



 **indena**[®]
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PERSONAL CARE

B O D Y C A R E

The ingredients described herein are offered for consideration for use in personal care products. The information provided describes historical use, ingredient activity and other information that may be relevant to their use in such products. How each ingredient would contribute to a particular product would be formulation specific. Furthermore please note that this documentation is available for various countries all over the world and hence it may contain statements not applicable to your country.

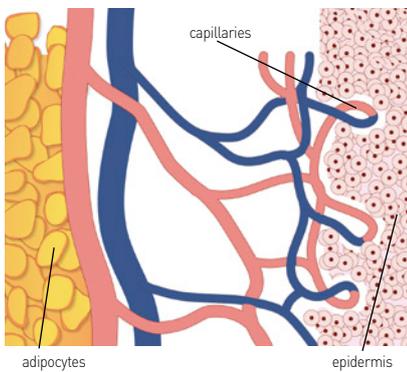
WHAT ABOUT BODY CARE

Under the general definition of “body care” fall most of the skin care applications which are not targeting the face. Body care may be thought to as a thorough approach addressing some of the most common sources of imbalances in our body affecting the skin health and appearance.

The approach proposed here refers to three to four different targets as the vascular system and its protection and efficiency, the metabolism by managing the lipogenesis/lipolysis balance, the fluid retention by modulating the fluid leakage and finally skin slackness by promoting skin density and firmness.

Aim of this brochure is to provide a comprehensive overview of the botanical active ingredients suitable for an overall body care application. It contains several options addressed to different biological targets to offer a multifunctional approach in the project of finished dosage forms containing natural active ingredients from plants.

VASOACTIVE VASCULAR PROTECTANTS



XIMILENE® and XIMENOIL®: are obtained from *Santalum album*, a plant traditionally used in form of poultices as “traditional masks” to treat the skin and make it smoother, tauter and more velvety. Ximeninyc acid, contained in Ximenoil®, and ethyl xymeninate, contained in Ximilene®, as well as polyunsaturated fatty acids in general are important factors related to the nourishment of tissues and biochemical balance of the skin, as they make up an integral part of cell wall lipids, building up cell membranes. They have been clinical reported to promote blood flow.

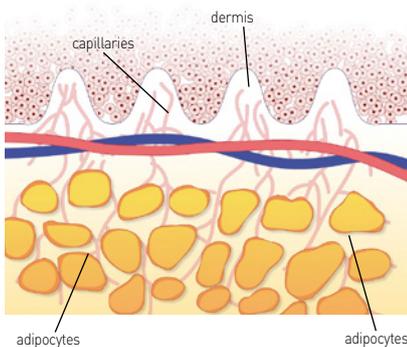
Level of use 0.1-1%

VISNADINE: is a natural product extracted from the seeds and aerial parts of *Ammi visnaga* (Umbelliferae), a plant widely used in traditional Egyptian medicine since the Pharaohs times. Visnadine has a strong vascular activity, not associated with vasodilating properties. Its efficacy, in fact, is due to the enhancement of the inotropic activity of the wall myocytes in microcirculatory vessels. Visnadine also has strong antiphosphodiesterase activity, maintaining high levels of cAMP, which activates lipases, thus improving lipolysis in fat cells. Visnadine has also been formulated in the most bioavailable Phytosome® form (Visnadex®).

Level of use 0.1-1%



LIPOLYTIC AND SWELLING MODULATORS



GINKGO BILOBA DIMERIC FLAVONOIDS: are a specific diflavonic fraction obtained from the Ginkgo biloba leaves. They have been reported to have a lipolytic action mediated by the inhibition of cAMP-phosphodiesterase, thus improving lipolysis in fat cells and capillary blood flow. Ginkgo Biloba Dimeric flavonoids has also been formulated in the most bioavailable Phytosome® form.

