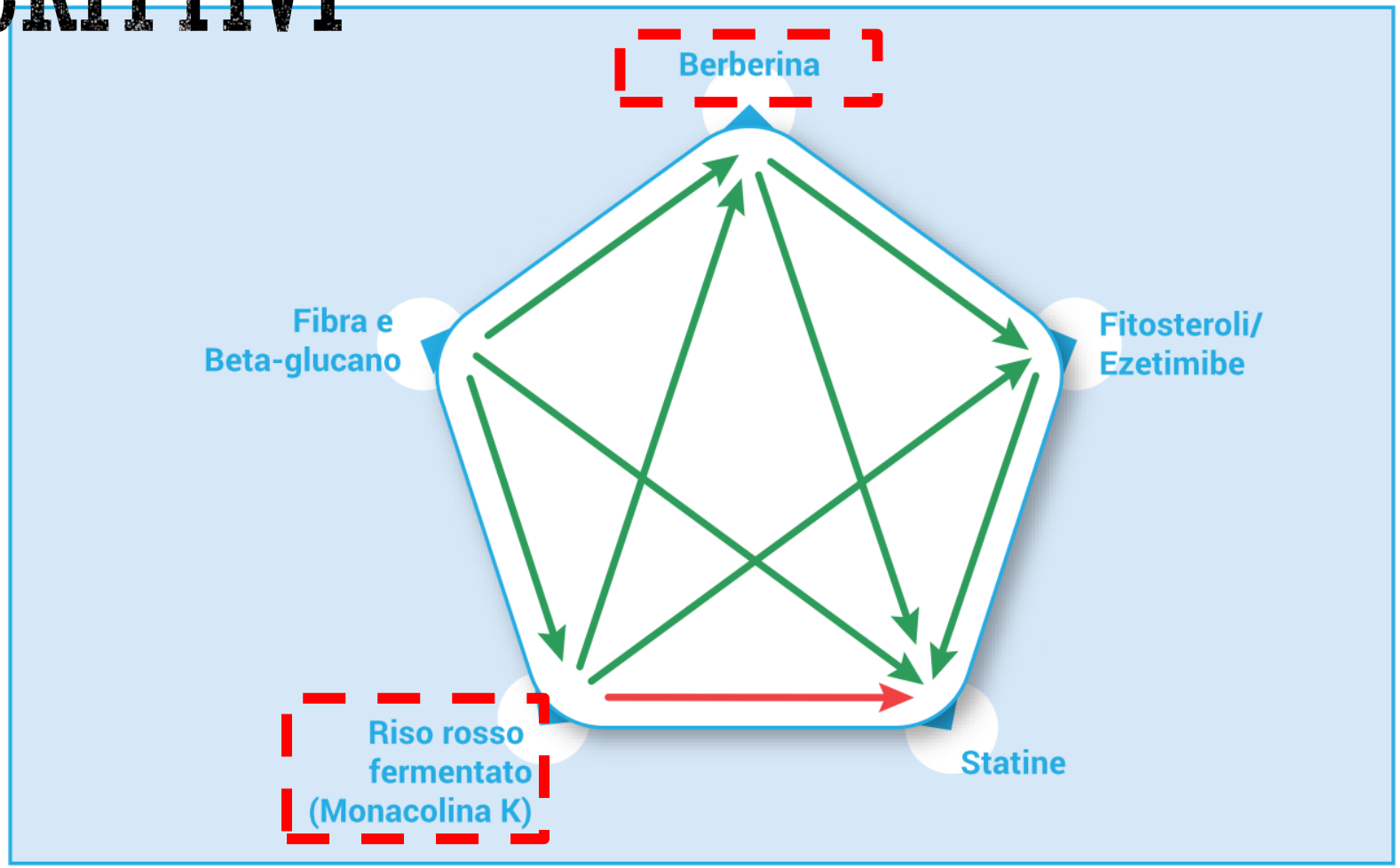


Figura 3

Possibili combinazioni di principi ad azione ipocolesterolemizzante.

