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(54) Title: STEARIDONIC ACID COMPOSITIONS AND USES THEREOF

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The use of an oil extracted from seeds of the borignacea family in topical application to, or oral ingestion by, the human or animal body. This oil alone may be used for these purposes, or, preferably, it is used to form a part of a composition for topical application to, or oral ingestion by, the human or animal body.
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**Title:** VEGETABLE OIL COMPOSITIONS

**Abstract**

The use of an oil extracted from seeds of the borignaceae family in topical application to, or oral ingestion by, the human or animal body. This oil alone may be used for these purposes, or, preferably, it is used to form a part of a composition for topical application to, or oral ingestion by, the human or animal body.
STEARIDONIC ACID COMPOSITIONS AND USES THEREOF

This invention relates to the use of oils containing glycerides of essential fatty acids, or of essential fatty acids formed from such oils, for topical and dietetic purposes. The invention also relates to compositions including such oils or essential fatty acids.

Fats and oils are triesters of glycerol; they are known as triglycerides or triacylglycerols. If the triglyceride is solid at room temperature, then it is generally considered to be a fat, whereas if it is liquid at room temperature, then it is generally considered to be an oil. Most triglycerides in animals are fats, while most triglycerides in vegetables tend to be oils. Fatty acids can be obtained from fats or oils by hydrolysis.

Certain fatty acids, called essential fatty acids, must be present in the human diet and are used in the body to synthesise, for example, prostaglandins. There are two main series of essential fatty acids: one is called the n3 family (also known as the ω-3 family); and the other is called the n6 family (also known as the ω-6 family).

Stearidonic acid (SA) is a polyunsaturated fatty acid of the n3 family. Chemically it can be described as 6c9c12c15c-octadecatetraenoic acid or 18:4n3. Other essential fatty acids are linoleic acid (LA), α-linolenic acid (ALA) and γ-linolenic acid (GLA) - these acids can be described as C18:2n6, C18:3n3 and C18:3n6 respectively.

It is known that the oils of the pips of certain fruits contain triglycerides of a number of fatty acids. In GB-A-2118567 it is disclosed that an oil-extracted from the pips of the fruit of blackcurrants, redcurrants and gooseberries contain triglycerides of fatty acids in the proportions shown in Table 1.
Table 1

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>Blackcurrants</th>
<th>Red Currents</th>
<th>Gooseberries</th>
</tr>
</thead>
<tbody>
<tr>
<td>C16:0</td>
<td>6-7 wt%</td>
<td>4-5 wt%</td>
<td>7-8 wt%</td>
</tr>
<tr>
<td>C18:0</td>
<td>1-2 wt%</td>
<td>1-2 wt%</td>
<td>1-2 wt%</td>
</tr>
<tr>
<td>C18:1 cis</td>
<td>9-10 wt%</td>
<td>14-15 wt%</td>
<td>15-16 wt%</td>
</tr>
<tr>
<td>C18:1 trans</td>
<td>0.5 wt%</td>
<td>0.5-1 wt%</td>
<td>1-2 wt%</td>
</tr>
<tr>
<td>C18:2n6</td>
<td>47-49 wt%</td>
<td>41-42 wt%</td>
<td>29-41 wt%</td>
</tr>
<tr>
<td>C18:3n6</td>
<td>15-19 wt%</td>
<td>4-5 wt%</td>
<td>10-12 wt%</td>
</tr>
<tr>
<td>C18:3n3</td>
<td>12-14 wt%</td>
<td>29-31 wt%</td>
<td>19-20 wt%</td>
</tr>
<tr>
<td>C18:4n3</td>
<td>3-4 wt%</td>
<td>2.5-3.5 wt%</td>
<td>4-5 wt%</td>
</tr>
</tbody>
</table>

Stearidonic acid is found in marine oils, some plant oils and in lipids isolated from micro-organisms. It is produced in the human body by the biochemical transformation of linolenic acid. The metabolic transformation in the human body of n3 fatty acids by desaturation and elongation takes place as follows:

