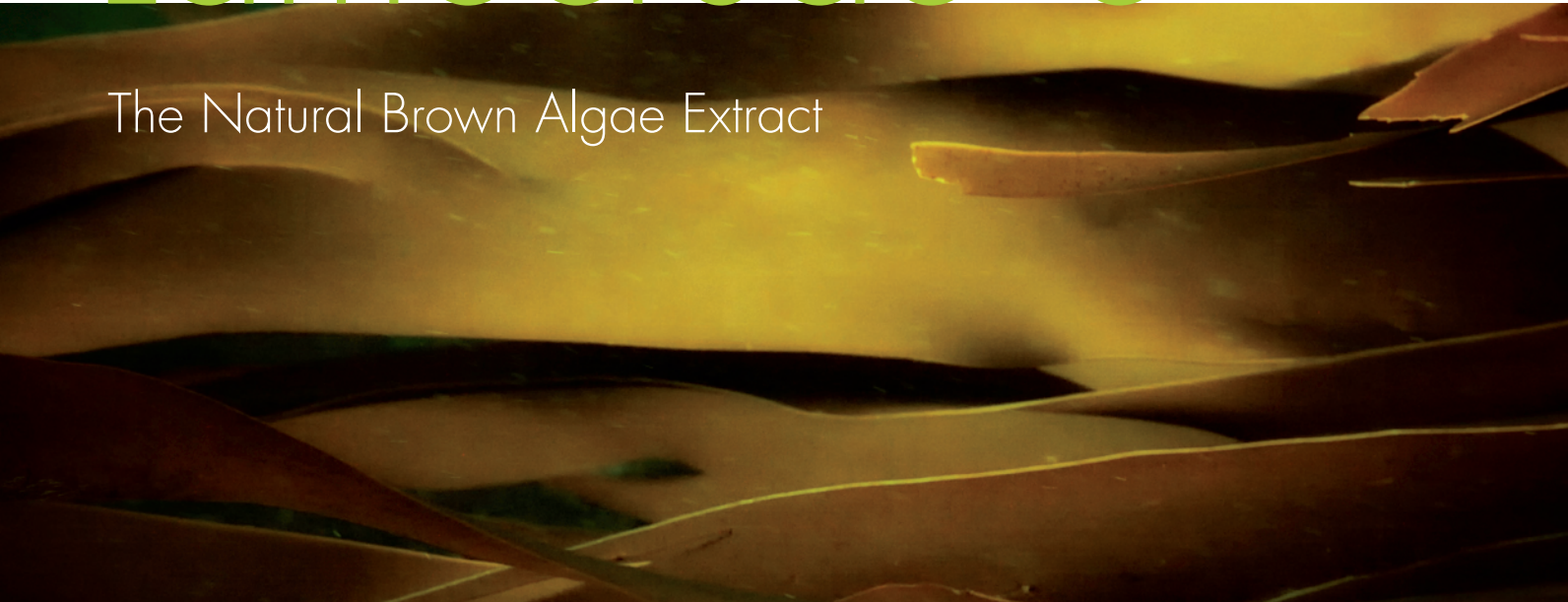




ocean actives

Lamocrude 'S

The Natural Brown Algae Extract



Lamocrude 'S – the Natural Brown Algae Extract.

Lamocrude 'S, the aqueous extract of the brown alga *Laminaria saccharina* (sugar kelp), provides mineralizing, revitalizing, skin caring and protecting properties for cosmetic and hair care products. The skin-protective substances include numerous unique algae sugars and antioxidative polyphenols. Additionally, the minerals and trace elements of seawater ensure a long-lasting moisturizing effect. The gentle processing preserves the chemical integrity of the active substances and their physiological availability.

Active Ingredients

Various ingredients of seaweed extracts protect the skin and have a positive effect on certain properties of the skin:

- UV protection by special phenols (phlorotannins), carotenoids, the enzyme photolyase
- basic skin protection by radical scavengers such as tocopherols, polyphenols, -carotene (vitamin A) and other carotenoids that stimulate the immune system
- hydrating and moisturizing the skin by (sulfated) polysaccharides and mucopolysaccharides (glycosaminoglycans)
- skin smoothing and regeneration through essential and non-proteino-genic amino acids and highly unsaturated fatty acids
- whitening by phlorotannins, phloroglucinol and its oligomers
- stimulation of collagen synthesis by low molecular weight fucoidans

The combination of special algae ingredients is particular and synergistically enhances the overall effect.

Fucoidan

Fucoidans are special sugars in brown algae, which neither can be found in other algae nor in land plants.

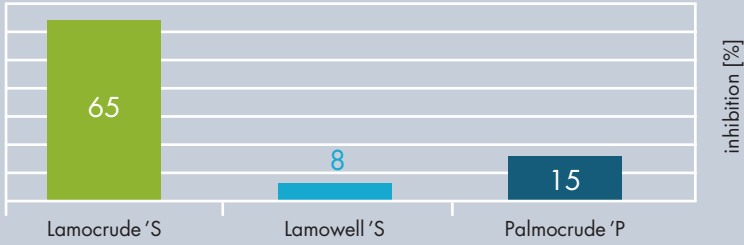
The increasing use of fucoidans in cosmetics is based on studies of the effect of these compounds on different main parameters, for example the stimulation of collagen synthesis. An anti-aging effect is explained by the increase of skin elasticity with applying aqueous extracts containing fucoidans to the skin. By inhibition of matrix metalloproteinases (MMPs) and stimulation of collagen and elastin synthesis in fibroblasts, the skin and connective tissue elasticity is improved, which makes the skin look younger.

