



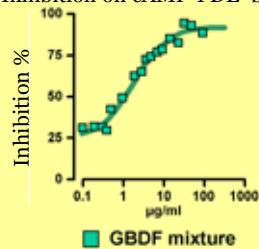
Ginkgo Biloba Dimeric Flavonoids Phytosome[®]



Lipolysis and microcirculation improver

Lipolytic and soothing activity

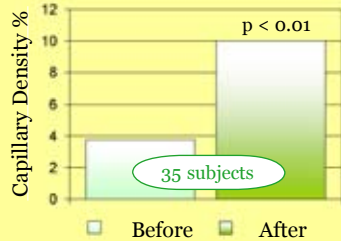
Inhibition on cAMP-PDE by GBDF



A study was undertaken to evaluate the activity of Ginkgo Biloba Dimeric Flavonoids (GBDF) on cyclic AMP (cAMP) - phosphodiesterase (PDE) in adipose tissue¹ in vitro. By inhibiting PDE, in fact, the regulating effect of cAMP on lipolysis is enhanced, and lipolysis promoted by a longer activation of the biochemical mediator cAMP. In an experimental model, the biflavonic fraction of Ginkgo biloba has been shown to perform a good soothing activity as the pure GBDF fraction reduced oedematous response by 73%, and its Phytosome[®] form showed a slightly higher activity³.

Proven efficacy on humans

Effect on capillary density induced by GBDF Phytosome[®] 3%



Capillary blood flow	Baseline	After 45 min
Mean value	4.78±0.42	6.97±0.63 p<0.01

Thirty-five subjects of either sex divided in different groups (of 5 subjects each) have been treated with the GBDF Phytosome[®] to evaluate its vasokinetic properties². Different areas and parameters have been tested.

Here we report the results obtained on the group of 5 cellulitic (II - III stage) female subjects treated with a cream (O/W emulsion containing 3% of GBDF Phytosome[®]) and an O/W emulsion of 2% phosphatidylcholine as control preparation.

The preparations were applied on thighs, baseline values and variations of blood flow and capillary density occurring after the applications (0.5 ml) were recorded.

Capillary Density (CD%) has been evaluated with Optic Probe Videocapillaroscopy (OPV) before and after 45 min showing a great increase of CD (statistically significant $p < 0,01$) whereas control treatment did not induce significant variations.

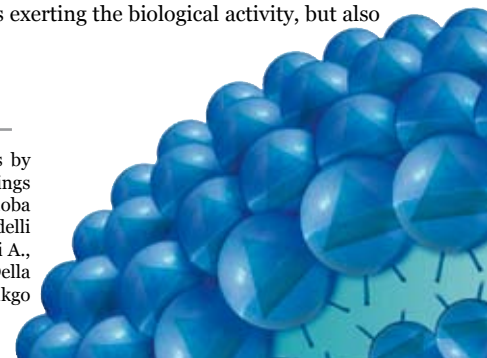
Capillary blood flow measured by Laser Doppler has been evaluated before treatment and after 45 minutes. It showed a statistically significant increase by 46%.

Mechanism of action

GBDF Phytosome[®] inhibits cAMP phosphodiesterase thus improving lipolysis in fat cells and the capillary blood flow, because cAMP is able to stimulate the pre-capillary arterioles rhythmic contractions. Moreover the number of open capillaries increases³. This activities, among the soothing ones observed, are important for the management of cellulite.

The improvement in the activity of the Phytosome[®] form, compared to the free active principles, is due to a higher affinity of the phospholipid complex to the skin phospholipids. This not only improves the absorption of the compounds exerting the biological activity, but also increases the duration of the activity as the complex slowly releases the active principle⁴.

1. Morazzoni P., Cristoni A., Bombardelli E., Saponara R. and Bosisio E.: "Inhibition of phosphodiesterases by Ginkgo Biloba Dimeric Flavonoids and modulation of skin microcirculation and adipocytes lipolysis" - Proceedings of the 20th IFSCC Congress. - 2. Bombardelli E., Cristoni A., Morazzoni P.: "Cosmetical use of Ginkgo biloba extracts and constituents" - Ginkgo biloba - Edited by Teris van Beek, Harwood Acad. Publ. 2000. - 3. Bombardelli E., Cristoni A., Morazzoni P.: "Ginkgo biloba: the tree of the beauty" - data on file. - 4. Bombardelli E., Cristoni A., Morazzoni P.: "Phytosome[®] in functional cosmetic" - Fitoterapia Volume LXV, No 5, 1995, pp. 387-401 - 5. Della Loggia R., Sosa A., Tubaro A., Morazzoni P., Bombardelli E., Griffini A.: "Anti-inflammatory activity of some Ginkgo biloba constituents and of their phospholipid complex" - Fitoterapia, vol LXVII, no. 3, 1996, pp. 257-264



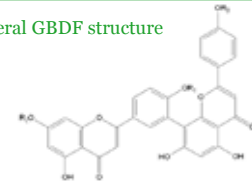
GBDF Phytosome®

Safety data

Topical application of the product (at a 3% concentration in an aqueous gel) showed good tolerability and no cutaneous sensitization on 20 healthy volunteers. The product can be therefore considered innocuous for the foreseen use⁵.