18:3 α-linolenic acid

\[ \Delta_6 \text{ desaturase} \rightarrow 18:4 \text{ stearidonic acid} \]

\[ \Delta_5 \text{ desaturase} \rightarrow 20:4 \text{ eicosatetraenoic acid} \]

\[ \Delta_4 \text{ desaturase} \rightarrow 22:5 \text{ docosapentaenoic acid} \]

\[ \Delta_4 \text{ desaturase} \rightarrow 22:6 \text{ docosahexaenoic acid} \]

The activity of the enzyme "\(\Delta_6\) desaturase" is known to be of lower
activity following certain illnesses, and in old age; its activity can also be lowered by poor diet and certain lifestyles. This is significant, because if the activity of Δ6 desaturase is lowered, then the body's capacity to make stearidonic acid (and the other compounds in the scheme shown above) is also lowered. One way to remedy this problem is to take a dietary supplement containing stearidonic acid.

None of the materials in Table 1 is very useful as a source of stearidonic acid, because this acid is present in such a low concentration. In order to use these materials as a source of stearidonic acid it would be necessary either to use them in large quantities, or to carry out expensive chemical processing to concentrate the stearidonic acid. Accordingly, there is a need for a material that is rich in stearidonic acid, and that does not contain any toxic compounds.

We have now found a rich natural, non-toxic, source of stearidonic acid, and this can be used to make a wide range of dietetic, cosmetic and health care products. In particular, we have found that the oil of seeds of the Borignaceae family are a rich source of stearidonic acid. We have also found that the oil itself can be used in dietetic, cosmetic and health care products, without the need for additional treatment or purification.

In one aspect the invention provides the use of an oil extracted from seeds of the borignaceae family in topical application to, or oral ingestion by, the human or animal body. This oil alone may be used for these purposes, or, preferably, it is used to form a part of a composition for topical application to, or oral ingestion by, the human or animal body.

In an especially advantageous embodiment the seeds are of the genus Echium, because this genus has been found to be a particularly rich source of stearidonic acid. We have found that the seeds of Echium vulgaris and Echium plantagineum are very useful.

The oil extracted from the seeds of the Borignaceae family will contain the triglyceride of stearidonic acid. In general, the oil will contain stearidonic acid (in the form of the triglyceride) in an amount of greater than 5 wt%, preferably greater
than 5.5 wt%, more preferably greater than 10 wt%, and most preferably greater than 15 wt%; the oil may contain as much as 20 wt% stearidonic acid, or more. We can obtain the oil at these concentrations without carrying out any purification process to increase the concentration of stearidonic acid in the oil. We have analysed the composition of three oils formed from the seeds of the Borignaceae family, and found that the fatty acids were present (in the form of triglycerides) in the amounts shown in Table 2.

Table 2

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>E. vulgaris</th>
<th>E. Plantaginum</th>
<th>Trichodesma Zeylanicum</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:0</td>
<td>6.2 wt%</td>
<td>7.6 wt%</td>
<td>9.4 wt%</td>
</tr>
<tr>
<td>18:0</td>
<td>2.0 wt%</td>
<td>3.8 wt%</td>
<td>5.8 wt%</td>
</tr>
<tr>
<td>18:1</td>
<td>8.0 wt%</td>
<td>16.7 wt%</td>
<td>26.8 wt%</td>
</tr>
<tr>
<td>18:2 (LA)</td>
<td>10.3 wt%</td>
<td>16 wt%</td>
<td>18.2 wt%</td>
</tr>
<tr>
<td>18:3 (GLA)</td>
<td>5.3 wt%</td>
<td>11.9 wt%</td>
<td>5.5 wt%</td>
</tr>
<tr>
<td>18:3 (ALA)</td>
<td>47.3 wt%</td>
<td>29.9 wt%</td>
<td>26.8 wt%</td>
</tr>
<tr>
<td>18:4 (SA)</td>
<td>19.8 wt%</td>
<td>12.3 wt%</td>
<td>5.7 wt%</td>
</tr>
<tr>
<td>Other</td>
<td>1.1 wt%</td>
<td>1.8 wt%</td>
<td>1.8 wt%</td>
</tr>
</tbody>
</table>

The oil extract can be used in a wide variety of topical applications, including many cosmetic and dermatological applications. For example, the oil extract can be used in skin creams and emulsions, including cleansers, moisturising creams, and sun screens; shampoos; and bath oils. The oil also has a wide range of dietetic uses. For example, the oil can be provided as an additive to existing food products, for instance as an additive to milk or milk-based drinks; it may form be in the form of a dietary supplement, or part of a dietary supplement (eg a vitamin containing supplement), and may be provided in solid form, for example as a tablet or as a soft or hard gelatin capsule, or in liquid form.

