Skin Moon®
Proven Skin-Brightening Effect From Plant Extracts

INCI Name: Citrus sinensis (Orange) Fruit Extract (and) Oryza sativa (Rice) Extract (and) Capparis Spinosa Fruit Extract (and) Olea Europaea (Olive) Leaf Extract (and) Maltodextrin

Key Benefits:
• Inhibits melanogenesis
• Skin brightener
• Non-photosensitizing effect

Background
An umbrella can protect skin against sunlight-induced pigmentation, but it is not enough because hyper-pigmentation is often produced by several factors, including aging, hormonal changes, chronic skin irritation, inflammation or other diseases. In many parts of the world, such as Asia, “moon-like” face skin means beauty and charm. Skin Moon® is a new combination of extracts with a high skin brightening activity. It is a natural ingredient designed to safely lighten skin tone.

Skin Moon® can be used for skin-brightening and anti-aging products. In contrast with other agents (hydroquinone and kojic acid), Skin Moon® can be applied during sun exposure because it does not have a cutaneous photo-sensitizing effect.

Typical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Solid</td>
</tr>
<tr>
<td>Odor</td>
<td>Characteristic</td>
</tr>
<tr>
<td>Color</td>
<td>Yellow-Brown</td>
</tr>
<tr>
<td>pH (2.5 aqueous solution)</td>
<td>3.5 - 6.5</td>
</tr>
<tr>
<td>Solubility</td>
<td>Moderately soluble in water</td>
</tr>
<tr>
<td>Total polyphenols</td>
<td>2 - 3</td>
</tr>
<tr>
<td>Recommended Use Level</td>
<td>2 - 3% w/w</td>
</tr>
</tbody>
</table>

What it Does

Skin Moon® is able to inhibit skin melanogenesis, showing an activity similar to hydroquinone and higher than kojic acid and arbutin, which are ingredients currently used in skin-brightening products. Skin Moon® is also well-tolerated by the skin and does not cause skin sensitivity, unlike other agents commonly used in skin de-pigmentation[1].

References

Skin Moon is a registered trademark of Bionap srl.
Clinical Studies

In vitro Evaluation of Anti-Tyrosinase Activity

The experimental protocol was as follows: Spectrophotometric determination of dopachrome produced from L-DOPA + tyrosinase. Determination of the IA% (Inhibitory activity percentage of tyrosinase) of Capparis spinosa, Olea Europaea, Citrus sinensis, and Oryza sativa extracts and their blend in comparison to kojic acid and hydroquinone.

Results

All herbal extracts showed tyrosinase inhibitory activity. A synergistic effect was observed when they were combined in the Skin Moon® ingredient, with higher activity than kojic acid and hydroquinone.

Evaluation of Skin Whitening Effect

The experimental protocol was as follows: 15 healthy volunteers (aged 30-45 years). Induction of skin tanning and application of skin whitening formulations for 4 weeks. Evaluation of skin melanin index (M.I.) by reflectance spectrophotometry. Depiction of method:

1. Skin tanning induced sun lamp exposure
2. Application of skin-whitening formulations:
   HY: 3% Hydroquinone
   KJ: 3% Kojic acid
   SM: 3% Skin Moon®
3. Evaluation of Melanin Index by reflectance spectrophotometry for 4 weeks on each skin site.
Results
Skin Moon® showed a skin-whitening effect similar to hydroquinone and higher than kojic acid.

**Evaluation of Skin Photosensitizing Effect**
The experimental protocol was as follows: 15 healthy volunteers (aged 30-45 years). Application of tested formulations once daily for 4 weeks. Induction of skin erythema by UV lamp exposure and evaluation of erythema index (E.I.) by reflectance spectrophotometry. Depiction of method:

1. Treatment with tested formulations (once a day for 4 weeks):
   - HY: 3% Hydroquinone
   - KJ: 3% Kojic acid
   - SM: 3% Skin Moon®

2. UV Lamp Treatment
   Each skin site was treated with a UV lamp emitting a range of 290-320 nm for double of the minimal erythema dose (MED) of each subject.

3. UV-Induced Erythema Evaluation
   For each skin site UV-induced erythema was quantified by reflectance spectrophotometry.

Results
Skin Moon® was shown to induce much reduced photosensitizing effects compared to hydroquinone and kojic acid.

Results Summary
Skin Moon® provided similar or better efficacy results as hydroquinone and kojic acid with much lower photosensitization.