



Life's GLA™

Omega-6 Flower Seed Oils

Master Presentation
10-2020

Relieves your skin from stress, allowing a healthy and natural look & feel!



Flower Power for your skin

Our flower seed oils are naturally rich in polyunsaturated fatty acids with a high content of gamma linolenic acid (GLA).

- **Evening Primrose**

life'sGLA™ '10' N-6 OIL (former ROPUFA® '10' n-6 oil) is prepared by extraction of oil from seeds of Oenothera plant or Evening primrose (9% GLA)



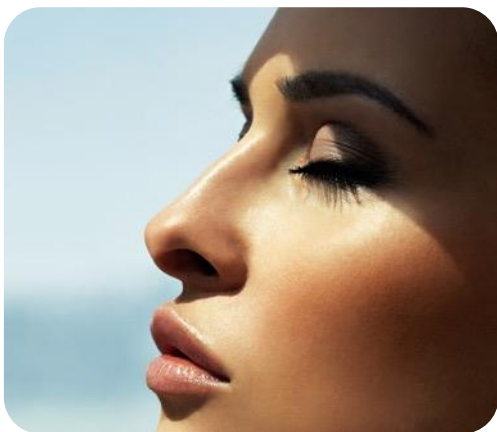
- **Starflower/Borage**

life'sGLA™ '25' N-6 OIL (former ROPUFA® '25' n-6 oil) is prepared by extraction of oil from seeds of the Borage plant (23% GLA).



Our improved production process results in a natural oil with a good stability, slight yellowish color, low odor, and bland taste.

Skin under pressure



Our skin is our largest organ and our shield to the environment.

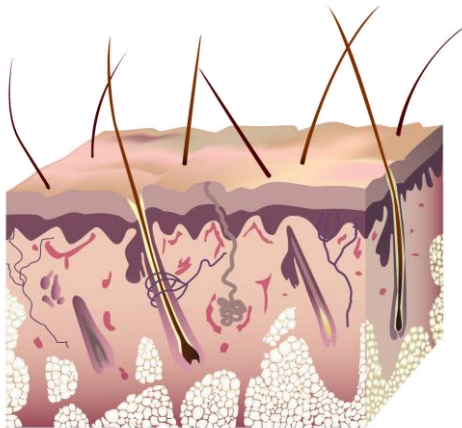
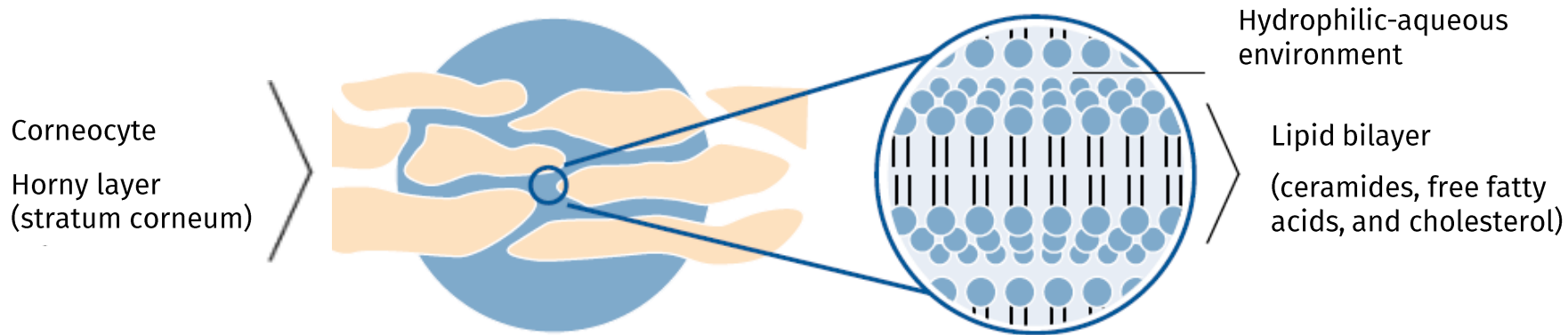
Regulation	Protection
Body temperature	UV radiation damage
Water balance	Pathogen attack
	Mechanical, physical and chemical insults

Our way of life stresses the skin barrier each day. The protective function of the skin is constantly challenged:

- Sunbathing, cold wind
- Washing, bathing
- Chemicals in cosmetics and perfumes
- Urban pollution



Skin Barrier Function



“bricks”

Layers of horny cells (corneocytes) form a tight wall.

„mortar“

- ceramides (40%)
- cholesterol (25%)
- free fatty acids (25%)

The essential free fatty acids, specifically gamma linolenic acid (GLA), are important for the skin barrier function.