The oil extract itself, or compositions formed from the oil extract, can
be used to treat a wide variety of skin disorders such as dry skin, itchy skin, psoriasis, eczema and the like.

According to another aspect of the invention there is provided a composition for topical application to, or oral ingestion by, the human or animal body, comprising an oil extracted from the seeds of the Borignaceae family, or a physiologically acceptable derivative thereof, in combination with a physiologically acceptable carrier.

The precise nature of the carrier depends on the use desired for the composition. In addition, the carrier would usually contain other active ingredients, such as a moisturiser (eg for moisturising cream), a surfactant (eg for shampoo) or a UV-blocking/absorbing compound (eg for a sun cream). Many specific examples of suitable carriers are disclosed in the Examples below.

The amount of the oil in the composition also depends upon the desired use. However, for most applications an amount of the oil from 1 wt% and 20 wt% is appropriate.

We have described above the use of oil extracted from the seeds of the Borignaceae family, and compositions including such oils. This oil contains glycerides of a number of fatty acids including stearidonic acid. However, it is possible to process the oil extracted from the seeds to convert it at least partially to the corresponding fatty acids of the triglycerides in the oil. This processing would typically a saponification step to hydrolyse the triglycerides, an acidification step, and at least one separation step to recover the stearidonic acid and other fatty acids. There may also be a purification step to purify the stearidonic acid.

The present invention also includes the use of stearidonic acid formed from an oil extracted from seeds of the bifornaceae family in topical application to, or oral ingestion by, the human or animal body. The stearidonic acid so formed may be used alone for these purposes, or, preferably, it is used to form a part of a composition for topical application to, or oral ingestion by, the human or animal body. The stearidonic acid may be part of a mixture of essential fatty acids formed
from an oil extracted from the seed of the borignaceae family.

The following examples illustrate the invention.

5 **Example 1**

10 kg of the seeds of echium plantagineum were crushed and the oil was extracted with 15 litres of petroleum ether (BP 40-60 °C). The petroleum ether extract was evaporated to yield 1741 g of a golden yellow oil. The oil was converted to the corresponding fatty acid methyl esters and was analysed by gas chromatography. The lipid profile was as follows:

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>Fatty Acid Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:0</td>
<td>7.2 wt%</td>
</tr>
<tr>
<td>18:0</td>
<td>4.0 wt%</td>
</tr>
<tr>
<td>18:1</td>
<td>18.2 wt%</td>
</tr>
<tr>
<td>18:2 (LA)</td>
<td>16.5 wt%</td>
</tr>
<tr>
<td>18:3 (GLA)</td>
<td>11.8 wt%</td>
</tr>
<tr>
<td>18:3 (ALA)</td>
<td>28.9 wt%</td>
</tr>
<tr>
<td>18:4 (SA)</td>
<td>12.2 wt%</td>
</tr>
<tr>
<td>Other</td>
<td>1.2 wt%</td>
</tr>
</tbody>
</table>

The values in obtained in this example are slightly different from those in Table 2 due to insignificant experimental errors.

25 **Example 2**

20 g of the seeds of trichodesma zeylanicum seeds were crushed and placed in a Soxhlet extraction thimble. An oil was isolated by refluxing n-hexane around the crushed seed to produce a solution of the oil in n-hexane. The oil was separated from the n-hexane by rotoevaporation; 5 g of a green oil was recovered.
An aliquot of the oil was converted to the corresponding fatty acid methyl esters and was analysed by gas chromatography. The lipid profile was as follows:

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>Fatty Acid Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>16:0 9.4 wt%</td>
</tr>
<tr>
<td></td>
<td>18:0 5.7 wt%</td>
</tr>
<tr>
<td></td>
<td>18:1 25.5 wt%</td>
</tr>
<tr>
<td></td>
<td>18:2 (LA) 19.0 wt%</td>
</tr>
<tr>
<td></td>
<td>18:3 (GLA) 5.5 wt%</td>
</tr>
<tr>
<td>10</td>
<td>18:3 (ALA) 26.5 wt%</td>
</tr>
<tr>
<td></td>
<td>18:4 (SA) 5.9 wt%</td>
</tr>
<tr>
<td></td>
<td>Other 2.5 wt%</td>
</tr>
</tbody>
</table>

The values obtained in this example are slightly different from those in Table 2 due to insignificant experimental errors.

