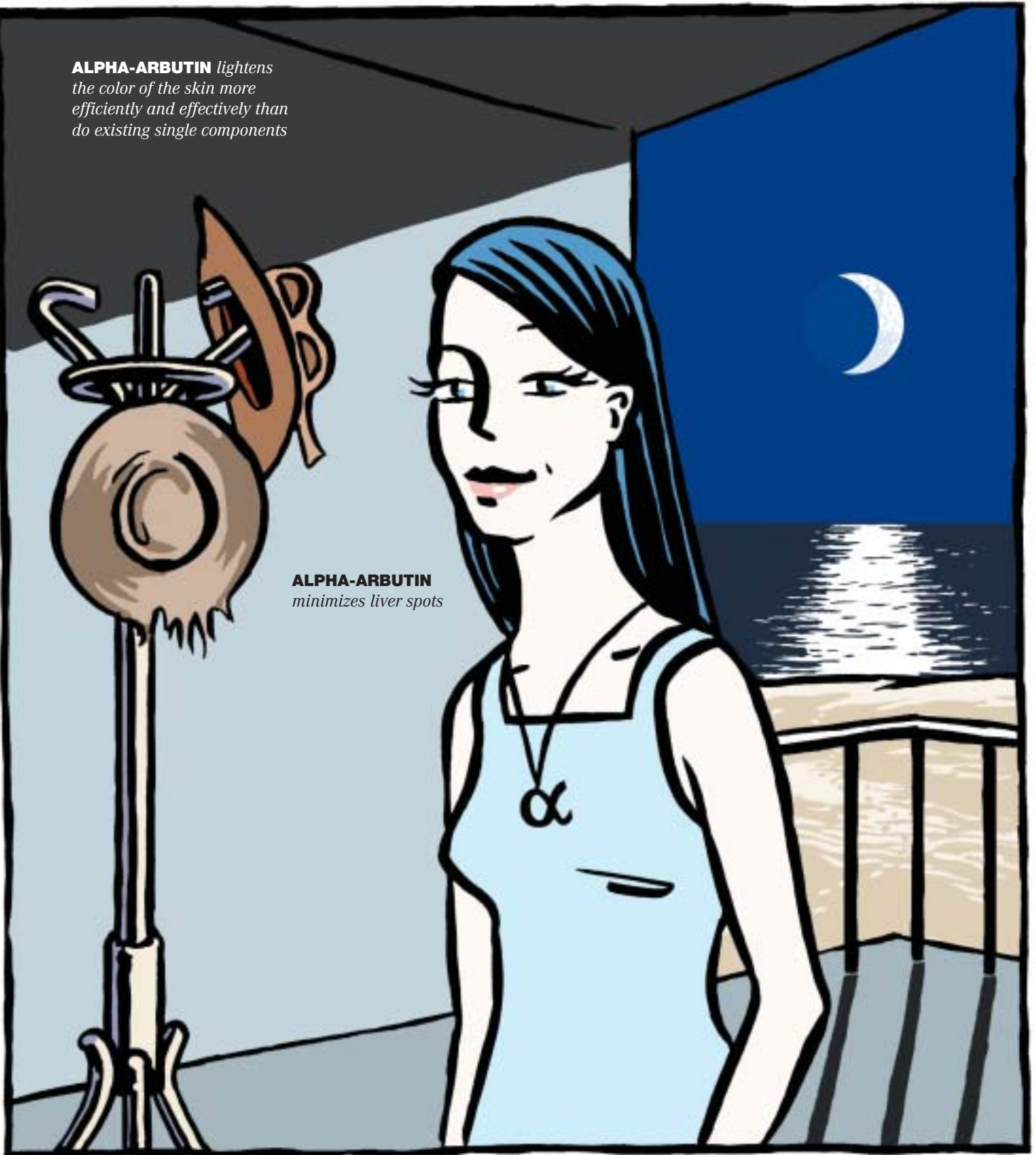


ALPHA-ARBUTIN - *the more effective,
faster and safer approach to skin lightening.*

Grüner & Bannhölzer AG Basel

ALPHA-ARBUTIN *lightens
the color of the skin more
efficiently and effectively than
do existing single components*