GLA Deficiency

Gamma linolenic acid (GLA) deficiency can result in

- increased transepidermal water loss (TEWL)
- dry, chapped, or rough skin
- irritations, infections and inflammation
- higher susceptibility to external stressors (allergens)



Refilling the “mortar” with **lipids** and **GLA** is an excellent way to strengthen the protective function of the skin and to avoid skin barrier degradation.

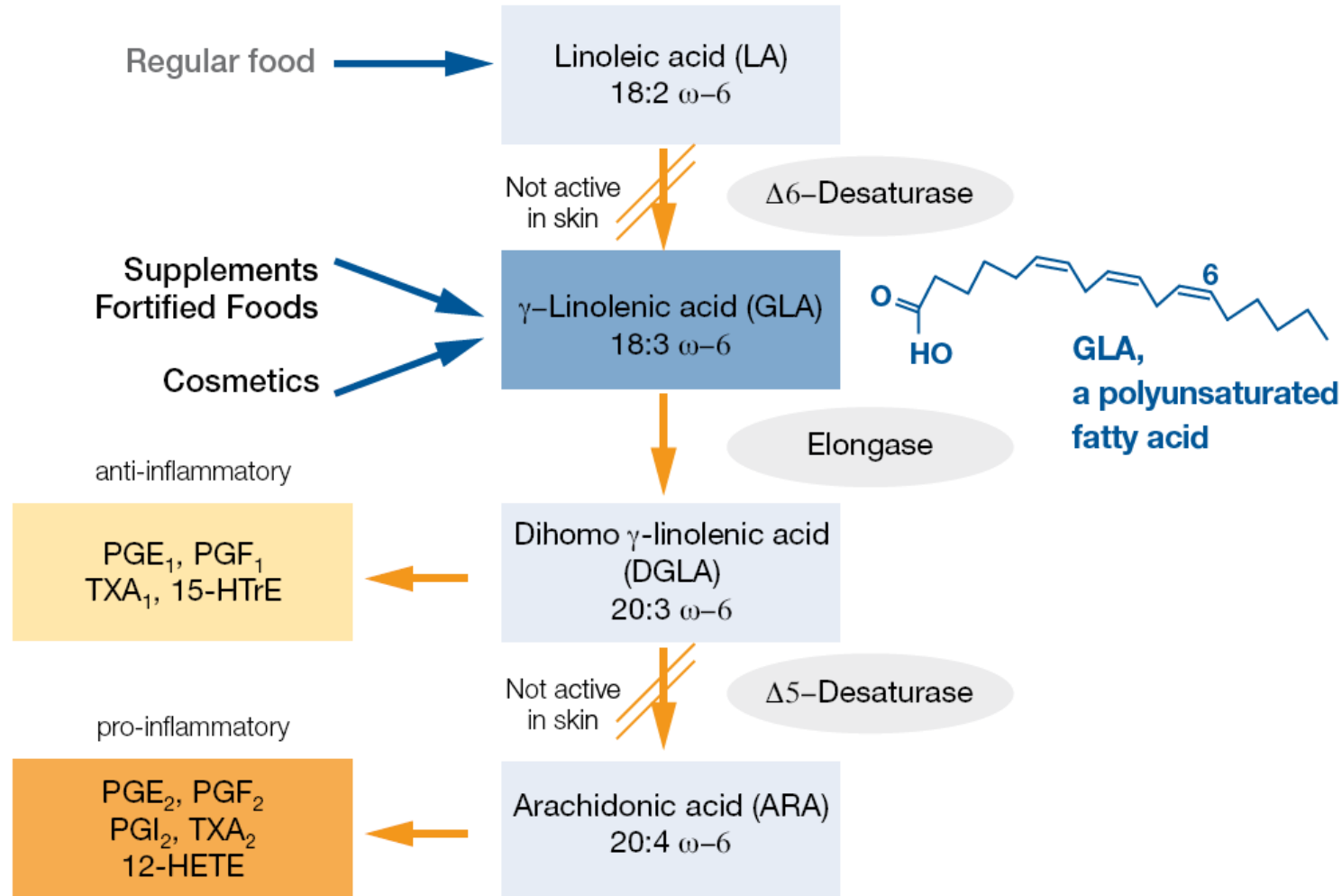
GLA helps protect our skin

Overall a younger and smoother appearance of the skin can be achieved by supplying gamma linolenic acid (GLA) from flower seed oils like life'sGLA™

(See scientific references for details)

Proven Benefits	Application
Reducing TEWL	Topical, oral
Moisturizing effect	Topical, oral
Smoothness	Topical, oral
Skin firmness	Oral
Fatigue resistance	Oral
Reduced itching	Oral

GLA – essential for healthy skin



Topical

Application Concepts

- Facial care and body care: dry and sensitive skin segment, 45+ age class
- Baby products
- Natural products
- Hair care products: scalp moisturizing and dandruff or treatment products
- Lip gloss, lip care, nail polish

DSM's **life'sGLA™** has been used in cosmetics products for over 20 years.