**Example 3**

A sun screen oil was prepared from the following ingredients:

- Butyl methoxydibenzoylmethane (Parsol™1789)(1) 2.0 wt%
- Octyl methoxycinnamate (Parsol MCX)(1) 7.5 wt%
- Benzophenone-3 (Uvinul™ M40)(2) 4.5 wt%
- PPG-2 myristyl ether propionate(Promyristyl PM3)(3) 10.0 wt%
- Oil from Example 1 2.0-10.0 wt%
- Caprylic/capric triglycerides (Crodamol GTCC) to 100 wt%
- Perfume, preservatives, colour qs

(1) From Givaudan™
(2) From BASF™
(3) From Croda™

The sun screen oil was formed by blending the ingredients, heating gently. The resultant blend was stirred to cool.

Example 4

A physical block sun screen cream was prepared from the following ingredients:

**Oil Phase:**

- Myristyl myristate (Crodamol MM)(1) 1.5 wt%
- Dimethicone (silicone 200/200cs)(2) 7.0 wt%
- Glyceryl stearate (GMS N/E)(1) 2.5 wt%
- Stearic acid (Crosterene)(1) 3.0 wt%
- PVP/eicosene copolymer (Antaron™ V220)(3) 0.5 wt%
- Nonionic emulsifying blend (Polawax GP200)(1) 2.0 wt%
- Octyl hydroxystearate (Crodamol OHS)(1) 5.0 wt%
- Oil from Example 1 2.0-10.0 wt%
- Super refined shea butter(1) 5.0 wt%
- Caprylic/capric triglycerides (Crodamol GTCC)(1) 9.0 wt%
- Titanium dioxide 5.0 wt%

**Water Phase:**

- Deionised water to 100 wt%
- Flobeads™ (CL-2080)(5) 5.0 wt%
- Glycerine 3.0 wt%
- Triethanolamine 0.9 wt%
- Perfume, preservatives, colour qs
(1) From Croda™
(2) From Dow Corning™
(3) From GAF
(4) From K&K Greef
(5) From Landsdowne Chemicals

The sun screen cream was made by heating the oil phase (including titanium dioxide) and water phase separately to 80-85°C, then adding the water phase to the oil phase with vigorous agitation. The triethanolamine was then added.

At 45°C the Flobeads were added. The stirring was continued until the temperature reached about 55°C, and then the composition was passed through suitable homogenising equipment, such as a triple roll mill).

Example 5

A shampoo was prepared from the following ingredients:

Sodium laureth sulphate (Empicol™ ESB3)(1) 50.0 wt%
Cocamidopropyl betaine (Incronam 30)(2) 5.0 wt%
Oil from Example 1 1-5 wt%
Polysorbate-20 (Crillet 1)(2) 3.0 wt%
PPG-5-ceteth-10-phosphate (Crodafos SG)(2) 3.0 wt%
Triethanolamine to pH 6.5-7.0
Butylated hydroxytoluene 0.01 wt%
Deionised water to 100 wt%
Perfume, preservatives, colour qs

(1) From Albright & Wilson
(2) From Croda
The shampoo was prepared by first forming a premix by solubilising the essential fatty acid containing oil from Example 1 in the surfactant mixture (polysorbate-20 and PPG-5-ceteth-10-phosphate). The other ingredients were combined and, when homogeneous, they were added to the premix. The resultant mixture was stirred until clear.

