

PI-100-01

INKA Omega Oil



3QP

High Concentration of Omega 3, 6 and 9 of Botanical Origin

Extracted entirely only using cold pressure techniques, INKA OMEGA OIL contains one of the highest concentrations of polyunsaturated fatty acids among all the oily seeds used for human consumption. It reaches an average concentration of **48%** content of alpha-linolenic acid (**Omega 3**) and an average of **37%** linoleic acid (**Omega 6**). Additionally, it contains approximately **8%** oleic acid (**Omega 9**).

INCI Denomination: Plukenetia Volubilis Seed Oil

Plant Description:



Family: Euphorbiaceae

Genus: Plukenetia

Species: *Plukenetia Volubilis* Linneo sp.

Synonyms: *Plukenetia peruviana* muell. arg.,
Plukenetia macrostyla Ule

Commo Names: Mani del Inca (Inca Peanut), Sacha Inchik, Sacha Yuchi

Botanical Names: *Plukenetia volubilis*, *Tetracapidium conophorum*

Habitat:

It is a plant native to the high humid forests of the South American Andean region.

Description:

Climbing plant native to the highlands of the Andes, the Inca Peanut is a plant with a root of branched nodes which fix nitrogen. Its white flowers turn into a tetra-globular fruit containing a seed, with a coating similar to the nuts in every fruit. The pod is sun-dried in the vine. The seeds or nuts have an oval shape, flat and small size. The seed weighs around 6.6 grams and the pit is over 63% the total weight of the seed. The seeds contain polyphenols which produce a bitter taste if they are not toasted.

Tnte. Enrique Delucchi 80. Lima 04. Perú

T: +51 1 463 0350. F: +51 1 477 2613

E: info@3qp.biz

PI-100-01

INKA Omega Oil



The seeds are appreciated for their oil content: 35 – 60% of which 90% is unsaturated. They also have high protein content (33%). As far as we know, it is the first plant that contains all the essential amino acids required by a human adult. The oil is viscous and has a yellow color.

Traditional Uses:

It is known that this plant was used by pre-Inca tribes, since it has been found in pots inside their tombs. The Inca Peanut has been traditionally used by the indigenous Chanca of Peru as food.



The natives of the Sequoia, Chandosas, Amueshas, Cashibos, Dapanahuas and Boras tribes eat the nut toasted, to recover strength and as a tonic for heavy duty work. They use the oil to rub their body to heal and relief muscle and rheumatic pains. The indigenous societies Sharanahua, Amuesha, Amahuaca, Aguaruna, Arabela, Chayahuita, Yagua, Shipibo, Huitoto, Murui, Campa, del Gran Pajonal, Machiguenga,

Ashaninca, Mayoruna, Arabela, Quechua of the San Martin region, Quechua of the Tiger region, etc., extract the oil in an artisan way to be used as food and fuel. They also produce flour from the resulting cake after the oil extraction.

In Peru, the harvests of *Plukenetia volubilis* are being promoted for the extraction of oil from the nut. The cake is used as food for animals. The women of the Mayorunas, Chayahuitas, Campas, Huitotas Shipibas, Yaguas and Boras tribes mix the oil with the flour producing a kind of special ointment to revitalize and rejuvenate the skin.

In some communities of the forests, the cake is used not only as human food but also as food for animals, replacing the soy cake. This is an important economic alternative for the peasant of the Peruvian Amazon.

Tnte. Enrique Delucchi 80. Lima 04. Perú
T: +51 1 463 0350. F: +51 1 477 2613
E: info@3qp.biz

PI-100-01

INKA Omega Oil



3QP

Sustainable Development – Support to Local Communities:

The objective of 3QP is the research and sustainable exploitation of natural resources of Peru for their application in the cosmetic industry.

We have the commitment to grant the highest priority to indigenous botanical ingredients aimed to the economic development of the local communities and under the principles of fair-trade.

Cosmetic benefit:

THE ROLE OF LIPIDS:

The lipids have basically three missions in the body:

- Store energy
- Essential part of the structure of the cell membranes
- Hormone precursors



Fatty acids are the basic structural units of lipids. The body cannot synthesize many fatty acids. Those that cannot be synthesized in adequate amounts must be obtained from the diet and are called essential fatty acids. Their lack can cause serious disorders in the body, affecting the hormonal production and the immune and cardiovascular health.

