



Rona

RonaCare[®] MAP

Biotechnologically-Derived
Magnesium Ascorbyl Phosphate



RonaCare® MAP:
Biotechnologically-
Derived Magnesium
Ascorbyl Phosphate



Introduction

White skin has long been considered to be a sign of wealth and beauty by many Asian and African countries. Today, a bright, even-toned complexion is accessible to the public as a whole as a result of the development of a large number of products which promise lighter skin. This trend is not limited to the traditional markets of Asia and Africa but is something that can be found worldwide. In their quest to maintain youthful-looking skin, consumers not only seek products that whiten, brighten, lighten, even tone and correct pigmentation disorders but those which arrest, reverse and prevent the signs of aging.

This more discriminating consumer is faced with wide variety of skin pigmentation control agents, many of which that are not as well-established, as effective and as safe as magnesium ascorbyl phosphate (MAP).



RonaCare® MAP

L-ascorbic acid (Vitamin C) plays many important roles in biological processes and is well-documented for its antioxidant, anti-aging and skin lightening properties. L-ascorbic acid however is unstable in aqueous solutions, even at neutral pH and room temperature. To resolve this problem, a number of more stable ascorbic acid derivatives have been developed that possess chemical functionality and percutaneous penetration which is similar to that of Vitamin C. RonaCare® MAP, the magnesium salt of the 2-phosphate ester of ascorbic acid, is one of those derivatives.

Stability

To demonstrate stability, RonaCare® MAP was tested in an aqueous solution where it was found to retain over 95 % of the product at 40 °C (fig. 1).

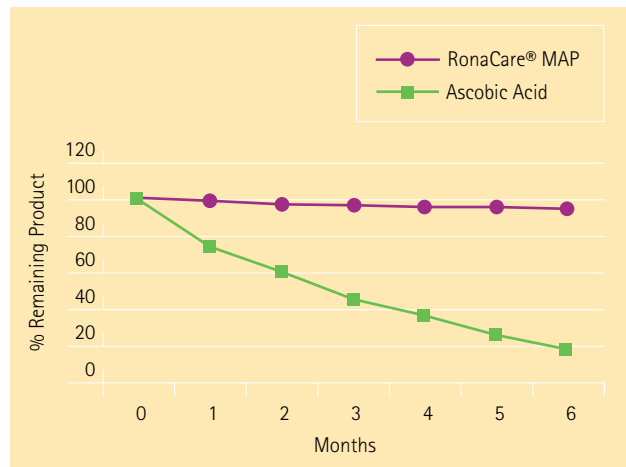


Fig. 1: Stability of magnesium ascorbyl phosphate (MAP) compared to ascorbic acid. 3% solution in water at 40 °C, pH not adjusted.

Skin Penetration

RonaCare® MAP is first converted into Vitamin C (ascorbic acid) by the skin's phosphatase enzymes and then readily absorbed into the skin.¹

Applications

Skin Lightening

The skin lightening action of RonaCare® MAP is based on its inhibitory effect on melanogenesis. More specifically MAP acts as a reducing agent on melanin intermediates. The production of melanin from DOPA is prevented by blocking the oxidative chain reaction at various points from DOPA to melanin.^{4,6}

RonaCare® MAP is an inhibitor of melanin synthesis (fig. 2) which results in lighter looking skin.

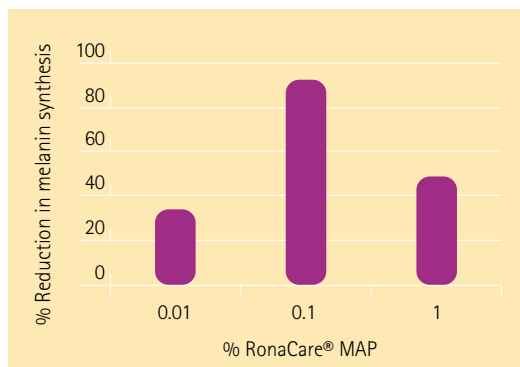


Fig. 2: Inhibitory effect of magnesium ascorbyl phosphate (MAP) on melanin synthesis. In-vitro cell culture study using tyrosine and purified tyrosinase at levels of 0.01% and 0.1% MAP on cell extracts of mice melanomas and 1% MAP on cell extracts of human melanomas

MAP, like L-ascorbic acid has a proven effect on cell renewal since it is essentially an alpha hydroxy acid. This functionality further increases MAPs effectiveness as a skin lightener. As is the case with other skin lightening products this exfoliation-type action reduces the thickness of the protective melanin layer of the skin. The use of sun protection products should, therefore, be considered to ensure the lightening effect of MAP-containing products is not diminished.

Anti-aging

Studies have shown that RonaCare® MAP has the same antioxidative effect as naturally occurring Vitamin C in regenerating α -tocopheryl radicals to α -tocopherol.⁸

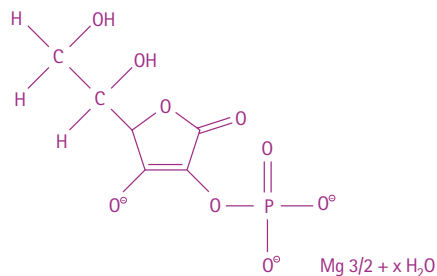
It has also been proven that RonaCare® MAP has a collagen stimulating effect equivalent to that of Vitamin C.²



Technical Data

INCI Name: Magnesium Ascorbyl Phosphate, EDTA

Structure of MAP:



Appearance: White to pale yellow powder

Active substance: $\geq 95\%$

Solubility: Water (8 g/100 ml at 25°C)

pH value: 7.0 - 8.5 (3 % in water)

Suggested Applications

- Skin lightening products
- Skin care products
- Sun care products
- Oral care products



Formulation Guidelines

- Use nonionic emulsifiers for preparing emulsions
- RonaCare® MAP is incompatible with metal ions (degradation). Therefore the use of chelating agents such as EDTA or sodium citrate is recommended.
- Dissolve RonaCare® MAP in water and add to emulsion as a solution at 40 to 50 °C.
- RonaCare® MAP should be protected from exposure to UV light (unstable).
- Maintain formulation at neutral to slightly basic pH value (i.e. pH 7)
- Use levels:
 - Maximum of 3% in skin lightening products (Quasi drug approved in Japan, at maximum of 3%)
 - 0.5 - 2 % in anti-aging and clarifying products
 - 0.1 - 0.5 % in toothpastes
- In the US, cosmetic claims that can be used are “brightening” or “even toning of the skin”.⁴

Ordering Information

Item No.	Name	Pack Sizes
130218	RonaCare® MAP	1 kg, 5 kg

References

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