**Example 6**

A cleanser was prepared from the following ingredients:

10 Oil Phase:
- Nonionic emulsifying wax (Polawax GP200)(1) 2.0 wt%
- Cetearyl alcohol (Crodacol CS90EP)(1) 1.0 wt%
- Glyceryl stearate (Cithrol GMS NE DP2186)(1) 1.0 wt%
- Caprylic/capric triglycerides (Crodamol GTCC)(1) 8.0 wt%
- Rosehip oil (2) 1.0 wt%
- Oil from Example 1 1-10 wt%

Water Phase:
- Glycerin 2.0 wt%
- Carbomer 981 (carbopol™ 981-2% aqueous solution)(3) 5.0 wt%
- Triethanolamine to pH 6.5
- Deionised water to 100 wt%
- Perfume, preservative, colour qs

25 (1) From Croda
(2) From Novarom™
(3) From B F Goodrich

The cleanser was prepared by heating the water and oil phase separately
to 65-70°C, then adding the water phase to the oil phase with stirring. The pH was then adjusted to pH 6.5 with the triethanolamine. The resultant mixture was stirred to cool.

5 **Example 7**

A moisturising facial oil was prepared from the following ingredients:

- Oil from Example 1 5.0-15.0 wt%
- Tocopheryl acetate(2) 5.0 wt%
- butylated hydroxytoluene 0.05 wt%
- Caprylic/capric triglycerides (Crodamol GTCC)(1) to 100 wt%
- Perfume, preservatives, colour qs

(1) From Croda
(2) From Roche™

The facial oil was prepared by incorporating the butylated hydroxytoluene in the caprylic/capric triglyceride with gentle warming and stirring. The resultant mixture was stirred to cool, then the remaining ingredients were added, whilst stirring.

**Example 8**

A moisturising body cocktail was prepared from the following ingredients:

- Oil from Example 1 5.0 to 20.0 wt%
- Super refined grapeseed oil(1) 20.0 wt%
- Tocopheryl acetate(2) 2.0 wt%
- Caprylic/capric triglycerides (Crodamol GTCC)(1) to 100 wt%
Perfume, preservatives, colour  

(1) From Croda  
(2) From Roche

The body cocktail was prepared by combining the preservatives and the caprylic/capric triglycerides with gentle warming and stirring. The resultant mixture was stirred to cool. The remaining ingredients were added, whilst stirring.

Example 9

A dispersible bath oil was made from the following ingredients:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>1.0 to 5.0 wt%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil from Example 1</td>
<td>1.0 to 5.0 wt%</td>
</tr>
<tr>
<td>Tocopheryl acetate (2)</td>
<td>3.0-5.0 wt%</td>
</tr>
<tr>
<td>Laureth-3 (Volpo L3 Special) (1)</td>
<td>12.5 wt%</td>
</tr>
<tr>
<td>Isopropyl myristate (Crodamol IPM) (1)</td>
<td>20.0 wt%</td>
</tr>
<tr>
<td>Caprylic/capric triglycerides (Crodamol GTCC) (1)</td>
<td>to 100 wt%</td>
</tr>
<tr>
<td>Perfume, preservatives, colour</td>
<td>qs</td>
</tr>
</tbody>
</table>

(1) From Croda  
(2) From Roche

The bath oil was prepared by adding the preservatives to the caprylic/capric triglycerides with gentle warming and stirring. The remaining ingredients were added, and the resultant mixture was stirred to cool.

Example 10

A skin lotion was prepared from the following ingredients:
Oil Phase:

Oil from Example 2 5.0-10.0 wt%
$C_{10}-C_{30}$ cholesterol/lanosterol esters (Super Sterol ester)(1) 1.0 wt%
Stearic acid (Crosterene SA4130)(1) 2.0 wt%
Glyceryl stearate S/E (GMS S/E GE0802)(1) 2.0 wt%
Nonionic emulsifying wax (Polawax GP200)(1) 0.75 wt%

Water Phase:

Glycerin 6.0 wt%
Triethanolamine 0.9 wt%
Deionised water to 100 wt%
Perfume, preservatives, colour qs

(1) From Croda

The skin lotion was prepared by heating the oil and water phases separately to 65-70°C, then adding the water phase to the oil phase while stirring. The resultant mixture was stirred to cool, and the perfume was added at 45°C.