ALPHA-ARBUTIN
minimizes liver spots



**Exclusive NA Dist.
Centerchem, Inc.
Norwalk, CT. USA
203-822-9800
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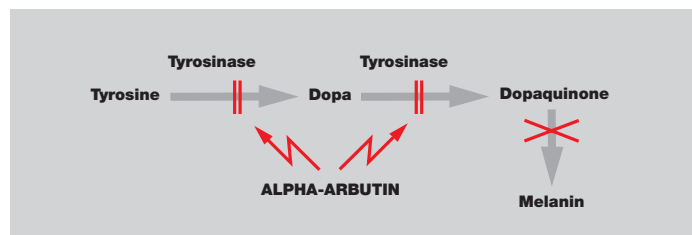


ALPHA-ARBUTIN

ALPHA-ARBUTIN (4-Hydroxyphenyl- α -D-glucopyranoside) is a synthetic and functional active ingredient for skin lightening.

Properties:

ALPHA-ARBUTIN blocks epidermal melanin biosynthesis by inhibiting enzymatic oxidation of Tyrosine and Dopa.



ALPHA-ARBUTIN acts faster and more efficient than do existing single components.

Function:

- Promotes lightening and an even skin tone on all skin types.
- Minimizes liver spots.
- Can reduce the degree of skin tanning after UV exposure.

Cosmetic application

- All degrees of skin lightening.

Formulations:

ALPHA-ARBUTIN is a water soluble, crystalline, white powder which is easily incorporated into the water phase of cosmetic formulations. **ALPHA-ARBUTIN** is stable against hydrolysis as tested in the pH range from 3.5 to 6.5.

Suggested concentration

0.2% when formulated with an exfoliant or penetration enhancer, otherwise up to 2%.

INCI Name:

Alpha-Arbutin

Efficacy tests:

In-vitro test:

ALPHA-ARBUTIN exhibits impressive *in-vitro* tyrosinase inhibition on human cell lysate (IC_{50} = 1.0 mMol) compared to Beta-Arbutin (IC_{50} = 9.0 mMol).

In-vivo test:

A skin lightening study on 80 Chinese descent women demonstrated that an emulsion containing 1% **ALPHA-ARBUTIN** resulted in a faster and more pronounced skin lightening effect after 1 month when compared with other commonly used single components at 1 % use levels.

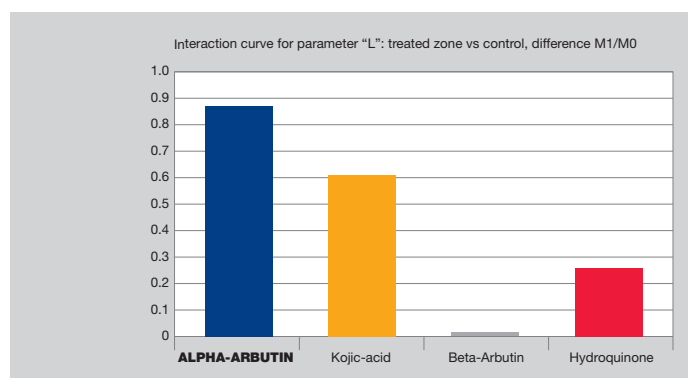


Figure 1: The classification of lightening single components according to the magnitude of their specific effect after 1 month (M0 = start, M1 = after one month)

In-vivo test:

ALPHA-ARBUTIN (2%) in a creme formulation shows liver spot improving efficacy after 3 months.

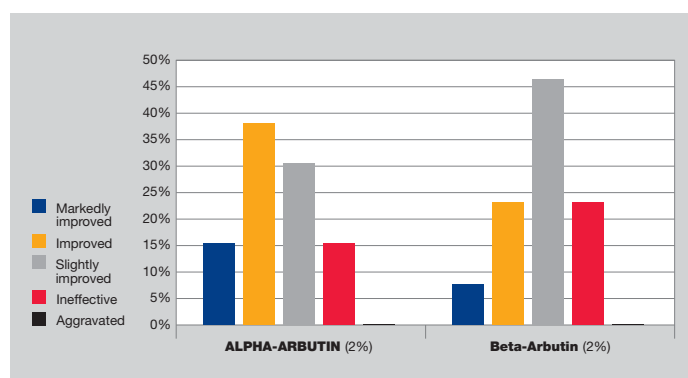


Figure 2: Satisfaction quotients relating to the evaluation of the liver spot reduction.