TEAVIGO®

PURE AND NATURAL GREEN TEA EXTRACT

The most active catechin in green tea

TAIYO

Teavigo® – Setting the standard in green tea extract

An ancient remedy for a modern sense of well-being

The healthy benefits of green tea have been embraced by Asian countries for centuries and include detoxification, improved blood flow and overall strengthened resistance to disease.

EGCG – The most active catechin in green tea

Modern research demonstrates that the beneficial effects of green tea are largely due to its main catechin, Epigallocatechin Gallate (EGCG). Recent findings also indicate positive effects of EGCG in the prevention of cancer and cardiovascular disease. Further research has revealed additional benefits of green tea, green tea extract and its main constituent, EGCG. These include antioxidant activity in the removal of free radicals, enhanced metabolism and fat oxidation, and improved oral health (including fresh breath). Furthermore, EGCG also helps to maintain healthy glucose levels.

Teavigo® – Pure and natural green tea extract

Teavigo® provides the best of green tea in its purest form. Using our innovative, patented and proven extraction technology, we provide easy access to the healthful benefits of green tea. Teavigo® is natural EGCG with a minimum purity of 94% on dry basis.

Green Tea

Teavigo® – Highest quality

Teavigo® is a highly defined ingredient with superior and consistent batch-to-batch quality. Teavigo® is free from caffeine, pesticide and herbicide residues.

Green Tea Extract

Teavigo® – Proven safety

Safety is an equally important issue when bringing a new product or ingredient to the market. We have invested in an extensive program to document the safety of Teavigo®, and to guarantee the best green tea extract (EGCG) possible.

Teavigo®

Teavigo® – Fortification of food and beverages

Teavigo® – Superior sensory properties

Teavigo® with its excellent product properties, offers valuable opportunities for a broad range of applications in many food industry segments. Teavigo® has been successfully used in categories such as confectionery, cereals, dairy products, and carbonated, still and near-water beverages.

Enrichment with Teavigo® does not change the taste profile of end-products. In comparison to traditional green tea extracts used for enrichment, Teavigo®, being a highly purified and defined substance, has much less impact on final product properties.

Teavigo® – A perfect partner for your product

Teavigo® is nearly colourless and has little to no impact on taste, allowing the appearance of your food and beverage products to remain unimpaired. With its minimal impact on your product's taste profile, Teavigo® is easy and versatile to use. Teavigo® is completely water soluble, and clear in solution, as well as free from caffeine, herbicide and pesticide residues. And naturally, it does not cause sediments in liquid applications or spotting in solid ones.

Teavigo® is well defined and highly purified, in fact, Teavigo® is setting the standard for high-performance green tea extract (EGCG). It offers excellent opportunities in beverages, solid foods, and for the Dietary Supplement and Pharmaceuticals industry.

Teavigo® – Seal of Guarantee

Our Teavigo® Seal of Guarantee is your consumer assurance, in the quality and superiority of the green tea extract used in your products. And your assurance, that all regulatory documentation and safety data comply with both European and US requirements.

The seal guarantees that only pure green tea extract has been used, in accordance with the highest standards:

- Guaranteed high-purity EGCG
- Little or no impact on your product's taste profile
- Caffeine-free
- Free of herbicide and pesticide residues
- Proven and patented production methods
- Extensive safety program

First-class technical assistance

Using our vast scientific background and knowledge of nutritional fortification, we can provide you with hands-on technical assistance in developing value-added applications fortified with Teavigo®.

Teavigo® – Pure health benefits

EGCG and Teavigo® have been shown to exert several beneficial activities including

- Antioxidant activity removing free radicals
- Enhanced metabolism and fat oxidation
- Improved oral health, including fresh breath
- Maintaining healthy glucose levels
- Exerting anti-inflammatory effects

Scientists agree that these functions play an important role in preventing disease and improving general health.

As with all our products, we can provide full product, safety and regulatory documentation on request.