Example 11

An emollient skin cream was prepared from the following ingredients:

Oil Phase:

Oil from Example 2 10 wt%
Nonionic emulsifying wax (Polawax GP200)(1) 4.0 wt%
Synthetic beeswax (Syncrowax BB4)(1) 2.0 wt%
Myristyl myristate (Crodamol MM)(1) 1.0 wt%
Butylated hydroxytoluene 0.05 wt%
Water Phase:

Carbomer 941 (Carbopol 941)(2) 0.2 wt%
Triethanolamine 0.2 wt%
Deionised water to 100 wt%

Perfume, preservatives colour qs

(1) From Croda
(2) From B F Goodrich

The skin cream was prepared by hydrating the Carbopol 941 in water at 60-70°C, then adding the rest of the aqueous phase components at a similar temperature while stirring. The oil phase components were heated to 65-70°C, then the water phase components were added to the oil phase components at 65°C whilst stirring. The perfume was added when the cream had cooled to below 45°C.

Example 12

An emollient skin cream was prepared from the following ingredients:

Oil Phase:

Oil from Example 2 20 wt%
Nonionic emulsifying wax (Polawax GP200)(1) 5.0 wt%
Synthetic beeswax (Syncrowax BB4)(1) 2.0 wt%
Cetostearyl stearate (Crodamol CSS(1) 5.0 wt%
Butylated hydroxytoluene 0.05 wt%

Water Phase:

Carbomer 941 (Carbopol 941)(2) 0.2 wt%
Triethanolamine 0.2 wt%
Glycerin 3.0 wt%
Deionised water to 100 wt%
Perfume, preservatives colour qs

(1) From Croda
(2) From B F Goodrich

The skin cream was prepared by hydrating the Carbopol 941 in water at 60-70°C, then adding the rest of the aqueous phase components at a similar temperature while stirring. The oil phase components were heated to 65-70°C, then the water phase components were added to the oil phase components at 65°C whilst stirring. The perfume was added when the cream had cooled to below 45°C.

Example 13
An emollient dispersible bath oil was prepared from the following ingredients:

PEG-20 Evening Primrose glycerides (Crovol EP40)(1) 15.0 wt%
Oleyl alcohol (Novol)(1) 17.5 wt%
Octyl palmitate (Crodamol OP)(1) 8.0 wt%
Oil from Example 2 1.0 to 20.0 wt%
Light mineral oil (25cS/25°C) to 100 wt%
Perfume, preservatives, colour qs

(1) from Croda

The bath oil was prepared by blending all the ingredients together at ambient temperature.
Example 14

A lipid emulsion for dietetic use was prepared from the following ingredients:

5 Oil from Example 1 10.0 wt%
Lecithin (Centomix E)(1) 2.0 wt%
Sorbitan monolaureate (Crill 1)(2) 1.66 wt%
Polyisorbate-20 (Crillet 1)(2) 0.34 wt%
Distilled water 86 wt%

(1) From Stern
(2) From Croda

The emulsion was prepared by adding the emulsifiers to the oil, then adding the water while homogenising the mixture in a suitable mixer, such as a homogeniser. The mixture was homogenised for 5 minutes. The resultant emulsion can be used for human ingestion as a dietary supplement. It can be used as an additive for milk or milk drinks.

Example 15

A lipid emulsion for dietetic use was prepared from the following ingredients:

Oil from Example 2 10.0 wt%
Sorbitan monolaureate (Crill 1)(1) 1.66 wt%
Polyisorbate-20 (Crillet 1)(1) 0.34 wt%
Distilled water 88 wt%

(1) From Croda
The emulsion was prepared by adding the emulsifiers to the oil, then adding the water while homogenising the mixture in a suitable mixer, such as a homogeniser. The mixture was homogenised for 5 minutes. The resultant emulsion can be used for human ingestion as a dietary supplement. It can be used as an additive for milk or milk drinks.

Whilst certain embodiments of the invention have been described above, it will be appreciated that modifications can be made.
THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A composition for use as a source of stearidonic acid to supplement that produced by the human or animal body, wherein said composition comprises in the range of from 1 to 20% by weight of the total composition of an oil extracted from the seeds of Echium genus, wherein said oil comprises in the range greater than 5% stearidonic acid triglycerides, by weight of the total fatty acids in the oil extract, wherein said stearidonic acid triglycerides may optionally have been converted to a physiologically acceptable derivative thereof, and a physiologically acceptable carrier therefor.

2. The composition according to claim 1, wherein the oil is an extract from seeds of Echium plantagineum.

3. The composition according to claim 1 or claim 2 formulated for dietetic use.

4. The composition according to any one of claims 1 to 3, wherein the composition is formulated for addition to food products.

