LABORATOIRES SÉROBIOLOGIQUES
Member of cognis

IMINDINYL® LS 9045

STIMULANT OF THE SKIN'S IMMUNE DEFENSE SYSTEM

ACTIVE INGREDIENT FOR COSMETOLOGY — SKIN

The body's **immune defense** comprises those systems it uses to protect itself against foreign materials such as micro-organisms or toxic substances. Immunity exists in two main defense systems: a **natural** and an **acquired immunity**.

The skin has its own immune defense system. The skin's natural immunity is the first to respond to an external attack, providing an essential defensive barrier which can intercept most attackers. The role of the immune defense system in preserving the youthful appearance of skin was recently demonstrated (1).

DEFINITION / COMPOSITION

IMINDINYL® LS 9045 is a new ingredient extracted from *the fruit of Tamarindus indica Linn* (Figure 1), a leguminous tree of exotic tropical origin (*Cesalpiniees* family). Tamarind trees have luxuriant foliage and beautiful flowers. The fruits (Figure 2) are in the form of pods of 10 to 15 cm long.

Fig. 1 *- Tamarind (Tamarindus indica Linn.) fruit.*

Fig. 2 *- Tamarind leaves and flowers.*

IMINDINYL® LS 9045 is obtained by a process of selective extraction, multiple purification steps, biotechnological transformation and stabilization.

IMINDINYL® LS 9045 is a concentrated solution of **branched heteropolysaccharides of low molecular weight** from the group of **xyloglycans**, containing a main chain β-D (1->4) glucose which comes in C6 short lateral chains of α-D xylopyranose. In plants, these xyloglycans are believed to play an important role in the **control of cellular growth**, in **cellular regulation** and **tissue differentiation** and in **protection** against invasion by pathogens.

SKIN BENEFITS

IMINDINYL® LS 9045:
- **strengthens the skin's defense** system,
- has an **anti-free radical** effect,
- is a skin **regenerator** and **anti-age active**,
- is a **moisturizer**.

COSMETIC USE

- Cosmetic formulations for **rough, dry skin**.
- Products for **sensitive and irritated skin**.
- **Day** and night products.
- **Make-up** preparations.

DOSAGE / SOLUBILITY / MODE OF INCORPORATION

1. Dose of use: 3 to 10%.
2. Solubility: IMINDINYL® LS 9045 is soluble in water, insoluble in oils and fats.
3. Mode of incorporation: IMINDINYL® LS 9045 is incorporated into the cosmetic product below 50°C, during the finishing process or at room temperature in cold processing.

ANALYTICAL CHARACTERISTICS

1. Aspect: colorless to pale yellow liquid, with a weak odor.
2. Specifications: upon request.

TOLERANCE

Good.

EFFICACY

Test summaries overleaf.

STORAGE

In its original packaging, at 15 - 25°C.

INCI NAME

Tamarindus Indica Seed Polysaccharide.

MANUFACTURER

Laboratoires Sérobiologiques S.A.

(1) Polysaccharides in Skin Care. P.W.A. Mansell - Cosmetics & Toiletries Vol 109. Sept. 1994, p.67-94

EFFICACY TESTS (IN VITRO)

STIMULATING EFFECT OF SKIN DEFENSE

Aim

Monocytes have specific receptors on their surface for polysaccharides of the β(1-3) glucan series. After binding at the surface, monocytes are activated and, start the immune response with the production of cytokines.

Specific yeast extracts are known for their immuno-stimulating activity, thanks to their β(1-3) glucan chains: as soon as they are bound to the specific receptors of monocytes, monocytes are able to phagocyte them, starting the immune response.

IMINDINYL® LS 9045 has been tested in comparison with a yeast extract, to show first its capability to bind on the monocytes receptors like yeast extract (simultaneous competition test), and second to start the immune response of monocytes shown by microscopic observation (subsequent competition).

Protocol

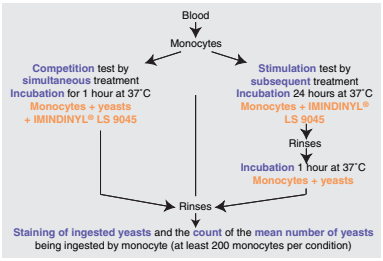

Fig. 3 - General protocol.

Results

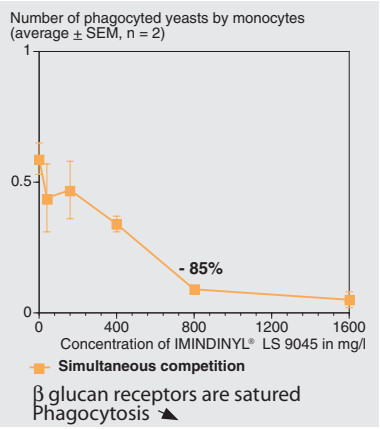

Fig. 4 - Stimulation of skin defense.