Lipids are multifunctional ingredients commonly used in cosmetics and in personal care products. They may act as emollients, emulsifiers, binders, lubricants, solubilizers, and dispersants; they favor the penetration of other products in the skin, may be vehicles for other actives, are used to modify the viscosity, as antimicrobials,... and also as active ingredients in a wide range of applications in skin care, hair care, decorative cosmetics and toiletries.

Natural lipids are very linked to biochemical processes including the regulation of the epidermal growth, reduction of irritation and formation of the skin barrier function. The property of barrier function depends exclusively on the presence of epidermal lipids.



LIPIDS IN SKIN CARE:

Natural lipids are important ingredients in all categories of skin care cosmetics, and also have key importance in treatments for dry and sensitive skins, for anti-aging products, sunscreens and facial cares. The problem of dry skin has become one of the most extensive at present. Many people need re-lipidizing and regulatory treatments for the hydration of their skin.

The skin acts as barrier to protect the body from the excessive water loss and from the penetration of foreign substances. The optimum skin condition is characterized by an adequate ratio between the epidermal lipids and hydration. The healthy condition of the skin depends on the retention of moisture provided by the external layers of the epidermis.

The dry skin is characterized by a reduced content of water and, what is more serious, a deficient lipid composition. A deficient barrier function from the skin results in an increase of the water evaporation and a higher sensitiveness of the skin to environmental factors. Therefore, an ideal treatment must contain ingredients that improve and repair the barrier function, and that also supplement the lack of natural epidermal lipids.

ESSENTIAL FATTY ACIDS:

The essential fatty acids are the polyunsaturated (Polyunsaturated Fatty Acids – PUFAs) and are necessary to have good health. They cannot be synthesized by the body. These acids are fundamental to have good health, becoming part of important processes such as the control of blood pressure, reduction of cholesterol or playing an important role in inflammatory processes and in allergic reactions. The polyunsaturated fatty acids cannot be synthesized by our body so they must be provided from the exterior.

The stratum corneum needs three types of lipids to perform an efficient barrier function: Ceramides, cholesterol and polyunsaturated fatty acids. When these lipids are regularly joined together between the keratinocytes, the potentially harmful substances that contact the skin cannot cross the skin barrier. On the contrary, when there is a rupture in the number and compaction of the intercellular lipids, the barrier formed by the skin becomes permeable.

The lack of PUFAs leads to skin problems, such as:

- * Dry skin
- * Scaling
- * Wounds take longer to heal
- * Moisture loss
- * Erratic process of keratinization
- * Increases the mitosis rate (disorganization of the epidermal layers)
- * Tendency to eczemas and to uncomfortable skin (itch)