Recent scientific publications have again confirmed their benefits for a healthy skin.

Use **life'sGLA™** to enrich your products with natural flower seed oils rich in gamma linolenic acid (GLA).



Topical

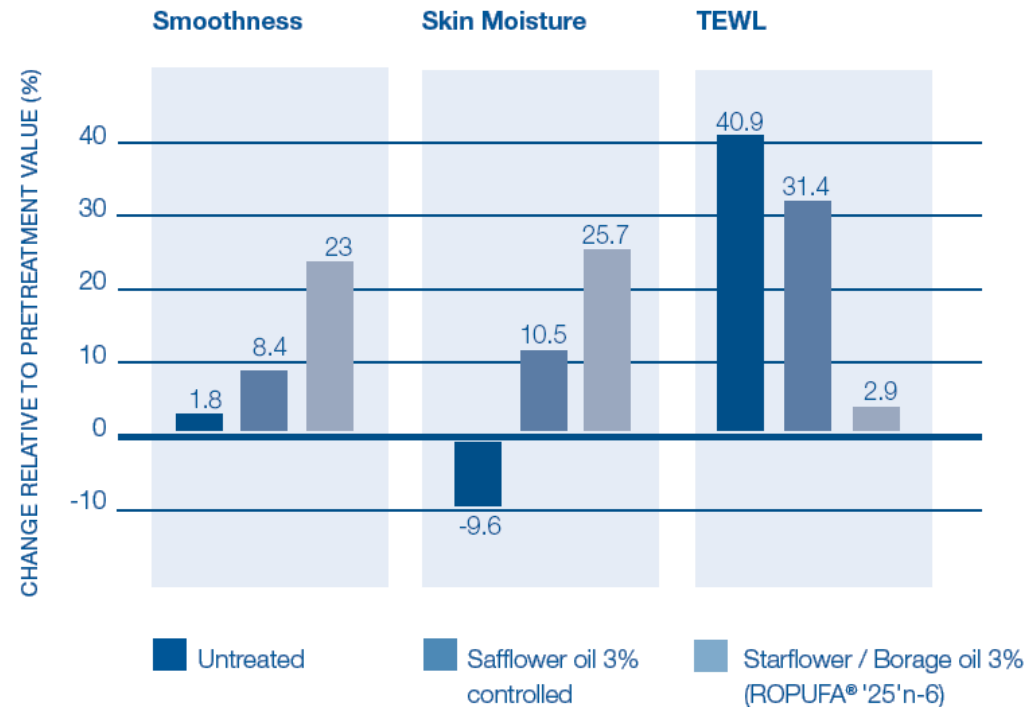
Test:

- 20 healthy men and women (age 25-58)
- Creams:
 - 3% safflower oil (control)
 - 3% starflower oil life'sGLA™ '25' n-6, borage)
- Twice a day on their right forearm. 2 mg of cream per cm² were applied. Smoothness, skin humidity and TEWL were measured on days 0, 7 and 14.

Results:

- After 14 days the skin was significantly smoother, had more moisture and less trans-epidermal water loss.

IMPROVEMENT OF SKIN PARAMETERS AFTER 14 DAYS USAGE OF BORAGE OIL CREAM (3%, ROPUFA® '25' n-6)



[see reference: Nissen 1995]

Oral- Beauty from within

Application Concepts

- Beauty drinks: soft drinks, breakfast shots
- Dietary supplements in segments botanical/herbal, hydrating, and Beauty from Within
- Fortified food: margarine, yogurt, snacks, milk drink, orange beverage, bread

life'sGLA™ provides the well-known skin benefits of evening primrose and borage seed oils into your supplements.

Evening primrose oil supplements have proven their efficacy for a younger appearance of the skin.



