

Polyplant Firming

This is a complex of plant extracts containing the extracts of the following plants: Asiatic Centella, Coneflower Seaweed and Fenugreek.

Asiatic centella



BOTANY

Hydrocotyle asiatica L. This is a vivacious, herbaceous plant of about 50 cms in height. It has a stem that roots in the knots from which whole leaves with rounded limb sprout; this characteristic differentiates typical Umbellifers from other plants. In the same place that the leaves spring from, twigs also emerge for the flowers to bloom. These are single umbels with very small, white flowers, each supported by a stalk growing out of the same point, which form between one and three crowns or close verticils. The fruit is a very tight diachene, wider than it is tall and divided into two parts each of which has five marked ribs.

CHEMISTRY

The leaves of the Asiatic Centella contain essential oils (0.8-1%), monoterpenes (α -pinene, β -pinene, myrcene, γ -terpineol, borneol), sesquiterpenes (α -copanene, β -elemene, β -caryophyllene, trans- β -farnesene, germacrene, bicycloelemene). They also contain tannins (24.5%) and the flavonoids are also represented here by quercetin and kaempferol. Phytosterols such as β -sitosterol, stigmasterol and campesterol also appear in the chemical composition.

The presence of amino acids (lysine, alanine, phenylalanine, serine, aspartic acid, glutamic acid), fatty acids (palmitic, oleic and linoleic acids), resin (8.9%) and mineral salts may also be detected.

The most important active ingredients in Asiatic Centella are the triterpenic saponins (1.4-3.4%) which derive from the ursane skeleton. The most important of these ingredients is Asiaticoside, which, through acid hydrolysis, unfolds into one part aglycone, Asiatic acid and the glucidic part made up of two molecules of D-glucose and L-rhamnose. Another isolated heteroside is Madecacoside.

Coneflower



BOTANY

Echinacea angustifolia Moench. This annual, herbaceous plant is fixed to the ground by an axomorphous root from which a large number of small roots spring out. Its stem is thin and hairy and reaches from 30 to 120 cm in height. The lanceolate leaves have flat edges and inflorescences of between 12 and 15 flowers, but only the flowers on the disk are bear fruit. The flowers of the *Echinacea angustifolia* are mauve, a feature which enables them to be distinguished from *Echinacea purpurea* and *Echinacea pallida* which are red and white respectively. The parts of this plant which are used are the root and the rhizome. The root is cylindrical or slightly pointed and has a diameter of between 4 and 10 mm; the rhizome has a diameter of some 15 mm.

CHEMISTRY

The presence of echinacoside is most important in the chemical composition of *Echinacea*. This is a glucoside of caffeic acid and may be found in proportions of between 0.3 and 1.3%. Other derivates of caffeic acid have also been detected: verbascoside, cynarin, chicoric acid and chlorogenic and isochlorogenic acids.

Essential oils also make up part of the chemical composition of *Echinacea* and principally terpenes in a proportion of less than 0.1%, the most important being α -pinene, β -farnasene and limonene.

We can also find polysaccharides with a high molecular weight: inulin, betaine and echinaceine. This vegetable species contains alkylamides too. Other components include glycoproteins, alkaloids and resin which, when hydrolysed, gives us oleic, linoleic, cerotic and palmitic acids as well as three phytoesterins.

Mineral are represented in *Echninacea* mainly by silicon, potassium and calcium.

Seaweed (fucus)



BOTANY

Fucus vesiculosus L. The plants belong to the family of brown algae in which the green colour of the chlorophyll has been masked by other pigments, and mainly fucoxanthin, which is brown. This seaweed reaches lengths of between 0.1 and 1 metre and is often dichotomic with small vesicles full of air in its tape-like frond, which serve as floats to keep the plant erect. The thallus is held onto the rock by a basilar lamina with hooks (rhizoids). When the conceptacles on the tips of the thallus come loose, they secrete a red or yellow mucous, antheridia, which are male elements and oospheres, which are female elements. The fusion is carried out in the water and brings about immediate germination.

CHEMISTRY

Once dried, the seaweed still contains 10-12% water and contains 15% mineral salts (0.3-0.8% iodine and appreciable quantities of potassium), 1-2% fatty acids and fucosterol, 4-5% proteins and 65% condensed carbohydrates, basically algin or alginic acid and also a certain amount of cellulose.

Alginic acid is a polymanuronic acid made up of units of D-mannuronic acid in a pyranous shape with 1-4 links. Beside the mannuronic acid there is glucuronic acid and the two are differentiated by their positions in the carboxylic group.

Alginic acid is insoluble in water and swells by absorbing water up to 100 times its weight. The alginates and magnesium alginates are soluble in water but the calcium alginates and the alginates of the heavy metals are not. Alginic acid is precipitated through the addition of an acid to a solution of alkaline alginate.

Fucoidan is a reserve polysaccharide which is soluble in water and is made up of l-fucose units with α -1-2 bonds and sulphur esters in C4. The great viscosity of Fucoidan makes it a useful substance.

Seaweed also contains a high degree of vitamin C and a small amount of provitamin A (carotenoids, fucoxanthin).

Fenugreek



BOTANY

The name comes from *Foeniculum-graecum*, meaning Greek Hay, the plant being used to scent inferior hay. The name of the genus, *Trigonella*, is derived from the old Greek name, denoting 'three-angled,' from the form of its corolla. The seeds of Fenugreek have been used medicinally all through the ages and were held in high repute among the Egyptians, Greeks and Romans for medicinal and culinary purposes.

Fenugreek is an erect annual herb, growing about 2 feet high, similar in habit to Lucerne. The seeds are brownish, about 1/8 inch long, oblong, rhomboidal, with a deep furrow dividing them into two unequal lobes. They are contained, ten to twenty together, in long, narrow, sickle-like pods.

CHEMISTRY

Constituents: about 28 per cent mucilage; 5 per cent of a stronger-smelling, bitter fixed oil, which can be extracted by ether; 22 per cent proteids; a volatile oil; two alkaloids, Trigonelline and Choline, and a yellow colouring substance.

The chemical composition resembles that of cod-liver oil, as it is rich in phosphates, lecithin and nucleoalbumin, containing also considerable quantities of iron in an organic form, which can be readily absorbed. It has been noted the presence of trimethylamine, neurin and betain; like the alkaloids in cod-liver oil, these substances stimulate the appetite by their action on the nervous system, or produce a diuretic or ureo-poietic effect.

COSMETIC PROPERTIES

The composition of this special blend is specially designed to be adapted for the formulation of any kind of cosmetic product with specific action on the connective tissue of the dermis and therefore has an effect on all factors involved in the skin's loss of elasticity.

Everyone of the plants helps to keep skin elasticity:

- Asiatic Centella is incorporated owing to its bioactivator and moisturising power. Although it is slow to act, the Asiatic Centella gives elasticity to the walls of the blood vessels and causes the elimination of edemas and haematomas.
- Seaweed has two actives very appropriate for this product: iodine has a cellulitic action and alginic acid has a moisturising action
- Coneflower is considered a useful product to treat dry, cracked and wrinkled skin or skin with stretchmarks due to its activity as a cellular regenerator.
- Fenugreek has mucilage which form hydrogen bridges with the water on the surface of the skin, retaining it and thus maintaining the moisture of the horny layer to enhance the elasticity, resilience and softness of the skin.

RECOMMENDED DOSE

The recommended dose is between 0.5–3.0%.