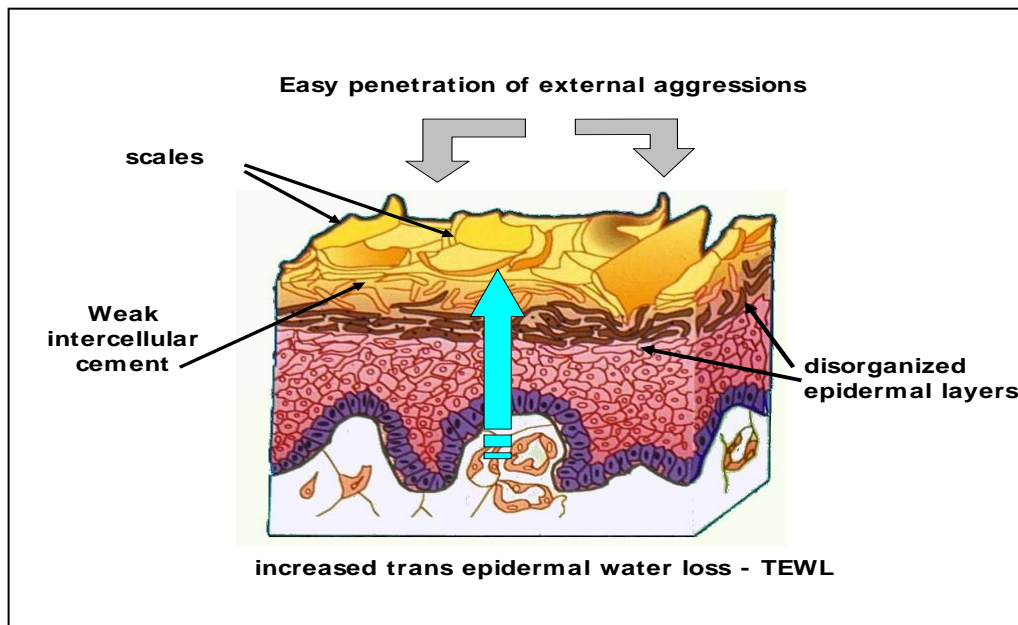


Fig 1: Problems of the skin lack of PUFA's

The Linoleic acid is an important precursor of ceramides and is essential for the skin barrier function¹. Studies carried out demonstrate that, both by topical application and by intake with the diet, the PUFAs can restore and improve the dry skin, besides having other therapeutic effects on skin disorders² such as atopic dermatitis, psoriasis or acne³.

The skin is very active in the metabolism of the PUFAs, but is not able to perform all the processes of desaturation and elongation. The PUFAs can be incorporated into the skin structure by topical application. The fatty acids can be metabolized by the skin.

The application of the PUFAs on the skin leads to:

Tnte. Enrique Delucchi 80. Lima 04. Perú
 T: +51 1 463 0350. F: +51 1 477 2613
 E: info@3qp.biz

PI-100-01

INKA Omega Oil



- Reduction of the trans-epidermal water loss (TEWL)
- Improvement of the barrier function
- Normalization of the keratinization process

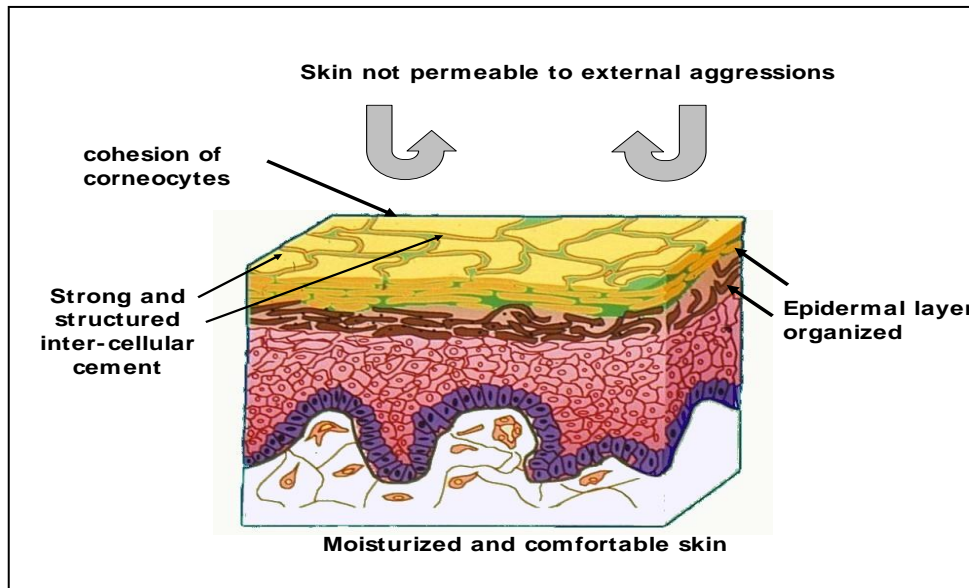


Fig 2: Normal skin



Tnte. Enrique Delucchi 80. Lima 04. Perú
T: +51 1 463 0350. F: +51 1 477 2613
E: info@3qp.biz