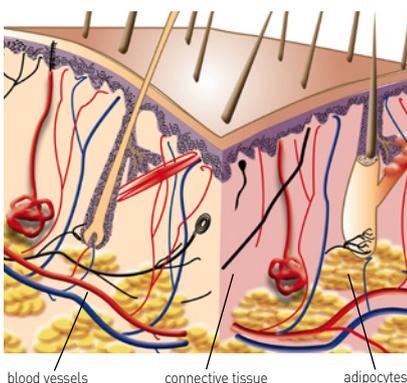
Level of use 0.1-1%

COLEUS: this extract from *Coleus forskolii* contains the diterpenoid forskolin, a compound which stimulates the activity of adenylate-cyclase, thus increasing the concentration of the second messenger cAMP. This protein-kinase mediated stimulation of the active form of the hormone-sensitive lipase results in an improved release of fatty acids from the body adipose tissue.

Level of use 0.1-0.5%



FIRMING, CONNECTIVE TISSUE PROTECTANTS



PA2: PA2 (Proanthocyanidin A2) is a molecule present in the bark of the Horse Chestnut tree. It has potent antienzymatic activity (mainly anti-elastase and anti-collagenase), is a free radical scavenger, and also normalizes impaired capillary permeability and fragility. The Phytosome® form has also been developed. This delivery system clinically has been reported to promote skin firmness and to reduce fine wrinkles.

Level of use 0.5-1.5%

CENTELLA ASIATICA SELECTED TRITERPENES: the triterpenes obtained from *Centella asiatica*, also known as gotu kola, exert their activity by stimulating collagen biosynthesis and increasing the incorporation of hydroxyproline into this protein, thus modulating the metabolism of connective tissue. Centella asiatica selected triterpenes also exert a protective effect on microcirculation, reducing abnormally increased capillary permeability. Centella asiatica selected triterpenes has also been formulated in the most bioavailable Phytosome® form.

Level of use 0.1-1%



THE BOTANICALS' OPTIONS

Several botanical active ingredients have been reported effective in addressing, by various mechanisms of action, the physiological functions our organism uses to maintain a healthy status and appearance of the skin.

In particular, it is worth mentioning vasoactive and vascular protectants, which promote the regular blood flow at a superficial level and ensure the delivery of the appropriate quantity of nutrients to dermis cells. Vasoactive and vascular protectants active ingredients address the superficial vessels by promoting circulation and maintaining the vessels' integrity.

Lipolytic ingredients promote the mobilization of fats from adipocytes, in particular from the subcutaneous panniculus adiposus. In particular in women, in fact, the retention of subcutaneous fat is much visible due to the fact that a woman's connective tissue is very inflexible, so as adipocytes expand they became immediately more visible by making the skin surface rougher and less even. Fluid retention is another topic, again more typical in women than in men, involving an excessive fluid leakage especially at the limbs' edge due to an excessive vascular permeability. Several botanicals protect blood and lymphatic vessels to modulate fluid leakage. Skin slackness is another common issue which different botanical active molecules address by maintaining and sustaining the connective tissue architecture thus promoting skin firmness.

ESCULOSIDE: acts to provide capillary protection by addressing capillary permeability and fragility. It is reported to inhibit catabolic enzymes such as hyaluronidase and collagenase, thus preserving the integrity of the perivascular connective tissue. Esculose is a glycosylated coumarin obtained from the bark of Horse Chestnut branches. Traditionally it has been used to address venous peripheral diseases. Recently in the research of new vasoactive substances, Esculose has been reported to have an interesting activity on skin microcirculation, thus becoming a candidate ingredient for topical applications addressing cellulite and hair growth.

Level of use up to 3%

RUSCOGENINS: are steroid saponins typical of *Ruscus aculeatus* L. Their pharmacological activity is vasoconstricting and anti-inflammatory, having been found to enhance venous circulation by promoting muscle contractions with a mechanism involving post junctional α -adrenergic receptors. Moreover, they inhibit the enzyme elastase maintaining the integrity of the constituents of the connective tissue, thereby exerting anti-ageing effect.

Level of use 0.1-1%

MIRTOSELECT®: is a standardized extract obtained from *Vaccinium myrtillus*, bilberry, also known as the wild blueberry. It contains biologically active molecules, the deep purple anthocyanosides, which strengthen the capillary walls by linking to the endothelial cells membrane and increasing capillary resistance. They also contribute to reduce capillary permeability by stimulating the synthesis of perivascular tissue constituents, thus qualifying as capillary protectants.