Characteristics

General GBDF structure



	R1	R2	R3	CAS N.
Amentoflavone	H	H	H	1617-53-4
Bilobetin	Me	H	H	521-32-4
Sequoiainflavone	H	Me	H	21763-71-3
Ginkgetin	Me	Me	H	481-46-9
Isoginkgetin	Me	H	Me	548-19-6
Sciadopitysin	Me	Me	Me	521-34-6

GBDF PHYTOSOME®

HPLC Content: ≥10% of total biflavones, expressed as ginkgetin, with reference to the anhydrous and solvent free substance.
 Form: green-brown amorphous powder, odorless
 pH: not applicable (insoluble in water)
 Stability: long term (25°C / 60% RH) and accelerated stability (40°C / 75% RH) available
 Level of use: up to 3%
 Solubility*: soluble in ethoxydiglycol, propylene glycol, C12-15 Alkyl Benzoate

Available Documentation

Botanical Certificate
 Analytical method
 References Standard
 Declaration GMO free
 Safety Data Sheet
 Stability data
 Published literature
 Confidential documentation

* 50 mg of GBDF Phytosome® in 10 g of solvent at 40°C

Formulation examples

O/W Emulsion with GBDF PHYTOSOME®

GBDF PHYTOSOME®	0.5%	Glyceryl Stearate	2.0%
Centella asiatica Phytosome®	1.0%	Sodium Hydroxide sol. 10%	1.4%
Kola dry extract (Cont. 14% alkaloids as caffeine)	0.5%	Fragrance	0.2%
Carbomer 980	0.5%	Distilled Water	as needed to 100
Acrylates/Alchil C10-30-Acrylate crosspolymer	0.25%		
Imidazolidinyl Urea	0.3%		
Methyl Chloroisothiazolinone (and) Methyl Isothiazolinone	0.05%	Also suitable for	
Disodium EDTA	0.1%	Firming products (gels, emulsions and gel-emulsions)	
C12-15 Alkyl Benzoate	5.0%	Slimming products (gels, emulsions and gel-emulsions)	
Dimethicone 350 cps	0.5%	Anticellulite products (gels, emulsions and gel-emulsions)	
Wheat germ oil	2.5%	Products for legs health (gels, emulsions and gel-emulsions)	
Tocopherol	0.2%	Massage oils	
Ascorbyl Palmitate	0.1%		

Formulation Advise

The physico-chemical characteristics of Ginkgo Biloba dimeric flavonoids Phytosome® and its ready dispersibility in water and oil virtually pose no limitations to the preparations of cosmetic formulations. GBDF Phytosome®, dispersed in aqueous phase by a homomixer or a turboemulsifier, is suitable for incorporation into monophasic and biphasic systems at a temperature lower than 40°C in order to avoid thermal stress that might damage the phospholipidic chain.

Patented formulations with GBDF Phytosome® in combination with other actives are available

Did you know...

Ginkgo biloba is considered as a living fossil, as it is the only survivor of a species originated 150 million years ago: as the tree defended itself throughout the centuries, it is in its components that modern science has identified the reasons for this immutability. Although this plant has contributed to the creation of several pharmaceutical products, the novelty of GBDF Phytosome® lies in its uniqueness, as it is not present in common Ginkgo biloba pharmaceutical and cosmetic extracts. Due to the activity shown, GBDF Phytosome® is a good active against cellulite acting on its three main factors: lack of microcirculation, local inflammation and fat deposits.

TRADE NAME	INCI (CTFA)	INCI (E.U.)	EINECS N.	CAS N.	INDENA CODE
Ginkgo Biloba Biflavones Phytosome®	Lecithin (syn. Phosphatidylcholine) (and) Ginkgo biloba Leaf Extract	Lecithin (syn. Phosphatidylcholine)	232-307-2	8002-43-5	9032991
		Ginkgo biloba Leaf Extract	289 - 896 - 4	90045 - 36 - 6	