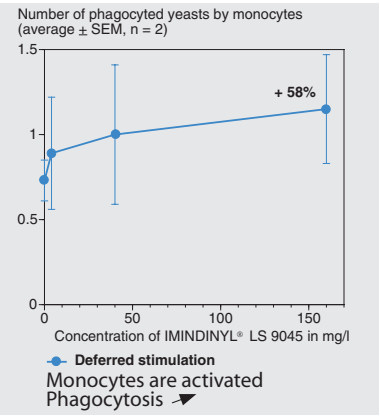

Fig. 5 - Stimulation of skin defense.

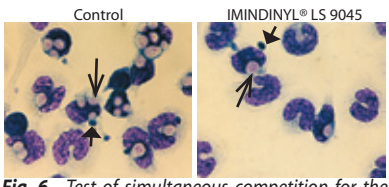

Fig. 6 - Test of simultaneous competition for the receptors of β glucans on human monocytes
→: in pink: yeasts phagocyted by monocytes
→: in blue: yeasts bound to β glucans receptors of monocytes.

Simultaneous competition test: IMINDINYL® LS 9045 decreases of the number of phagocyted yeasts, corresponding to a competition between yeasts and IMINDINYL® LS 9045 on the receptors of the monocytes.

Subsequent stimulation test: IMINDINYL® LS 9045 shows a good tendency to increase the capabilities of monocytes to phagocyte yeasts, corresponding to an immuno-stimulating effect.

Conclusion

IMINDINYL® LS 9045 has a **strong affinity** for the β(1-3) glucan **receptors of the monocytes**, and shows a good tendency for an **immuno-stimulating effect** on **immune cells**.

ANTI-FREE RADICAL EFFECT

Aim

The anti-free radical capacity of IMINDINYL® LS 9045 against the hydroxyl radical ($OH^{\cdot}$) and the superoxide anion ($O_2^{\cdot-}$) was demonstrated *in tubo*.

Protocol

Hydroxyl radicals and superoxide anions were generated by chemical reactions. The effectiveness of IMINDINYL® LS 9045 in inhibiting their formation was quantified.

Results

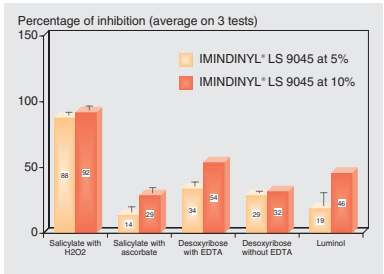

Fig. 7 - Free radical inhibition.

Conclusion

IMINDINYL® LS 9045 has significant anti-free radical activity.

CELL REGENERATION

Aim

The capacity of IMINDINYL® LS 9045 to activate the growth and regeneration of human MCR5 fibroblasts *in vitro* was compared to that of *Saccharomyces* (yeast) extract.

Protocol

Fibroblasts were incubated with different doses of IMINDINYL® LS 9045 (0.01 - 10%) or *Saccharomyces* (yeast) extract (0.01 - 1%, maximum tolerated concentration) for 6 days. Afterward, the number of cells and the ATP concentration were measured.

Results

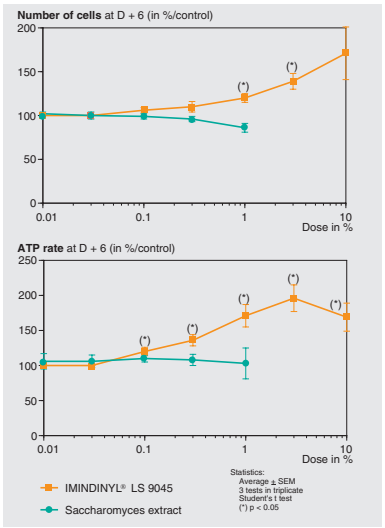

Fig. 8 - Growth activation on fibroblasts MRC5 in vitro.

Conclusion

IMINDINYL® LS 9045 has a strong, dose-dependant capacity for activating the growth of human fibroblasts in vitro. By comparison, the *Saccharomyces* extract is inactive in growth stimulation of human fibroblasts.

MOISTURIZING ACTIVITY ON HUMAN STRATUM CORNEUM (DIELECTRIC CONDUCTIVITY)

Aim

The moisturizing effect of IMINDINYL® LS 9045 was measured in vivo.

Protocol

Measurement of the dielectric conductivity of the *stratum corneum* after application of a placebo or an emulsion containing 5% IMINDINYL® LS 9045.

Results

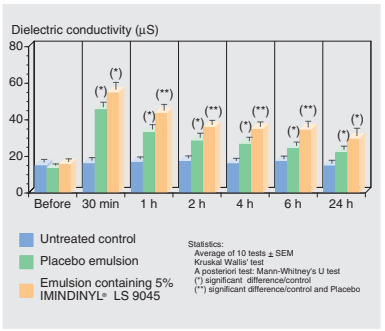

Fig. 9 - Dielectric conductivity of the stratum corneum versus time.

Conclusion

The emulsion containing 5% IMINDINYL® LS 9045 produces a long-lasting (at least 6 hr) moisturizing effect significantly greater than that of the placebo emulsion.