PURE AND NATURAL
TEAVIGO®
GREEN TEA EXTRACT

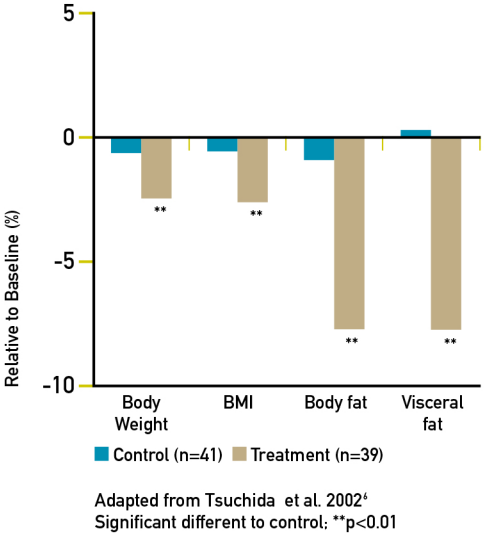
Teavigo® modulates body fat

EGCG attenuates body fat accumulation

■ Epidemiological data suggest that green tea consumption favorably affects body weight and particularly body fat.[1] Subjects with an average habitual consumption of 434 ml/day of tea for more than ten years were characterized by a lower percentage of total body fat, smaller waist circumference and decreased waist-to-hip ratio.

This is supported by several long-term studies (12 weeks) showing that treatment with green tea catechins reduced body fat and body weight.[2-6]

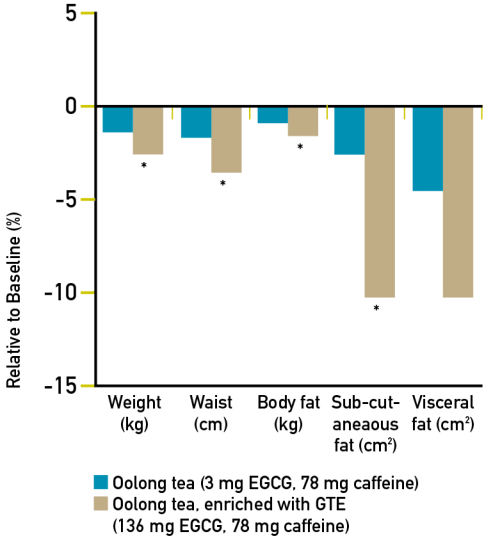
Green tea extract rich in EGCG decreases fat accumulation and promotes body weight loss



Adapted from Tsuchida et al. 2002[4]
Significant different to control; **p<0.01

■ In another human trial with 35 normal/overweight male volunteers on a moderate diet (90% of individual energy intake) EGCG promoted body weight loss and fat loss.

EGCG supports a healthy lifestyle by reducing body fat mass in men



Adapted from Nagao et al. 2005[5]
Significant different to control; *p<0,05

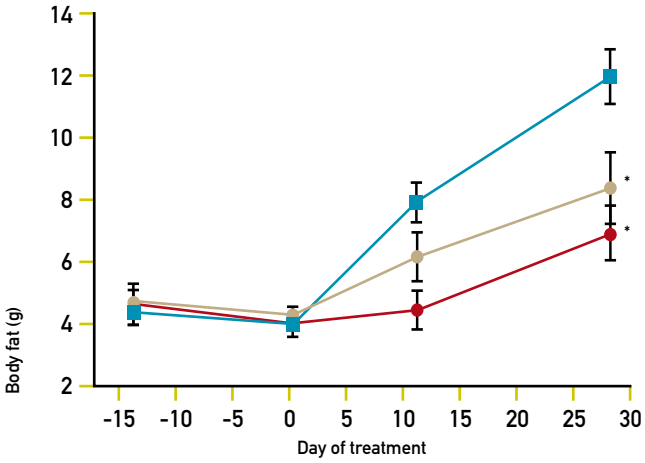
PURE AND NATURAL TEAVIGO® GREEN TEA EXTRACT

Teavigo® prevents diet-induced obesity in animals

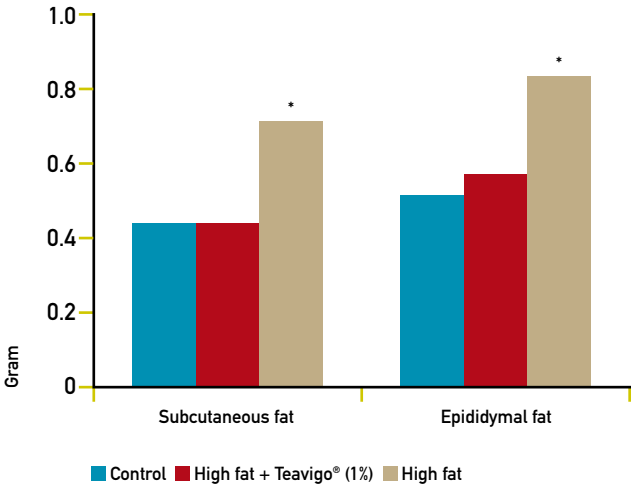
■ These results could be repeated with Teavigo® in animal models of human obesity.