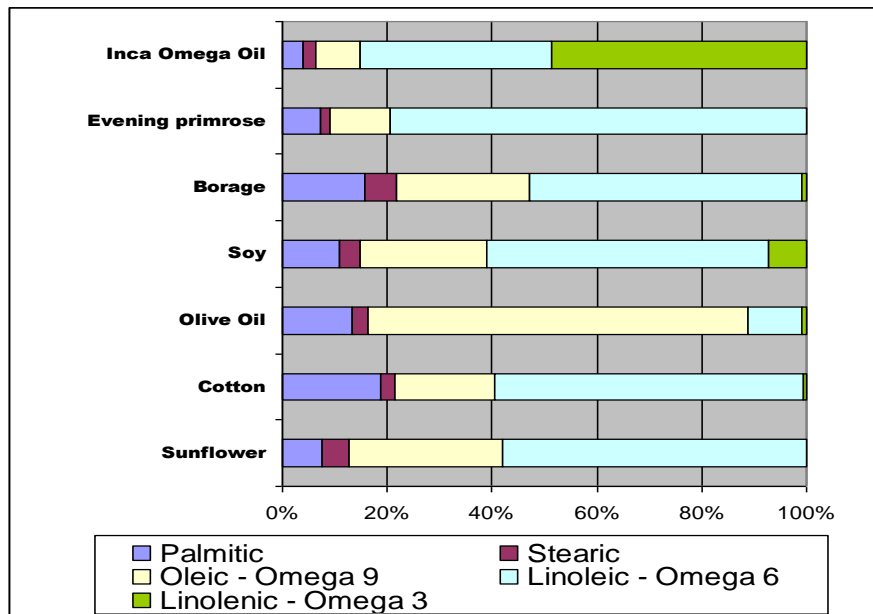


Table 1: Fatty acid composition of some oils

ANTI-FREE RADICAL ACTION

Free radicals are chemical agents provided with a potent oxidant capacity. Their origin may be exogenous (pollution, tobacco, etc.) as well as endogenous (stress, cellular respiration, etc.).

Under normal conditions, the skin is able to maintain a balance between the free radicals that are generated or that infiltrate from the outside, and the systems that neutralize them. An imbalance produces oxidative stress, which attacks the tissues and the skin cells, causing an accelerated aging.

Free radicals attack the cell membranes especially, causing the destruction thereof. These membranes are the delicate support of the genetic map of our cells, which nucleus contains the DNA. The integrity of this membrane protects the DNA and the life of our cells.

The INCA OMEGA OIL acts in two ways to prevent the destruction of the DNA: On one hand, the essential fatty acids act as support of the cell membrane. Additionally, its composition rich in Tocopherols, natural antioxidants, gets to restrain the chain reaction mechanism of formation of free radicals.

The high concentration of delta-tocopherol, the isomer of highest activity, is very significant, compared to other oils normally used in the cosmetic industry. Numerous

PI-100-01

INKA Omega Oil



tests performed in laboratory demonstrate that the delta-tocopherol and the gamma-tocopherol are the ones that have the highest antioxidant capacity followed by, far behind, the alpha-tocopherol.

Neither the delta-tocopherol nor the gamma-tocopherol can be chemically synthesized and must be extracted from natural products containing the same. Well then, it is very interesting, the high concentration both of gamma-tocopherol and of delta-tocopherol that can be found in the INCA OMEGA OIL.

