OLIVOIL GLUTAMATE EMULSIFIER

Natural PEG-free and hydrolyzed protein free

Soft and emollient emulsifier of vegetal origin

Ecocert

International patent

Kalichem Italia s.r.l.

OLIVOIL PRODUCTS

"PEG-FREE" SURFACE TENSION MODIFIERS OF VEGETAL ORIGIN INTERNATIONALLY PATENTED

>> PRODUCTS BACKGROUND

In the modern concepts of wellness, now consisting in the responsible respect of both body and skin equilibrium and environment, the wide success of ingredients of natural origin is due to two key aspects. **Firstly, the need for developing formulas as much as possible compatible with the physiology of skin and its annexes, without any adverse effect or allergic potential. Second, the growing confidence of the consumers in the beneficial properties provided by complex mixtures of natural ingredients.** The quest for PEG-free surfactants and emulsifiers led Kalichem to the creation of new classes of base ingredients for skin-friendly and environmental-friendly cleansing cosmetic products, the OLIVOIL Series. These ingredients of vegetal origin are ethylene oxide free and highly performing in cosmetic formulations. Moreover, they provide to the skin the pleasant accompanying effects of vegetal structures. The OLIVOIL brand references are based on the multi-faceted combination of OLIVE OIL and vegetal PROTEINS, derived from WHEAT and OAT.

>> THE ORIGINS

Extra-virgin **Olive** oil is obtained by cold pressing of the pulp of fruits of Olea europaea (Olive), a species of small tree of the family Oleaceae, native to the coastal areas of the eastern Mediterranean region from Lebanon, Syria, the maritime parts of Asia Minor to the south end of the Caspian Sea and successively cultivated in all the Mediterranean area. Its stone fruit, the olive, is of major agricultural importance in the Mediterranean region as the source of olive oil.

Olive oil shows the following average composition, here given in comparison with the most used edible oils:

OILS	SATURATED LIPID CHAINS	MONO-UNSATURATED LIPIDIC CHAINS	POLY-UNSATURATED LIPIDIC CHAINS
OLIVE OIL	16%	75%	9%
PEANUT OIL	19%	53%	28%
SUNFLOWER OIL	11%	33%	50%
CORN OIL	5%	31%	50%
SOYA OIL	4%	23%	59%
COCONUT OIL	87%	6%	2%

Widely preferred to other vegetal oils for its high amount of mono-unsaturated fatty acids, it exhibits well-known properties of integration with the body physiology. Olive oil has the undoubted advantage of its lipidic fraction, provided by a millenary history of contact with vital human cells, which thus allows to boast high safety standards. When the complex of its lipidic chains is chemically combined with hydrophilic molecules of known performances, functional ingredients suitable for innumerable cosmetic formulations can be created. Another interesting aspect of olive oil properties concerns its unsaponifiable fraction (0.6-1.5%). This fraction is kept unchanged in the finished material. Its antioxidant power, as well as the emollient effects of the lipidic moiety, contributes to skin normalization and protection.