Feeding mice a high fat diet for 28 days resulted in clear increase of body fat. However, when supplemented with Teavigo®, a dose-dependent decrease in body fat accumulation was observed.[7, 8]

In addition, Teavigo® prevented obesity in the long-term after 5 months of feeding a high fat diet.



Adapted from Klaus et al 2005[7]
Significant different to control: *p<0,05



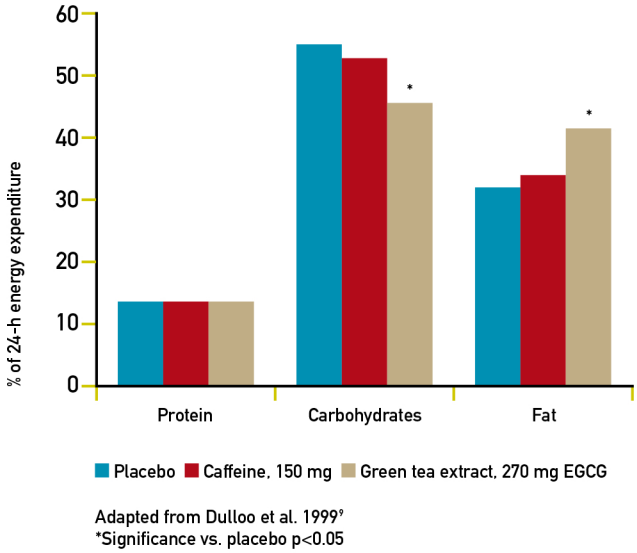
Adapted from Wolfram et al 2005[8]
Significant different to control: *p<0,05

Teavigo® prevented obesity in mice which were fed with a high fat diet

■ Mice fed a diet high in fat and carbohydrates containing 1% EGCG developed significantly less weight over 5 months than their counterparts receiving the same diet without EGCG. This finding is partly explained by the reduced subcutaneous and epididymal body fat accumulation as observed in the EGCG-treated group at the end of the experiment.
(DSM Nutritional Products, data on file)

Green tea extract, rich in EGCG increases fat oxidation

A randomized, double-blind, placebo-controlled trial found 24-h energy expenditure and fat oxidation increased by 4% or 35%, respectively[9]. The male volunteers consumed either placebo, caffeine or a green tea extract containing 270 mg EGCG and 150 mg caffeine. As was to be expected, caffeine stimulated the sympathetic nervous system, thus increasing energy expenditure. The consumption of the green tea extract however, resulted in an increase exceeding the one observed with caffeine alone.



Adapted from Dulloo et al. 1999[9]
*Significance vs. placebo p<0.05

Conclusions

EGCG exerts a "body shaping" effect. Body composition changes in favour of decreased body fat and can therefore support a healthy lifestyle. This finding contributes to the observed body weight loss at EGCG consumption. The decrease in body fat is at least partly caused by a shift in nutrient oxidation, i.e. increased fat oxidation.

Literature

1. Wu, C.H., et al., Relationship among habitual tea consumption, percent body fat, and body fat distribution. Obes Res, 2003. 11(9): p. 1088-95.
2. Chantre, P. and D. Lairon, Recent findings of green tea extract AR25 (Exolise) and its activity for the treatment of obesity. Phytomedicine, 2002. 9(1): p. 3-8.
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9. Dulloo, A.G., et al., Efficacy of a green tea extract rich in catechin polyphenols and caffeine in increasing 24-h energy expenditure and fat oxidation in humans. Am J Clin Nutr, 1999. 70(6): p. 1040-1045.

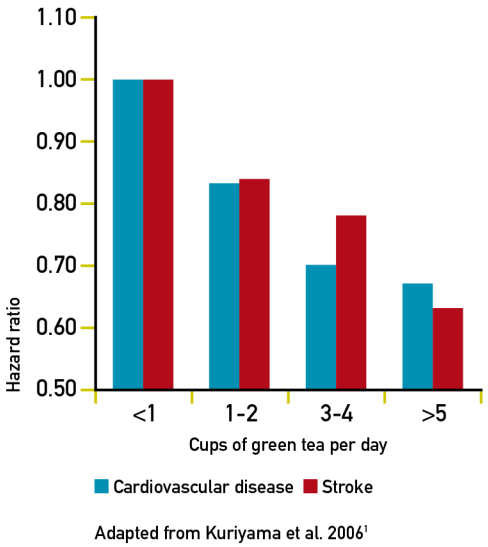
Teavigo® supports cardiovascular health

A potent antioxidant and antiatherogenic agent

Atherosclerosis is a progressive disease that involves the deposition of endogenous oxidized cholesterols in the cells of the arterial walls, which causes the hardening of the arteries.

