Emulsifying base and pre-structured lipo-gel obtained from lipo-amino acids and lipoproteins with a high vegetable oil and cosmetic lipids content for the easy preparation of fluid and consistent micro-emulsions in cold-working process, thermo-stable and Ecocert conform.

Patent pending
Application No.: PTC/EP2006/063941
Publication No.: WO2007/003658
Phytomuls 812 e Phytogel

Phytomuls 812 and Phytogel are cosmetic oil pre-emulsions, lipoproteins and lipo-amino acids. These biological emulsion pre-structures allow the formulator to emulsify further oils in great quantities at his discretion. Specifically, Phytogel is a high oil content semi-rigid emulsion (80% ca.) obtained from Phytomuls 812. The latter allows the cosmetic chemist to emulsify other oils he chooses with up to 4 times the weight of Phytomuls 812 itself.

It is therefore sufficient to add water and active ingredients to obtain fluid and stable micro-emulsions. If consistent emulsions are desired, it is possible to add EASYCREAM Hydro.

The production process can even be performed at ambient temperature, quickly and with great cost savings.

**Why you should use it:**

° It makes possible to obtain functionalized emulsions
° Lipo-amino acid and lipoprotein emulsions at low free chemical energy and high content of cosmetic lipids are obtained
° High emulsion performance, thanks to its pre-structure able to incorporate a high content of cosmetic lipids
° Formation of lipo-jellified emulsions with a high content of lipids, stable even at high temperatures
° Formation, even at cold temperatures, of micro-emulsions by simply adding water
° Possibility, even at cold temperatures, to create consistent micro-emulsions by simply adding a pre-structured base of traditional consistency factors, peg free and/or derived from petroleum.
° Formations of fluid and consistent micro-emulsions for a pleasant and silky touch, superior to traditional formations, total natural derivates and free from synthetic petroleum emulsions.
° Easy Ecocert classification (biological cosmetic)
° Emulsion biological structure similar to multi-stratified and dispersed lamellar phases (liposome)
° No limit for stability when introducing lipids, as the emulsion structure overcomes HLB concepts
° Hypo-allergic cosmetic emulsion and safe for use
° The Phytomuls 812 emulsion, through the formation of lipo-jell, represents a delivery system for the active ingredients used (lipo / hydro vitamins)
Phytomuls 812 is a self-emulsifying base for the easy preparation, even at cold temperatures, of fluid and consistent micro-emulsions from vegetable and skin-refining substances, such as lipoproteins, lipo-amino acids and tri-glycerides. The emulsions obtained have an extraordinary skin texture, thanks to a composition similar to the biological structure.

**INCI NAME:**
- Caprylic/capric Triglyceride 40 – 60%
- Aqua: 15 - 25%
- Glycerin: 10 - 20%
- Potassium Olivoyl Hydrolyzed OAT Protein: 5 - 15%
- Sodium Lauroyl OAT Amino Acids: 5 - 15%

**GENERAL CHARACTERISTICS**
- Appearance at 20°C: semi-solid paste
- Colour: avorious white
- Odour: slight, characteristic
- Lipids: 55 % ca.
- Nitrogen: 0.4 - 0.6%

**Moisturizing microemulsion spray**
1. PHOTOMULS 812: 4%
2. Sweet almond oil: 2%
3. Rice oil: 2%
4. Caprylic/capric Triglyceride: 2%
5. Squalane: 2%
6. Vit. E acetate: 0.5%
7. Panthenol: 0.5%
8. Preservative and perfume: q.s.
9. Water: to 100

**Working process**
1. Charge PHOTOMULS 812 and a first part of the oils (ca. the same quantity of PHOTOMULS) and omogeneize.
2. Add the other oils under omogeneization since obtain a consisten gel (PHOTOGEL)
3. After 5 min. add water, active principles and the remaining ingredients.
4. Omogeneize for other 5 min. and check that the obtained microemulsion is conform to standards.

**Moisturizing body cream**
1. EXAMPLE N.1 (above): 90%
2. EASYCREAM Hydro: 10%

**Working process**
1. Under room temperature add EASYCREAM Hydro at emulsion N.1
2. Omogeneize for 5-10 min. since the building up of a consistent emulsion.