Oral- Beauty from within

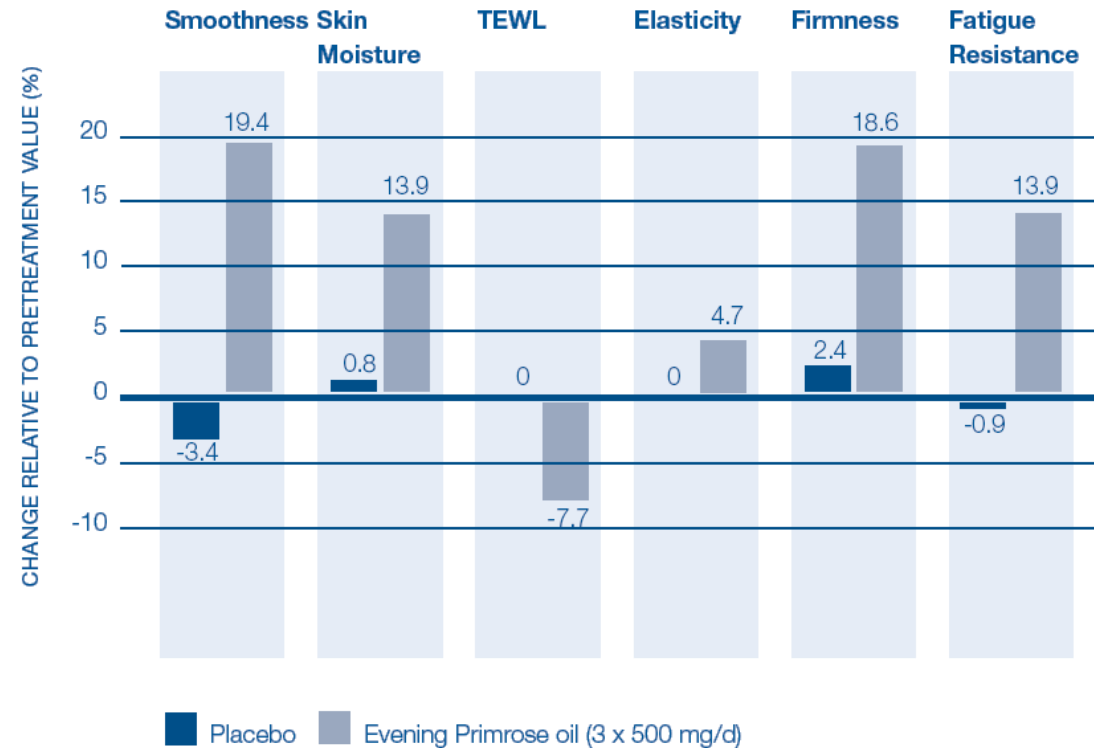
Test:

- A double-blind, placebo-controlled, parallel trial of 40 men and women (age 32-60)
- 2 gelatine capsules of 500 mg evening primrose oil three times daily

Results:

- The study shows structure repairs and improvements of appearance of dry and irritated skin in three months.
- Volunteers with dry skin showed improvement of skin moisture, smoothness and some age-related skin properties such as elasticity, firmness and strength after 12 weeks.

EFFECT OF EVENING PRIMROSE OIL SUPPLEMENTATION ON HEALTHY SKIN AFTER 12 WEEKS



[see reference: Muggli 2005]



life'sGLA™ in a nutshell

- Improves skin elasticity and firmness
- Restores the skin barrier function
- Reduces skin itching
- Heals dry skin, due to a strong moisturizing effect

Available Products

Flower	Product	INCI Name	GLA Content	Product Code
Evening Primrose	life'sGLA™ (ROPUFA®) '10' n-6 oil	Oenothera Biennis (Evening Primrose) Oil	>9%	0422398
Starflower/Borage	life'sGLA™ (ROPUFA®) '25' n-6 oil	Borago Officinalis Seed Oil	>23%	5008549

Backup

- Formulation Guidelines
- Scientific References

Topical: Formulation Guidelines

- Store life'sGLA™ at cool temperature (<15°C).
- Peroxide value of ROPUFA® should be below 5 when you produce a cosmetic product.
- life'sGLA™ is sensitive to light and oxygen. Reseal container after adding nitrogen or argon to protect leftover.
- When formulating always use EDTA.
- Recommended use level is 0,1% – 8%.
- Use in conjunction with antioxidants, most preferred are BHT, BHA, or mixed tocopherols.
- Add life'sGLA™ below 40°C, e.g. together with perfume oils or the preservative system.
- Remove as much oxygen as possible by boiling the water phase and producing/filling under vacuum.
- Final cosmetic formulation should be in a sealed container (glass, aluminum or laminate tube/bottle).
- Plastic will be penetrated by oxygen and should not be used.

Scientific References

- 1: Nissen, H.P., H. Biltz, and R. Muggli, *Borage oil*.
Cosmetics & Toiletries, 1995. 110(10): p. 71-73, 76.
- 2: Muggli, R., *Systemic evening primrose oil improves the biophysical skin parameters of healthy adults*.
International Journal of Cosmetic Science, 2005. 27(4): p. 243-249.
- 3: Brosche, T. and D. Platt, *Effect of borage oil consumption on fatty acid metabolism, transepidermal water loss and skin parameters in elderly people*.
Archives of Gerontology and Geriatrics, 2000. 30(2): p. 139-150.
- 4: Henz, B.M., et al., *Double-blind, multicentre analysis of the efficacy of borage oil in patients with atopic eczema*.
British Journal of Dermatology, 1999. 140(4): p. 685-688.

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