5. The composition according to any one of claims 1 to 4, wherein the composition is formulated as a dietary supplement.

6. The composition according to any one of claims 1 to 5, formulated for addition to milk, milk-based drinks, vitamin supplements, dietary supplements or lipid emulsions.

7. The composition according to claim 1 or claim 2 formulated for cosmetic use.

8. The composition according to claim 1 or claim 2 formulated for topical use.
9. The composition according to any of claims 1, 2, 7 or 8, in a form selected from the group comprising: skin creams, skin emulsions, cleansers, moisturising creams, sunscreens, sun creams, shampoos, facial oils, bath oils, body cocktails and skin lotions.

10. The composition according to any one of claims 1 to 9, in a solid form.

11. The composition according to any of claims 1 to 9, in a liquid form.

12. The composition according to any one of claims 1 to 11, wherein the oil comprises at least 10wt% of the triglyceride of stearidonic acid, or a derivative thereof.

13. A composition according to any one of claims 1 to 12, wherein the derivative is the alkyl ester of stearidonic acid.

14. The composition according to any one of claims 1 to 13, wherein the oil comprises at least 12.2 wt% of the methyl ester of stearidonic acid.

15. A dietary composition comprising in the range of from 1 to 20% by weight of the total composition of an extract of an oil extracted from the seeds of Echium genus, wherein said oil comprises in the range greater than 5% stearidonic acid triglyceride and up to 95% other fatty acid triglycerides selected from the triglycerides of 16:0, 18:0, 18:1, 18:2 (LA), 18:3 (GLA), 18:3 (ALA) and minor amounts of other fatty acid triglycerides, by weight of the total fatty acids in the oil extract, wherein said stearidonic acid triglycerides or other fatty acids may optionally have been converted to a derivative thereof, and a physiologically acceptable carrier therefor, wherein the composition supplements stearidonic acid produced by the human or animal body.

16. The composition according to claim 15, wherein the oil is an extract from *Echium plantagineum*. 
17. The composition according to claims 15 or 16, wherein the composition is formulated for addition to food products.

18. The composition according to claims 15 or 16, wherein the composition is formulated as a dietary supplement.

19. The composition according to any one of claims 15 to 18, formulated for addition to milk, milk-based drinks, vitamin supplements, dietary supplements or lipid emulsions.

20. The composition according to any one of claims 15 to 19, wherein said composition is in a solid form.

21. The composition according to any one of claims 15 to 19, wherein said composition in a liquid form.

22. The composition according to any one of claims 15 to 21, wherein the oil comprises at least 10wt% of the triglyceride of stearidonic acid, or a derivative thereof.

23. A composition according to any one of claims 15 to 22, wherein the derivative is the alkyl ester of stearidonic acid.

24. The composition according to any one of claims 15 to 23, wherein the oil comprises at least 12.2 wt% of the methyl ester of stearidonic acid.

25. A cosmetic composition comprising in the range of from 1 to 20% by weight of the total composition of an extract of an oil extracted from the seeds of Echium genus, wherein said oil comprises in the range greater than 5% stearidonic acid triglyceride and up to 95% other fatty acid triglycerides selected from the triglycerides of 16:0, 18:0, 18:1, 18:2 (LA), 18:3 (GLA), 18:3 (ALA) and minor amounts of other fatty acid triglycerides, by weight of the total fatty acids in the oil extract, wherein said
stearidonic acid triglycerides or other fatty acids may optionally have been converted to a derivative thereof, and a physiologically acceptable carrier therefor, wherein the composition supplements stearidonic acid produced by the human or animal body.

26. The composition according to claim 25, wherein the oil is an extract from *Echium plantagineum*.

27. The composition according to claims 25 or 26, wherein the composition is formulated for topical use.

28. The composition according to any one of claims 25 to 27, wherein said composition is in a solid form.

29. The composition according to any of claims 25 to 27, wherein said composition in a liquid form.

30. The composition according to any of claims 25 to 29, in a form selected from skin creams, skin emulsions, cleansers, moisturising creams, sunscreens, sun creams, shampoos, facial oils, bath oils, body cocktails and skin lotions.