**Moisturizing microemulsion spray**
- Appearance at 20°C: fluid emulsion
- Colour: white
- Odour: lightly characteristic
- pH: 6.5
- Viscosity GSV5: 20 mPas.
- Stability:
  - +45°C: ok
  - + 4°C: ok
Phytogel

Phytogel is the lipo-gel obtained from Phytomuls 812 by adding a high quantity of cosmetic oils. Usually, Phytogel contains 66% of additional oils to 33% of Phytomuls 812, with a ratio of 2:1. Phytogel is manufactured using specific oils, such as: almond, grain, jojoba, squalene, caprylic/capric triglyceride, etc. or a mixture of them. Phytogel is used in its water solutions which form fluid and stable micro-emulsions.

Phytogel hydrocarbons

Phytogel Squalane

Squalane: 60 - 70%
CAS: 111-01-3  EINECS: 2038256
Phytomuls 812 (see above): 30 - 40%

Phytogel Squalane

Appearance at 20°C: consistent emulsion
Colour: white
Odour: slight, characteristic
pH: 6.5
Viscosity G6V5: 120.000 mPas.
Stability: +45°C: ok / + 4°C: ok

Phytogel hydrocarbons

Phytogel Caprylic/capric Triglyceride

Caprylic/capric Triglyceride: 60-70%
CAS: 65381-09-1  EINECS: 2657243
Phytomuls 812 (see above): 30 -40%

After-sun protective microemulsion

1. Phytogel Caprylic/capric Triglyceride: 20%
2. EASYCREAM HYDRO: 2%
3. Vit. E acetate: 0.5%
4. Alfa Bisabolol: 0.2%
5. Panthenol: 0.5%
6. Vit. A Palmitate: 0.05%
7. Parfume and preservative: q.s.
8. Water: to 100

Working process

1. Charge Phytogel, vitamins, Bisabolol, Panthenol and EASYCREAM HYDRO. Mix for 5 min. since all ingredients are absorbed.
2. Add water, preservatives, and omogeneize for 5 min. Check that the microemulsion conform to standards.

Appearance at 20°C: consistent emulsion
Colour: avorious white
Odour: slight, characteristic
pH: 6.5
Viscosity G2V50: 20 mPas.
Stability: +45°C: ok / + 4°C: ok

Phytogel esters

Phytogel sweet almond oil

Prunus Amigdalus: 60 – 70%
CAS: 8007-69-0  EINECS: -
Phytomuls 812 (see above): 30 -40%

Protective spray microemulsion

1. Phytogel sweet almond oil: 10%
2. EASYCREAM HYDRO: 2%
3. Parfume and preservative: q.s.
4. Water: to 100

Working process

1. Charge water, preservatives and parfume. Solubilize PHYTOGEL and the other ingredients with omogeneization for 5 min.
2. Check microemulsion is conform to standards.

Appearance at 20°C: fluid emulsion
Colour: avorious white
Odour: slight, characteristic
pH: 6.5
Viscosity G2V50: 80.000 mPas.
Stability: +45°C: ok / + 4°C: ok

Phytogel threeglycerides

Protective spray microemulsion

Appearance at 20°C: fluid emulsion
Colour: white
Odour: slight, characteristic
pH: 6.5
Viscosity G2V50: 20 mPas.
Stability: +45°C: ok / + 4°C: ok
How to use: formulative example

How to use: formulative characteristics

**GENERAL CHARACTERISTICS:** PHYTOGEL is a lipoaminoacidic and lipoproteic base, that contains 80% of oil in form of microgel (layer phase).

PHYTOGEL is able to absorb under good mixing, better in homogenization, other oils in ratio 1:1 to its weight and possible small doses of water (3-5%) to maintain a fluid viscosity otherwise too elevated.

Oil must be added little by little.

**PERCENTAGE OF USE:** PHYTOGEL is stable and it can be used in all its dilutions, from 1 to 100%.
Range of recommended employment is situable among 3 and 15%, guaranteeing in this way the bring of lipidic phase, typical of the cosmetic products. With this percentage of use, fluid and emollient emulsions are easily obtained, to create moisturizing creams, sun protective, etc.

**LIPIDIC PHASE:** PHYTOGEL is available formulated with any type of lipid, cosmetic oils and also in mixture between them. The ratio between emulsifying part (LIPOPROTEINS) and lipidic part of PHYTOGEL is 1:4, with Capryc capril/triglicerid already contained.

PHYTOGEL, which contain silicone oil, made this one soluble in water to the point not to be had antifoam effect anymore.
If they were wanted to load further oils it is enough to add a 4-5% of EASYCREAM HYDRO to the emulsion.