Frecce verdi: combinazioni razionali. Frecce rosse: combinazioni non raccomandate

CRITERI PRESCRITTIVI

Criteri generali di impiego dei nutraceutici per il controllo della colesterolemia

- È importante considerare con molta cautela, e ridiscutere con il proprio medico di fiducia, i consigli terapeutici provenienti da fonti informative non mediche. Solo il medico è infatti in grado di valutare adeguatamente l'indicazione all'uso, la scelta del principio più appropriato (o della più appropriata combinazione di principi) nonché di valutare, con la possibile collaborazione del farmacista, il rischio di potenziali effetti collaterali o di eventuali interazioni farmacologiche, che possono esporre il paziente a rischi talora rilevanti.

- La qualità degli integratori reperibili sul mercato è molto eterogenea. Nell'articolo prima ricordato, del 2010, l'analisi di 12 campioni di riso rosso fermentato acquistati sul web ha permesso di identificare una quantità di principio attivo (monacolina K e Ka) compresa in un range estremamente ampio rispetto al dichiarato (da un +4% ad un -99%)[31].
  Nel corso della stessa analisi è stata anche rilevata, in alcuni campioni, una significativa presenza di citrinina, un alcaloide nefrotossico. I prodotti a base di berberina sono invece talvolta contaminati o miscelati con vegetali differenti, di minore costo, privi di effetti sul metabolismo lipidico. I preparati commerciali disponibili sono inoltre, molto spesso, miscele di diversi composti, a dosi delle singole sostanze attive non sempre sufficienti per ottenere l'effetto terapeutico desiderato. È importante che il medico abbia ben presenti queste potenziali criticità, e orienti ove possibile la scelta del paziente verso i preparati più affidabili per i quali sia disponibile la formulazione esatta e venga garantita la qualità.

- Gli effetti ipotizzati o anche osservati con la somministrazione del vegetale da cui è stato estratto il principio attivo non possono essere automaticamente trasferiti ai nutraceutici che li contengono. La loro biodisponibilità, tollerabilità ed efficacia non sono infatti necessariamente sovrapponibili. Per acquisire questi dati sono necessari studi randomizzati, in doppio cieco verso placebo o verso un altro trattamento attivo. Tale premessa deve essere rispettata anche nel caso di combinazioni di più principi attivi nello stesso integratore.