Myristic acid $CH_3 (CH_2)_{12} COOH$

1%

Palmitic acid $CH_3 (CH_2)_{14} COOH$

15%

Palmitoleic acid $CH_3 (CH_2)_5 CH=CH (CH_2)_7 COOH$

1%

Heptadecanoic acid $CH_3 (CH_2)_{15} COOH$

0,5%

Stearic acid $CH_3 (CH_2)_{16} COOH$

4%

Oleic acid $CH_3 (CH_2)_7 CH=CH (CH_2)_7 COOH$

68%

Linoleic acid $CH_3 (CH_2)_4 CH=CH - CH_2 CH=CH (CH_2)_7 COOH$

9%

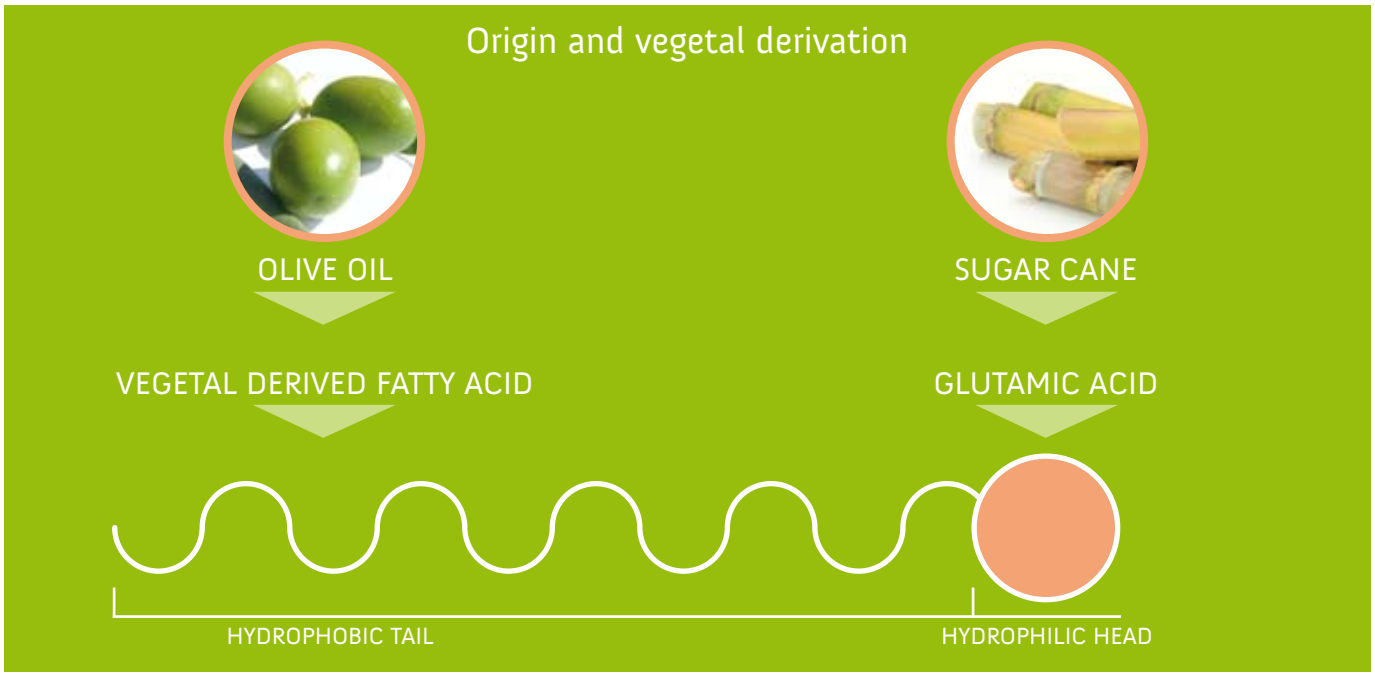
Linolenic acid $CH_3 CH_2 CH=CH - CH_2 CH=CH - CH_2 CH=CH (CH_2)_7 COOH$

0,5%

Others 1%

>> OLIVOIL TECHNOLOGY

Combining the best of both vegetal oils and glutamic acid allowed Kalichem to achieve new molecules having relevant interfacial properties:



These new surface-active agents can be used to formulate 'totally natural' finished cosmetic products that are very suitable for sensitive skin, baby-care, hair-care and personal-hygiene.
Furthermore, beside being extremely performing as vehicle ingredients (as surfactants and emulsifiers), thanks to their special composition they may act as functional substances with protecting, soothing and restoring ability.

As for their environmental impact, they are characterized of high biodegradability (according to the CEE regulation N.82/242 OECD Method).

OLIVOIL GLUTAMATE EMULSIFIER

NATURAL PEG-FREE AND HYDROLYZED PROTEIN FREE

SOFT, EMOLLIENT AND SOOTHING EMULSIFIER OF VEGETAL ORIGIN

ECOCERT

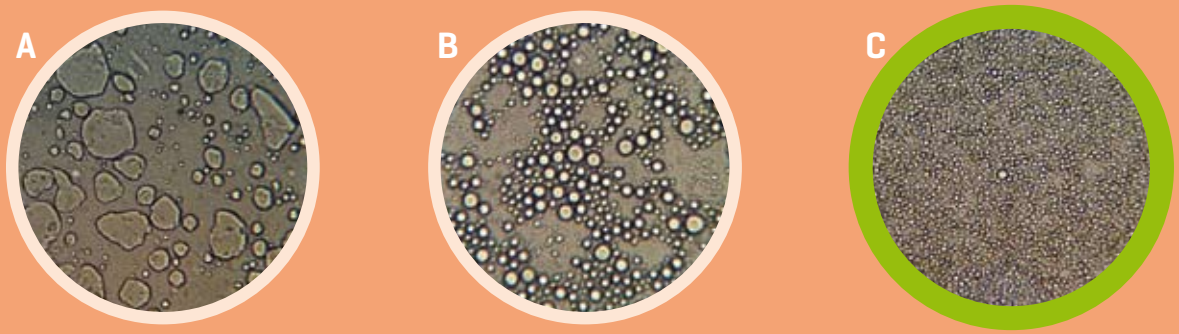
OLIVOIL GLUTAMATE EMULSIFIER® is a non-ethoxylated, vegetal derived surfactant that combines the unique fatty acid profile of olive oil with the characteristic affinity of glutamic acid toward the skin surface. The result of this conjunction is a new emulsifier structure with high skin compatibility and maximum biodegradability. OLIVOIL GLUTAMATE EMULSIFIER is based on Olivoyl Glutamate, a lipo-amino-acid with a fatty amide structure, showing high interfacial activity. It is obtained by condensation between the amino group of glutamic acid and the carboxyl groups of the fatty acids.