Level of use 0.1-1%

CENTEVITA®: this Cosmos validated extract contains both the well known tripetrenic fraction and another polyphenolic fraction from the *Centella asiatica* leaves. It mimics very closely the content of biologically active molecules contained in the leaf. It has demonstrated *in vitro* to have lipolytic properties on human adipocytes.

Level of use 0.1-1%

CENTEROX®: this highly purified blend of madecassoside and asiaticoside *Centella asiatica*, freely water soluble, is recommended to modulate the ECM architecture, thus qualifying for body care products. *In vitro*, it was demonstrated to promote membrane proteins expression thus reinforcing the dermal-epidermal junction.

Level of use 0.1-1%

GREEN TEA: the amount of caffeine present in green tea is responsible for the lipolytic properties of caffeine-containing green tea extracts. Caffeine also is thought to participate, in combination with green tea polyphenols, with respect to mechanisms leading to the use of this ingredient in weight management.

Level of use 0.1-1%

ASIATICOSIDE: is a terpenoid component extracted from *Centella asiatica*. It has been shown to increase collagen synthesis and therefore anti-wrinkle activity. Skin aging appears to be principally related to a decrease in the levels of type I collagen, the primary component of the skin dermis. Type I collagen is also known to impart tensile strength to skin. *In vitro* evaluations have demonstrated the receptor activity of Asiaticoside on collagen synthesis.

Level of use 0.1-0.5%





SERICOSIDE: is a pure molecule obtained from *Terminalia sericea*. Many trials have been performed and Sericoside has been shown to have skin restructuring activity, capillary protection activity, skin regeneration and anti-oedema properties. This is due to a remarkable reduction of capillary permeability exerted by the active ingredient. Significant anti-inflammatory qualities have also been demonstrated by Sericoside.

Level of use up to 0.5%

LEUCOSELECT®: (Grape Seed extract) exerts its activity through multiple mechanisms: as a free radical scavenger, through chelation of transition metals, and by inhibition of proteolytic enzymes, etc. The oligomeric procyanidins contained in the extract are the active small molecular size polyphenols responsible for the biological activity. Leucoselect® has also been formulated in the most bioavailable Phytosome® form.

Level of use up to 1%



GINKGOSELECT®: *Ginkgo biloba* extract contains two families of molecules, of which the flavonoid components are responsible for the anti-oxidant and free radical scavenger properties of the plant. When topically applied, Ginkgoselect® has been shown to reduce skin sensitivity to UVB irradiation, and to promote blood flow and provide capillary protection. Ginkgoselect® has also been formulated in the most bioavailable Phytosome® form.

Level of use up to 1%



ESCIN: the topical benefits of escin, or aescin, are demonstrated by scientific studies assessing its anti-oedema and vasoactive properties. It acts principally in capillaries, being its mechanism of action related to the modification of vascular permeability. In fact, it has been shown to reduce the number and the size of the small pores of the capillary walls through which water exchanges normally occur. Escin has also been formulated in the most bioavailable, yet most tolerable, Phytosome® form.

Level of use 0.5-2%



HORSE CHESTNUT: the topical benefits of horse chestnut fruit extract, containing escin or aescin, are demonstrated by scientific studies assessing its anti-oedema and vasoactive properties. It acts principally in capillaries. Escin mechanism of action is related to the modification of vascular permeability. Escin has been shown to reduce the number and the size of the small pores of the capillary walls through which water exchanges normally occur.

Level of use up to 2%

LYMPHASELECT®: this *Melilotus officinalis* extract has been reported to exert a marked activity on the lymphatic system thanks to its myotropic stimulation of the rhythm and tonus of the lymphatic vessels. At the venous system level, Lymphaselect® has been shown to increase blood flow and to improve the venous return.

Level of use up to 2%

Also in more bioavailable PHYTOSOME® form.

The Phytosome® technology is used to improve the bioavailability of active ingredients through biological membranes. Phytosome® demonstrated a higher biological activity compared to an equal amount of the active ingredient or extract. The delivery system forms a structure in which the active ingredient is anchored to the polar head of the phospholipid and becomes an integral part of the micellar membrane. It allows a high load of active (1:2 or 1:3).