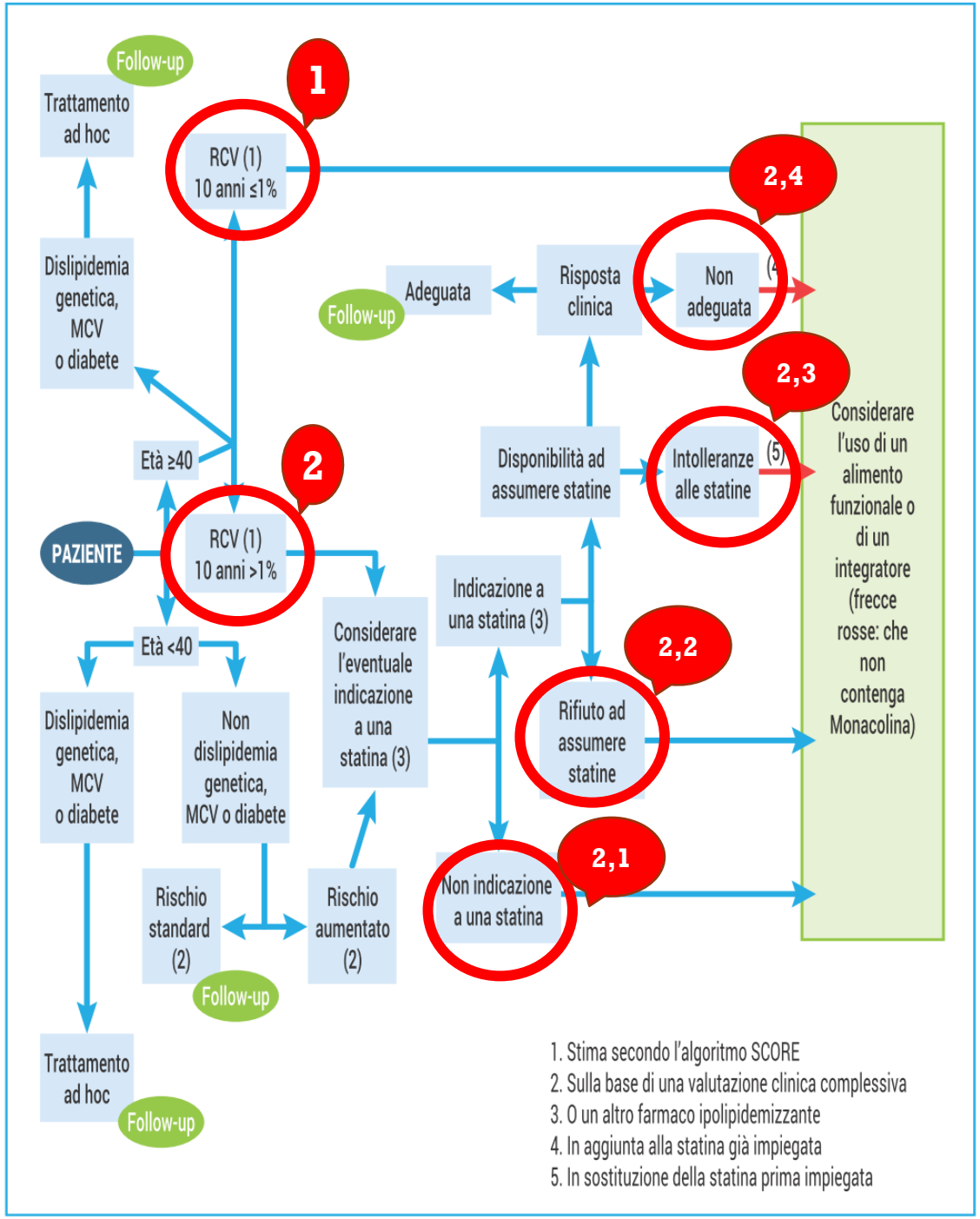
- L'origine "naturale" dei principi ricordati non è in alcun modo garanzia di una loro "non pericolosità". Secondo dati recenti, i preparati botanici non controllati (e specie quelli acquistati via web), sono per esempio tra i principali responsabili dei quadri di epatotossicità osservati nel mondo occidentale[67]. I rischi connessi all'uso dei vari principi attivi di origine vegetale, le loro possibili interazioni farmacologiche, la potenziale presenza di contaminanti, le oscillazioni del contenuto dei principi attivi nei vari lotti, devono essere quindi conosciuti e considerati con attenzione, con il supporto del medico curante.

CRITERI PRESCRITTIVI

Criteri generali di impiego dei nutraceutici per il controllo della colesterolemia

- Tutti i principi esaminati hanno un'azione reversibile sulla colesterolemia, che si estingue da poche ore a pochissimi giorni dopo la sospensione della loro assunzione. L'impiego di questi prodotti deve quindi essere continuato nel tempo, e deve tenere conto dell'evoluzione del rischio cardiovascolare del paziente trattato. Qualora il rischio aumenti, e comporti per esempio una variazione del target per il colesterolo LDL, il medico dovrà valutare se la nuova situazione sia compatibile con l'attività del/degli integratori impiegati, e decidere se sia invece necessario passare ad un trattamento di altra natura. Un uso irregolare o episodico o limitato nel tempo di questi principi, nei casi in cui il medico ravveda l'opportunità di tenere sotto controllo i livelli di colesterolo, non comporta significativi effetti protettivi (e potrebbe causare oscillazioni della colesterolemia potenzialmente pericolose), e risulta perciò in una dispersione di risorse[68].

Pazienti candidati all'uso di que



STUDIO, STRATEGIA, PREPARAZIONE E CONCENTRATI FINO IN FONDO SULL'OBBIETTIVO! (ANCHE QUELLO CLINICO)

GRAZIE DELL'ATTENZIONE !

DOMANDE