>> EMULSION TYPE

With OLIVOIL GLUTAMATE EMULSIFIER®, the concepts of skin respect and skin friendly emulsifier become a reality. The hydro-lipidic balance of the skin, significantly lowered by traditional emulsifiers, is only barely altered by the application of the complex.
Furthermore, the lipidic moiety of the Olivoil Glutamate Emulsifier can provide a significant contribution to the restitutive effects of the whole cosmetic formula, thanks to the saturated and unsaturated fatty acids from olive oil.

Crystal Liquid Emulsions

HOMOGENEITY & SIZE MICROSCOPE



Not fine - Not Homogeneous

Quite fine - Quite Homogeneus

Very fine Homogeneus
(with **Olivoil Glutamate Emulsifier®**)

Chemical structure of Sodium Olivoyl Glutamate (SOG)

The hydrophilic part made up of glutamic acid

$$HOOC\text{-}CH_2\text{-}CH_2\text{-}CH(NHCOR)\text{-}COONa$$

The lipophilic part of olive oil

Starting from the surfactant ingredient, the key molecule (SOG corresponding to Olivoil Glutamate), a mild emulsifier system is obtained, suitable for the stabilization of O/W emulsions, by simply adding some structuring co-emulsifiers: Cetearyl Alcohol and Glyceryl Stearate. The combination leads to the final ingredient: Olivoil Glutamate Emulsifier. The result is an 'emulsifier base' with outstanding emulsifying power.

Protein and
Gluten Free

>> TECHNICAL ADVICE

The product comes in solid waxy blocks with a characteristic, but faint, odour and ivory white colour. It is suggested its addition to the oil phase of cosmetic emulsions. Having a melting point within the range 65-70 °C, it may require heating up around these temperatures for easy solution. On the basis of experimental trials of emulsification, in order to achieve fine and homogeneous emulsions, the best operative method is as follows:

> addition of the emulsifier to the oil and heating to the required temperature,
> addition of a little amount (20% of the total) of hot (70-75°C) water phase to the oil phase for the emulsion process
> slow addition of the remaining part of the water phase to cool the system.

The correct operating parameters in the emulsification phase (time, speed, cycles of stirring and homogenization) have to be defined by taking into account the specific equipment and formula characteristics and bench trials.

>> COSMETIC APPLICATIONS

OLIVOIL GLUTAMATE EMULSIFIER® can be used in a wide range of skin-care products.
It represents a useful choice to formulate performing traditional and special cosmetic emulsions, e.g. those suitable for sensitive and delicate skins (dry skin, baby skin, ethnic products).
Emulsions with very pleasant white appearance and characteristic soft-touch, stable at high temperature, can be obtained without the addition of co-emulsifiers.

