Scientific studies in the world show that people who have healthy skin relate with unique parameters; vinegar, wine, pickle, yoghurt and so on.

All the objectives meet at significant point as fermented products via fermentation technology.

Trans-resveratrol is one of the most important part of the antioxidants, because there are over the 4000 academic research and evidential studies about its potential reactive oxygen species scavenger properties for the skin. It is called “miracle raw material” by scientific environment (1).

Fermented Polygonum cuspidatum plant extracts has a trans-resveratrol approximately 1000 times more than red grape varieties. However, there are some challenges in the scale up production because of alcohol in conventional fermented products used in cosmetic industry.

SURYA KIMYA LTD and YEDITEPE UNIVERSITY COSMETICS RESEARCH CENTER have co-operated about innovative raw material development and they optimized a unique, pure, trans-resveratrol from fermented Polygonum cuspidatum plant derivatives with the research of 15 cosmetic scientists for a long time (2, 3).

The aim of this research is to separate the anti-aging and antioxidant properties of the extract obtained by fermentation and scientifically proven trans-resveratrol from other catechins, flavonoids and secondary metabolites in order to produce a natural active ingredient that would be highly effective in cosmetic products.

Many of the cosmetic products could not show effectiveness due to failing to transport through the epidermis layers of the skin because the particle size must be below 1 micron in order to overcome the intercellular spaces in the epidermis.

The most suitable cosmetic carrier system liposome technology has been applied to the skin to transport the active agent into basal membrane which is the bottom layer of the epidermis. Liposomes are described as “artificial cell membranes” and “smart cosmetic carrier systems” because of their compatibility to the skin and by encapsulating both lipophilic and hydrophilic actives within their structure they significantly increase the absorption of the skin thus play a key role in prolonged effectiveness.

LIPOZOOM® RESERVE-AGE is a novel cosmetics carrier system containing natural trans-resveratrol which is fermented from Polygonum cuspidatum plant derivatives in liposome technology. LIPOZOOM® RESERVE-AGE has both lipophilic and hydrophilic parts and it provides easily process for wide applications to formulate in cosmetics. It may stable up to 50-60 °C during the production. Conventional liposomes can not survive around that temperatures. Because, the structure of LIPOZOOM® RESERVE-AGE includes gel state liposomes which has higher phase transition temperature (over 60 °C) than conventional one. Furthermore, it is mostly applicable into the gel, cream, ointment, serum, solution, aerosol cosmetic formulations by its unique structure.

The most appropriate combinations to the structure of the skin are preferred in developing the liposome formulation containing a trans-resveratrol.
LIPOZOOM® RESERVE-AGE stimulates regeneration of skin cells and prevents reactive oxygen species via appropriate particle size, zeta potential and antioxidant effects.

Particle size has been proven that the reduced below the micron level (between 100-500 nm) LIPOZOOM® RESERVE-AGE has a value around +25 mV in zeta potential measurements which is one of the major parameters for stability. According to the DLVO (Derjaguin and Landau, Verwey and Overbeek’s) theory it has been shown that the above 25mV liposomes are more stable due to their loads than the unloaded liposomes. Additional forces beyond the DLVO construct have been reported to also play a major role in determining colloid stability.

The objectives for selection of the positive charges in the outstanding feature of this system comparing to similar ones, are enhancing the absorption the skin surface having the negative charges.

<table>
<thead>
<tr>
<th>Diam. (nm)</th>
<th>% Intensity</th>
<th>Width (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z-Average</td>
<td>138,9</td>
<td>51,6</td>
</tr>
<tr>
<td>Pdl: 0,875</td>
<td>635,9</td>
<td>48,4</td>
</tr>
<tr>
<td>Intercep: 0,792</td>
<td>0,000</td>
<td>0,0</td>
</tr>
</tbody>
</table>

**Table 1. Average Size Distribution Table of LIPOZOOM® RESERVE-AGE**

**Table 2. Zeta potential table of LIPOZOOM® RESERVE-AGE.**

<table>
<thead>
<tr>
<th>Zeta Potential (mV)</th>
<th>Mean (mV)</th>
<th>Area (%)</th>
<th>Width (mV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z-Average (d.nm):779.0</td>
<td>32,4</td>
<td>100,0</td>
<td>5,13</td>
</tr>
<tr>
<td>Pdl: 0,875</td>
<td>0,00</td>
<td>0,0</td>
<td>0,00</td>
</tr>
<tr>
<td>Intercep: 0,792</td>
<td>0,00</td>
<td>0,0</td>
<td>0,00</td>
</tr>
</tbody>
</table>

**Result Quality: Good**

The characterization of the study is supported by polarizing microscope (PLM) and scanning electron microscope images (SEM), respectively.
Many cosmetic product users prefer natural, safe, reliable, non-toxic, effective and beneficial actives into their skin. **LIPOZOOM® RESERVE-AGE** contains an innovative multipotential trans-resveratrol which is a scavenger against free-radicals in your skin.

When the antioxidant capacity determination is made, **LIPOZOOM® RESERVE-AGE** has been proven by in vitro studies that **LIPOZOOM® RESERVE-AGE** active is far more superior to other trans-resveratrol derivatives. (about 10 times).

**Table 3. Antioxidant capacity result of the different kind of raw materials.**

In normal environmental conditions, human cell cycle life is approximately 28 days. However, skin cells lose their regeneration ability and that cycles may prolonged because of stress and negative environmental conditions.

Additionally, **LIPOZOOM® RESERVE-AGE** showed against the placebo statistically significant improvements which were observed on anti-wrinkle effects at T1 (28 days) on volunteers (n=10).

**APPLICATION AND PROCESSING INFORMATION**

**LIPOZOOM® RESERVE-AGE** can be used in skin care and hair care products as anti-aging and anti-oxidant properties. It is suitable for wide applications (gels, O/W W/O emulsions etc.). **LIPOZOOM® RESERVE-AGE** has both hydrophilic and lipophilic substances and thanks to its unique properties it can be easily processed into many formulation. Furthermore unlike conventional cosmetic liposome systems, it has higher phase transition temperature (aprox. 60 °C) and it provides excellent resistance against stability challenges in the production process.

**INCI NAME:** Phospholipids, trans-resveratrol.

**LIPOZOOM® RESERVE-AGE**

- Reduces wrinkle deepness (by MPA5 Skin visiometer).
- Has efficient anti-oxidant capacity.
- Is preservative free.
- Is nanomaterial free.
- Recommended usage concentration level is between 2%-5% in cosmetic applications.
- Contains natural actives.

**REFERENCES**


**PHYSICAL PROPERTIES**

- **Appearance:** Opaque Liquid
- **Colour:** light yellowish
- **pH:** 5.6 - 6.5
- **Solubility:** partially soluble in water
- **Odour:** mild characteristic
- **Particle size:** 100-500nm

**LIPOZOOM®** is a trademark of Surya.