31. The composition according to any one of claims 25 to 30, wherein the oil comprises at least 10wt% of the triglyceride of stearidonic acid, or a derivative thereof.

32. The composition according to any one of claims 25 to 31, wherein the derivative is the alkyl ester of stearidonic acid.

33. The composition according to any one of claims 25 to 32, wherein the oil comprises at least 12.2 wt% of the methyl ester of stearidonic acid.

34. Use of a composition for supplementing stearidonic acid in the human or animal body, wherein said composition comprises in the range of from 1
to 20% by weight of the total composition of an oil extracted from the seeds of *Echium* genus, wherein said oil comprises in the range greater than 5% stearidonic acid triglycerides, by weight of the total fatty acids in the oil extract, wherein said stearidonic acid triglycerides may optionally have been converted to a physiologically acceptable derivative thereof, and a physiologically acceptable carrier therefor.

35. Use of a composition in the preparation of a dietary or a cosmetic formulation for supplementing stearidonic acid in the human or animal body, wherein said composition comprises in the range of from 1 to 20% by weight of the total composition of an oil extracted from the seeds of *Echium* genus, wherein said oil comprises in the range greater than 5% stearidonic acid triglycerides, by weight of the total fatty acids in the oil extract, wherein said stearidonic acid triglycerides may optionally have been converted to a physiologically acceptable derivative thereof, and a physiologically acceptable carrier therefor.

36. The use according to claim 34 or 35, wherein the oil is an extract from seeds of *Echium plantagineum*.

37. The use according to any one of claims 34 to 36, wherein said composition is formulated for dietetic use.

38. The use according to any one of claims 34 to 37, wherein the composition is formulated for addition to food products.

39. The use according to any one of claims 34 to 38, wherein the composition is formulated as a dietary supplement.

40. The use according to any one of claims 34 to 39, wherein said composition is formulated for addition to milk, milk-based drinks, vitamin supplements, dietary supplements or lipid emulsions.
41. The use according to claim 34 or 35, wherein said composition is formulated for cosmetic use.

42. The use according to claim 34 or 35, wherein said composition is formulated for topical use.

43. The use according to any of claims 34, 35, 36, 41 or 42, wherein said composition is in a form selected from the group comprising: skin creams, skin emulsions, cleansers, moisturising creams, sunscreens, sun creams, shampoos, facial oils, bath oils, body cocktails and skin lotions.

44. The use according to any one of claims 34 to 43, wherein said composition is in a solid form.

45. The use according to any of claims 34 to 43, wherein said composition is in a liquid form.

46. The use according to any one of claims 34 to 45, wherein the oil comprises at least 10 wt% of the triglyceride of stearidonic acid, or a derivative thereof.

47. The use according to any one of claims 34 to 46, wherein the derivative is the alkyl ester of stearidonic acid.

48. The use according to any one of claims 34 to 47, wherein the oil comprises at least 12.2 wt% of the methyl ester of stearidonic acid.

49. Use of an oil extracted from the seeds of Echium genus for supplementing stearidonic acid in the human or animal body, wherein said oil comprises in the range greater than 5% stearidonic acid triglycerides, by weight of the total fatty acids in the oil extract, wherein said stearidonic acid triglycerides may optionally have been converted to a physiologically acceptable derivative thereof, and a physiologically acceptable carrier therefor.
50. Use of an oil extracted from the seeds of *Echium* genus in the preparation of a dietary or a cosmetic formulation for supplementing stearidonic acid in the human or animal body, wherein said oil comprises in the range greater than 5% stearidonic acid triglycerides, by weight of the total fatty acids in the oil extract, wherein said stearidonic acid triglycerides may optionally have been converted to a physiologically acceptable derivative thereof, and a physiologically acceptable carrier therefor.

51. The use according to claim 49 or 50, wherein the oil is an extract from seeds of *Echium plantagineum*.

52. The use according to any one of claims 49 to 51, wherein the oil comprises at least 10wt% of the triglyceride of stearidonic acid, or a derivative thereof.

53. The use according to any one of claims 49 to 52, wherein the derivative is the alkyl ester of stearidonic acid.

54. The use according to any one of claims 49 to 53, wherein the oil comprises at least 12.2 wt% of the methyl ester of stearidonic acid.