Epidemiological data suggest that regular consumption of green tea may help to prevent cardiovascular disease.[1]

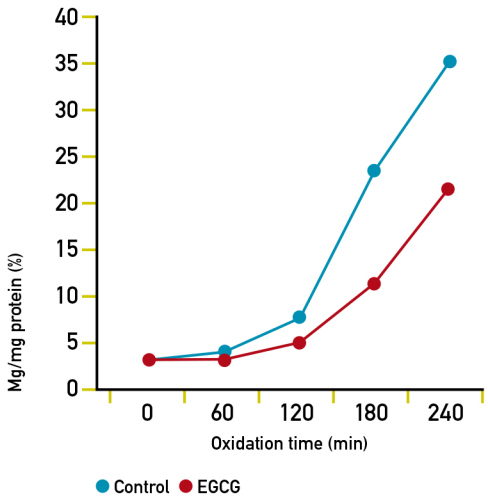
Green tea consumption is positively correlated with reduction of stroke and CVD mortality



Adapted from Kuriyama et al. 2006[1]

EGCG, the most active catechin in green tea, has been demonstrated to interact with the cascade of events leading to cardiovascular disease[2]: In vitro and animal experiments, as well as human intervention studies show EGCG to exert potent antioxidant activity[3-6], possess anti-inflammatory properties[7], to inhibit vascular smooth muscle growth[8], to counteract vasoconstriction[9,10], and to prevent stroke[11,12] as well as hypertension[13,14], thereby helping to maintain a healthy cardiovascular system.

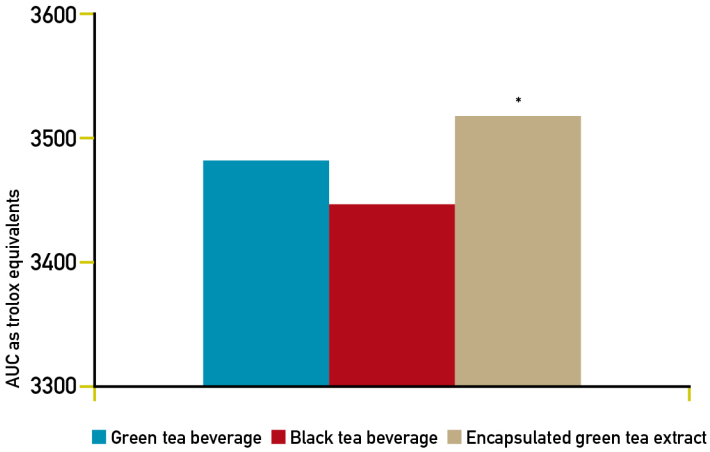
EGCG was shown in vitro to be a potent inhibitor of cholesterol oxidation in low density lipoprotein (LDL)



Adapted from Osada et al. 2001[15]

Furthermore, green tea extract rich in EGCG has been shown to increase the resistance against oxidative damage in humans and ameliorates antioxidant defences in human plasma.[4,5]

Encapsulated green tea extract rich in EGCG increases antioxidant capacity of blood in humans



Adapted from Henning et al. 2004[4]
*P<0,05

Literature

1. Kuriyama, S., et al., Green tea consumption and mortality due to cardiovascular disease, cancer, and all causes in Japan: the Ohsaki study. Jama, 2006. 296(10): p. 1255-65.
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15. Osada, K., et al., Tea catechins inhibit cholesterol oxidation accompanying oxidation of low density lipoprotein in vitro. Comp Biochem Physiol C Toxicol Pharmacol, 2001. 128(2): p. 153-64.