**STABILITY AND TEMPERATURE:** emulsions obtained with PHYTOGEL are countersigned by a particular thermo-stability even if hyper-fluid.
If during the working process a fluider and flowing PHYTOGEL was desired it is enough to add 10-15% of water into it.

**SUN PROTECTIVE EMULSION:** With PHYTOGEL it is easy to formulate hyperfluid solar emulsions.
In case of use of one or more solid lipidic solar filters, it is recommended to dissolve them preventively in oils and only subsequently introduce them in the PHYTOGEL, little by little and under planetary mixing. Then, dilute the obtained raw product, as from procedure in the water.

In case of use of physical solar filters it is recommended to insert them in already obtained emulsion, stabilizing all with 3-4% of EASYCREAM HYDRO or 0.2% of Xantan Gum.

**DETERGENTS:** it is possible to formulate with PHYTOGEL modern cosmetic detergents with high lipids content, without demolishing the foam or the cleansing power as it would happen instead adding oils in native form.
To proceed it is enough to load PHYTOGEL to the pre-formulated detergent without limits of chemical incompatibility.
It is advisable to check the thermostability, adding, where possible, reologic additives.
### Sun protective emulsion high spf:

<table>
<thead>
<tr>
<th>No.</th>
<th>Ingredient</th>
<th>Amount (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>PHYTOGEL</td>
<td>15%</td>
</tr>
<tr>
<td>2.</td>
<td>PARSOL MCX</td>
<td>7%</td>
</tr>
<tr>
<td>3.</td>
<td>UVINOL T 150</td>
<td>3%</td>
</tr>
<tr>
<td>4.</td>
<td>BENZOPHENONE</td>
<td>1,5%</td>
</tr>
<tr>
<td>5.</td>
<td>JALURONIC ACID</td>
<td>0,02%</td>
</tr>
<tr>
<td>6.</td>
<td>PANTENOLO</td>
<td>0,3%</td>
</tr>
<tr>
<td>7.</td>
<td>GLYCEROL</td>
<td>0,5%</td>
</tr>
<tr>
<td>8.</td>
<td>PERFUME</td>
<td>0,2%</td>
</tr>
<tr>
<td>9.</td>
<td>ROKONSAL BS</td>
<td>1,0%</td>
</tr>
<tr>
<td>10.</td>
<td>TiO2</td>
<td>1,0%</td>
</tr>
<tr>
<td>11.</td>
<td>EASYCREAM HyDRO</td>
<td>4%</td>
</tr>
<tr>
<td>12.</td>
<td>LACTIC ACID</td>
<td>pH 5,5</td>
</tr>
<tr>
<td>13.</td>
<td>WATER</td>
<td>TO 100%</td>
</tr>
</tbody>
</table>

**Appearance at 20 °C**: hyperfluid Em., viscous Em., consistent Em.

**Colour**: milky white, milky white, milky white

**Odour**: Pleasant, Pleasant, Pleasant

**pH Value**: 5,5

**Viscosity at 20 °C**: G4 V5

**Stability at 4°C**: OK

**Stability at 50°C**: OK

**Centrifuge stability**: OK

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### Emollient bathcream:

<table>
<thead>
<tr>
<th>No.</th>
<th>Ingredient</th>
<th>Amount (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>LIPOSINE GLYGLU</td>
<td>10,0%</td>
</tr>
<tr>
<td>2.</td>
<td>PHYTOGEL OMD</td>
<td>12,5%</td>
</tr>
<tr>
<td>3.</td>
<td>BETAINF</td>
<td>10,0%</td>
</tr>
<tr>
<td>4.</td>
<td>COCOAT AC 6000 DS</td>
<td>7,0%</td>
</tr>
<tr>
<td>5.</td>
<td>PARFUM</td>
<td>0,3%</td>
</tr>
<tr>
<td>6.</td>
<td>PRESERVATIVES</td>
<td>0,3%</td>
</tr>
<tr>
<td>7.</td>
<td>WATER</td>
<td>A 100%</td>
</tr>
<tr>
<td>8.</td>
<td>LACTIC ACID</td>
<td>Fino a pH 6</td>
</tr>
</tbody>
</table>

**Appearance at 20 °C**: Viscous emulsion

**Colour**: Avorious white

**Odour**: Parfumized

**pH Value**: 6

**Viscosity at 20 °C**: G4 V5

**Stability at 50°C**: OK