Oily phase obtained by use percentage of Olivoil Glutamate Emulsifier

% GLUTAMATE + % OILS

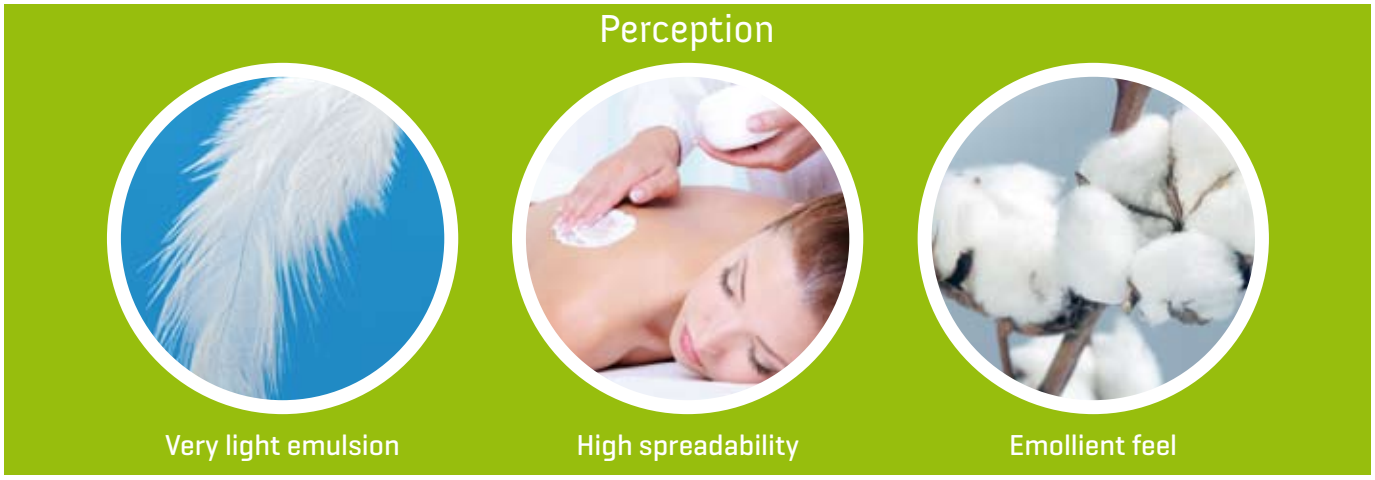
OILY PHASE	OLIVOIL GLUTAMATE EMULSIFIER
10 - 20%	4 - 5%
30 - 40%	6 - 7,5%

>> SENSORIAL EVALUATION

In order to underline the outstanding skin-feel of emulsions realized with OLIVOIL GLUTAMATE EMULSIFIER®, the evaluation of formulations prepared with different oils and different polarity, made by a panel of experts, was carried out.

Results

Each of the realized formulas was evaluated in terms of initial perception, during application and final perceptions.
All the emulsions made with different oils and based on OLIVOIL GLUTAMATE EMULSIFIER had a very light initial perception, independently from the oil used, even when high amounts of vegetal oil (e.g. Sweet Almond Oil) are contained. The spreadability of all emulsions was related to the characteristics of the oil used. The final perception was also dependant on the oil phase characteristics. Therefore, a nourishing sensation is obtained when using polar oils, while a dry and emollient feel is obtained with medium polar and non polar oils.



>> PRODUCT SPECIFICATIONS

INCI NAME and COMPOSITION:	CAS No	EINECS / ELINCS	RANGE %
SODIUM OLIVOYL GLUTAMATE	-	Biopolymer	25-50%
CETEARYL ALCOHOL	67762-27-0	267-008-6	25-50%
GLYCERYL STEARATE	31566-31-1	250-705-4	25-50%

PHYSICO - CHEMICAL ANALYSIS	METHOD	LIMITS
APPEARANCE	Internal	SOLID
COLOUR	Internal	IVORY WHITE
ODOUR	Internal	SLIGHT NEUTRAL
MELTING POINT (°C)	Internal	65 - 70°C
pH OF AN AQUEOUS SOLUTION 10%	Internal	6.5 - 7.5
NITROGEN	Internal	0.5 - 1.0%
DRY RESIDUE	Internal	95 - 98%
MICROBIOLOGICAL SPECIFICATIONS	Internal	< 100 UFC/g

SHELF LIFE: 12 months in the original containers.
BIODEGRADABILITY: high, according to the CEE regulation N.82/242 OECD Method.
IN-VITRO SAFETY EVALUATIONS: Red Blood Cell test: non irritating.
LPO586: it does not induce any lipo-peroxidation.
USE PERCENTAGE: SKIN CARE PRODUCTS (O/W emulsions): between 3 and 8%. If the amount of oil phase is in the range 10-20% the amount of emulsifier required is 4-5%, higher amounts of oil phase require 5-7.5% emulsifier. By introducing a little amount of stabilizing polymer (mainly Xanthan Gum), the emulsifier is able to give stable emulsion up to 40% oil phase. pH range: the optimum stability interval for finished products is obtained between 5 and 7 values.
OLIVOIL GLUTAMATE EMULSIFIER® has the ECOCERT certification.

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OLIVOIL

GLUTAMATE

EMULSIFIER

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