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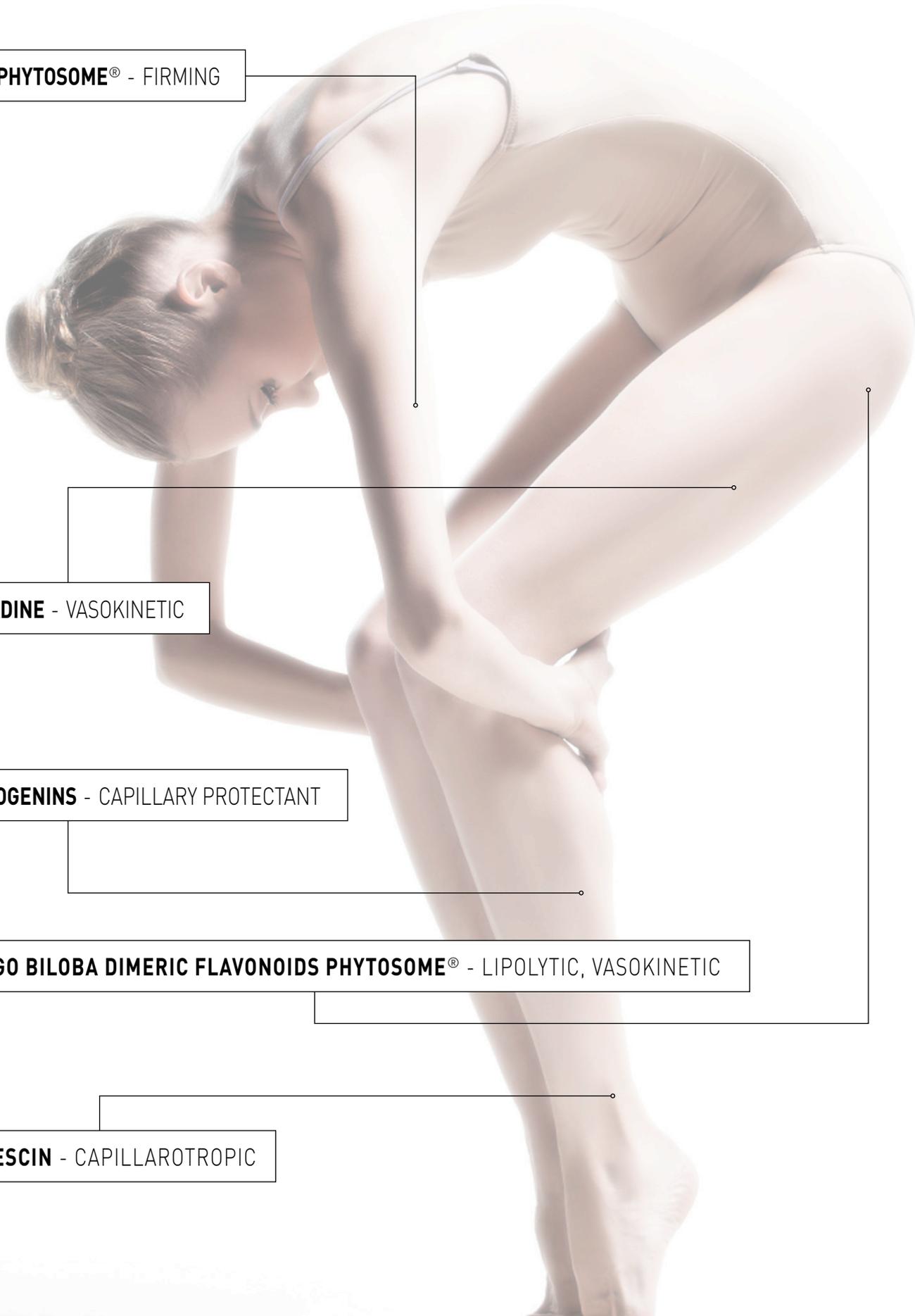
PA2 PHYTOSOME® - FIRMING

VISNADINE - VASOKINETIC

RUSCOGENINS - CAPILLARY PROTECTANT

GINKGO BILOBA DIMERIC FLAVONOIDS PHYTOSOME® - LIPOLYTIC, VASOKINETIC

ESCIN - CAPILLAROTROPIC





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