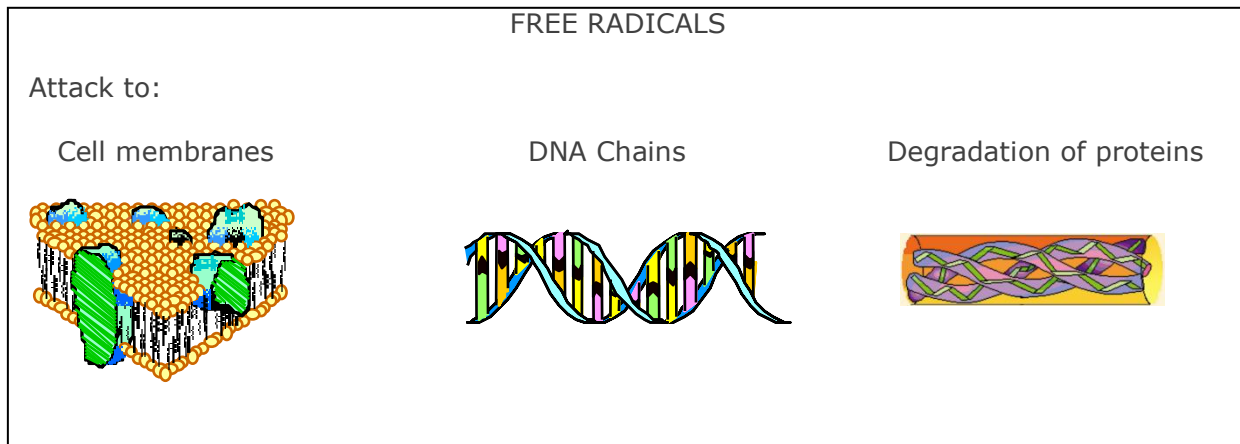


Fig 3: Free Radicals sites of attack



Fig 4: Accumulation of oxidative damage

Tnte. Enrique Delucchi 80. Lima 04. Perú
T: +51 1 463 0350. F: +51 1 477 2613
E: info@3qp.biz

Oil	Alpha	Beta	Gamma	Delta	Total
Hazelnut	354	-	32	4	390
Almond	392	-	6	-	398
Soy	84	24	545	367	1020
Sunflower	694	26	-	-	720
Palm	125	-	-	-	125
Apricot	28	24	750	-	802
Peanut	229	17	198	17	461
Avocado	64	-	19	-	83
Rapeseed	377	9	506	28	920
Cotton	398	-	352	-	750
Corn germ	196	7	1202	38	1443
Walnut	56	5	500	5	566
Olive	115	-	4	-	119
Grape grain	133	21	817	4	975
Sesame	12	6	244	32	294
INCA OMEGA OIL	32,3	-	1329	732	2093,3

Table 3: Composition in TOCOPHEROLS of different oils in ppm

EFFICACY TESTS

Re-hydrating damaged skin

We performed a Clinical test, under dermatologist supervision, on 10 volunteers:

- Application of a skin drying gel on one arm to create a model of sudden dried skin
- Application of same gel dosed with 5% INCA OMEGA OIL on the other arm
- Measurement with CORNEOMETER of the re-hydration of superficial layers of skin 2 and 4 hours after application. Results are in Figure 5.

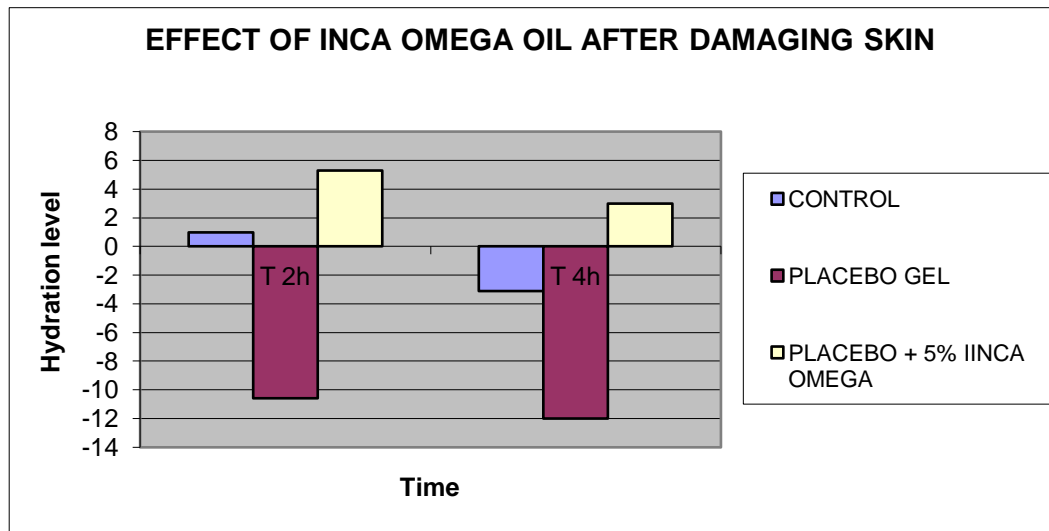


Fig 5: Effect of Inka Omega Oil in damage skin

The addition of 5% of INCA OMEGA OIL at the drying gel, not only compensates the negative effect of the placebo - 150% after 2 hours and 125% after 4 hours - , but even improves the moisturization level of the initial control.