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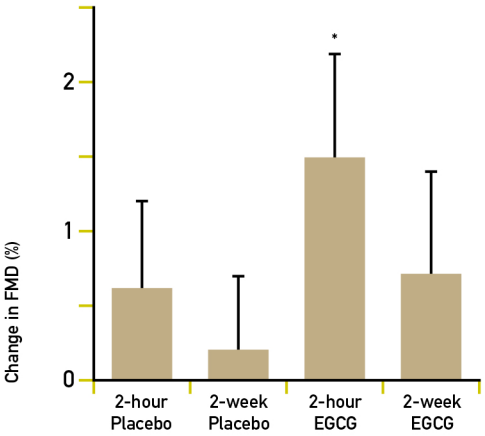
Teavigo® supports cardiovascular health

An endothelial protector

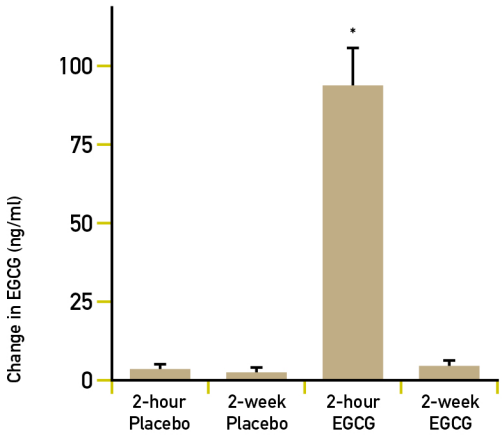
■ Recent research suggests green tea to protect the endothelium.[1] There is clinical evidence showing Teavigo® to beneficially affect endothelial function by improving flow mediated dilatation.

Teavigo® supports endothelial function



*P = 0.015 vs pre-EGCG baseline

DSM Nutritional Products, data on file



*P<0.001 DSM Nutritional Products, data on file
Mean ± SD

Conclusions

■ Green tea and its most active catechin, namely EGCG, are potent protectors of cardiovascular health, by supporting the normal function of the endothelium, counteracting vasoconstriction, reducing vascular plaque formation and exerting antioxidant effects.

Literature

1. Potenza, M.A., et al., Epigallocatechin Gallate, a Green Tea Polyphenol, improves endothelial function and insulin sensitivity, reduces blood pressure, and protects against myocardial ischemia/reperfusion injury in Spontaneously Hypertensive Rats (SHR). Am J Physiol Endocrinol Metab, 2007.

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Teavigo® and oral health

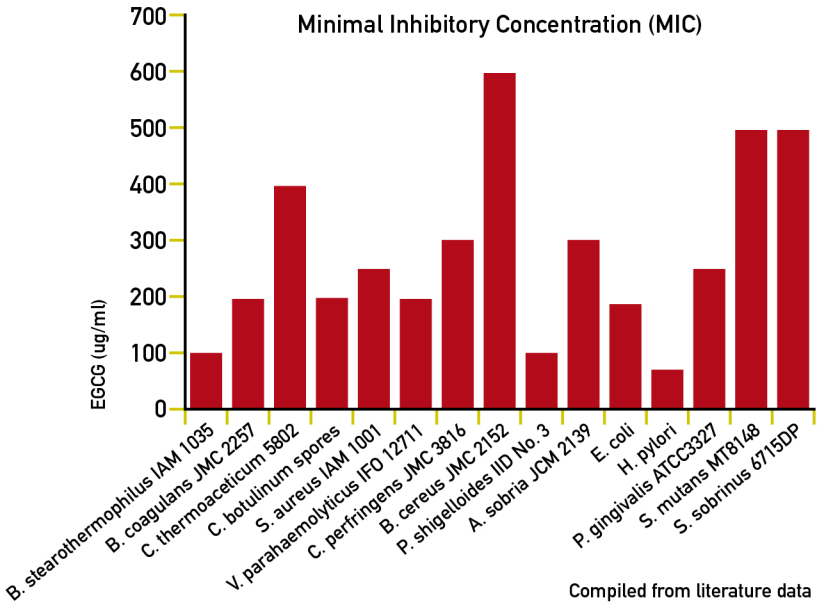
A natural antimicrobial agent

EGCG (Teavigo®) supports oral hygiene and oral health

The oral microflora is responsible for impairments of oral health:

- Dental caries
- Periodontal diseases
- Halitosis and bad breath

EGCG inhibits the growth of various bacterial strains



Compiled from literature data

EGCG was shown in vitro to be a potent anti-infective:
In numerous experiments EGCG has been demonstrated to help maintain oral health by:[1,2]

- Growth inhibition and direct bactericidal effect against caries and periodontal disease relevant bacteria.
- Prevention of bacterial adherence to teeth.
- Inhibition of glucosyl transferase, thus limiting the synthesis of sticky glucan.
- Inhibition of human and bacterial amylases.
- Inhibition of collagenase activity.

The promising role of EGCG in promoting oral health as demonstrated experimentally, is supported by human trials with green tea.[1]

Literature

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