

# Nano- and Microemulsions with Natural Oil Blend

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## Introduction:

**Top 5 Skin Concerns\*:** Dark Circles under Eye, Fine Lines & Wrinkles, Acne & Breakouts, Uneven Skin tone/Hyperpigmentation, Sagging Skin/Needs Firming

**Consumer Needs:** Efficacious, Natural Products, Sustainable, Transparent Communication

**Key Elements:** → Phyto-actives (water & Oil-soluble), known in Ayurveda  
→ Localized Phyto-active delivery for efficacy  
→ Oils with low (< 5 CP) viscosity; High (>10 % w/w) solubility of phytoactives; Good spreadability on skin; Low freezing point

**Demonstration in three Almora Botanica products:**  
(1) Dark Spot & Pigmentation Serum;  
(2) Serum for Fine Lines;  
(3) Restorative Nail & Cuticle Oil

**Scope:** Identification of unique oil blend, 'Elixir Saptā', Microemulsion phase behaviour with 'Elixir Saptā', In-vitro studies on reconstructed skin, Clinical studies

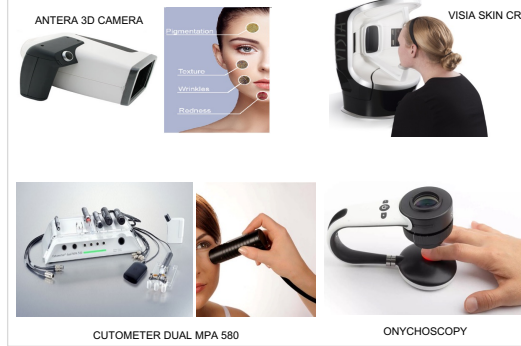
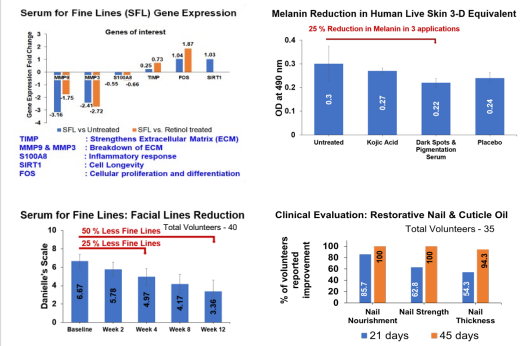
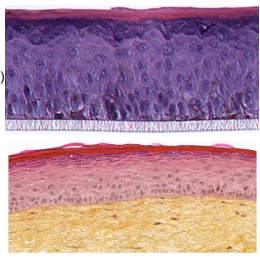
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## Results & Discussion:



## Materials & Methods:

- Spreadability of Oil measured on Whatman Filter paper [3]
- Viscosity ( $\eta$ ), Phyto-active solubilization in oils using Anton Paar stress-controlled rheometer
- Melanin reduction study on Human Reconstructed Pigmented Epidermic, RHPE, Model (SkinEthic™) [1]
- Product application: 3 Times (9 Days)
- Melanin concentration monitored by Optical density at 490 nm
- Gene Expression Studies using Episkin's T-skin (Reconstructed Human Full thickness model consisting of human fibroblasts and keratinocytes, cultured on inert polycarbonate filter [2])



## Conclusions:

- Developed a proprietary oil blend consisting of seven oils, *Elixir Saptā*, with the following characteristics: very light ( $\eta = 5$  mPa.s); good spreadability on skin; low freezing point (4°C); capable of solubilising solid phyto-actives.
- Microemulsions [6] as well as nanoemulsions [5] with *Elixir Saptā* were developed using a proprietary mixture of emulsifiers. These emulsions formed the basis for several commercial products of *Almora Botanica*, i.e., *Restorative Nail & Cuticle Oil*, *Serum for Fine Lines* and *Dark Spots & Pigmentation Serum*.
- In vitro experiments using Episkin's RHPE as well as T-skin models, along with clinical studies, indicated a strong biological basis for product efficacy and sensorial benefit. By packaging specialized, *Ayurveda-inspired active ingredients* into micro- and nano-emulsion product formats, targeted delivery and dermal nourishment was observed.

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