Subjective Clinical Test

After 1 month of use, the following results are seeing (Fig 6):

- 75% saw a better moisturized skin
- 100% felt the skin softer
- 79% had a better general feeling
- 70 % of the users with oily skin felt it mattified

All of these improvements were seen formulating 5% of INCA OMEGA OIL in a skin drying gel.

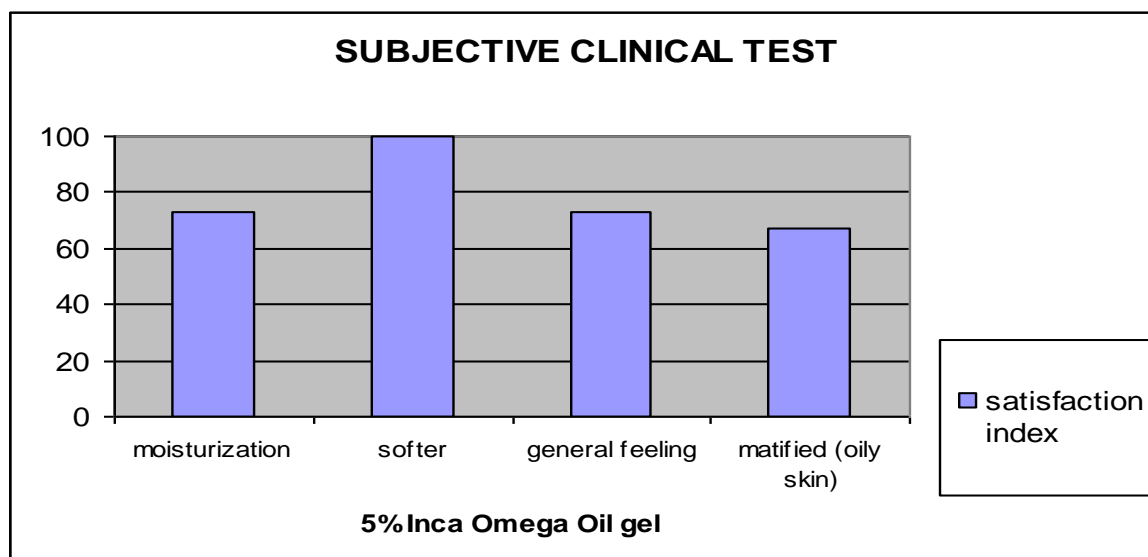


Fig 6. Subjective Clinical Test of a Gel with 5% Inca Omega Oil

CONCLUSION

INKA OMEGA OIL reduces the Trans Epidermal Water Loss, improves the Barrier Function of the skin, normalizes the Keratinization Process, prevents DNA damage and restores skin softness.

It is recommended for:

- Sensitive & dry skin treatments
- Moisturizers
- Anti-age products
- Anti free-radical products. After sun treatments
- DNA protection treatments.
- Capillary treatments

Dose of use – Solubility – Preparation

DOSE OF USE: From 1 to 10%.

SOLUBILITY: Fat-soluble.

PI-100-01

INKA Omega Oil



3QP

PREPARATION: INCA OMEGA OIL is compatible with most of the raw materials commonly used in cosmetics. However, the formulator will have the responsibility to ensure the stability of the formulation by performing the necessary tests.

Preferably, it will be incorporated into the cosmetic preparations during the preparation of the fat phase.

Analytical Information

Aspect:	Oily liquid, with yellowish color
Relative density (at 20 °C):	0,90 – 0,93
Refractive Index (at 20 °C):	1,48
Acidity Index:	≤5 mg KOH/g

PRESERVATIVES: None

MICROBIOLOGY:

Total germs:	≤ 1000 cfu/gr
Fungi and yeasts:	≤ 1000 cfu/gr
Pathogens:	Absence

TOLERANCE: Excellent. Dermatologically tested

PRESERVATION: Keep refrigerated (4 to 8 °C) and **protected from light**
If the original container is opened, it should be handled with special care in order to avoid a secondary microbiological contamination and kept refrigerated.