Certification

Lamocrude 'S exclusively contains nature-identical preservatives and is certified according to NATRUE guidelines for natural cosmetics. It is therefore suitable for use in natural cosmetic products.



SOSA assay of different algae extracts
dialysis with high molecular components (MWCO = 10kDa);
dilution factor 1:40



Advantage/Effect:

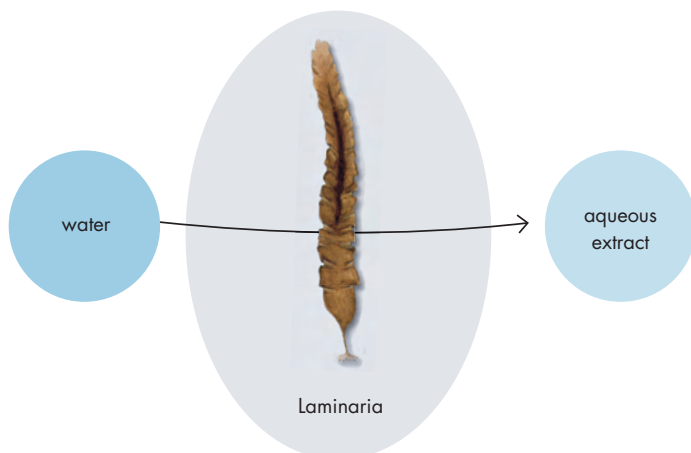
- protects against oxidative stress
- special algae sugars
- skin protecting trace elements
- reduces collagen degradation

Vitamins and Minerals

Algae are relatively rich in minerals, trace elements and vitamins. In addition to calcium, magnesium, iron and potassium they contain the trace elements iodine, copper, zinc and selenium, as well as manganese, strontium, molybdenum and germanium. These elements are bound to the polysaccharides and are bioavailable in this form.

The broad spectrum of vitamins includes vitamin A, C and E and several members of the vitamin B complex, including the rare vitamin B12. These components are of particular importance for the immune system as well as for skin, hair, nails and connective tissue.

Extraction process



Antioxidant Capacity

The oceanBASIS seaweed extracts were analyzed with new measurement methods on their antioxidant properties. Measurements based upon the SOSA assay (superoxide scavenging activity) showed a high radical scavenging activity of the brown seaweed extract Lamocrude 'S' towards superoxide anions. Superoxide is a very aggressive oxygen radical, which is a by-product of cellular respiration.

The SOSA assay is different from other antioxidant tests (TEAC, ORAC), because in this case only the high molecular weight components of the extract (MWCO = 10 kDa) are active. The high radical scavenging activity is probably based on the characteristics of the algal sulfated sugars (eg. fucoidan).

Characteristics:

| | |
|---------------------------|--|
| INCI Description | LAMINARIA SACCHARINA EXTRACT |
| INCI-Function | skin protecting |
| USP | - natural aqueous brown algae extract - NATRUE certified |
| Core Statements | - bioavailable active ingredients from algae - antioxidant properties - algae from sustainable sources |
| CAS No | 90046-14-3 |
| EINECS No | 289-982-1 |
| Organism | <i>Laminaria saccharina</i> (alga) |
| Condition | liquid |
| Color | yellow to brown, clear |
| Odor | characteristic, herbaceous |
| pH Value | 5,0 – 5,8 |
| Iodide | < 150 mg/l |
| CFU | < 100 cfu/g |
| Recommended Concentration | 1–3% |
| Preservation | benzoate, sorbate, ascorbic acid |
| Solubility | unlimited soluble in water |
| Storage Information | 12 months at max. +20°C (+68°F) |

Lamocrude 'S – the natural brown algae extract with cell-protecting polyphenols and moisturizing algae sugars.



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Position:

sea. The sea is source of our inspiration and our products. It keeps immense treasures of substances that we want to make accessible to people without damaging this sensitive habitat.

science. The research and development of marine resources for health and well-being is our priority. We do research on natural and environmentally friendly products.

solutions. Solutions to the problems of our time, return to the values of nature and protection of ocean habitats are central to our efforts.

Business Segments:

ocean actives: NATRUE-certified extracts from marine organisms for cosmetics and hair care products, cultivation of brown algae *Laminaria saccharina* in the first certified organic offshore seaweed farm in Germany

ocean biotech: Research and development of marine drugs for medical applications

ocean cosmetics: Certified natural cosmetics, toiletries and algae based drinks



Literature

Bilan M.I., Grachev A.A., Shashkov A.S., Kelly M., Sanderson C.J., Nifantiev N.E., Usov A.I. (2010) **Further studies on the composition and structure of a fucoidan preparation from the brown alga *Saccharina latissima*.**, *Carbohydr Res.* Vol. 345(14):2038-47. | Sanderson C.J., Kelly M., Di Gregorio P., Rossi C., Tinari N., Iacobelli S., Rabinovich G.A., Nifantiev N.E. (2011) **Fucans, but Not Fucomannoglucuronans, Determine the Biological Activities of Sulfated Polysaccharides from *Laminaria saccharina* Brown Seaweed.**, *PLoS One.* 6(2):e17283.
Fodil-Bourahla I, Bizbiz L, Schoevaert D, Robert AM, Robert L. (2003) **Effect of L-fucose and fucose-rich oligo- and polysaccharides (FROP-s) on skin aging: penetration, skin tissue production and fibrillogenesis.**, *Biomed Pharmacother.* 2003 Jul-Aug;57(5-6):209-15