AA2G™

stabilised vitamin C from Hayashibara

for healthier, brighter, younger looking skin

Hayashibara

AA2G™

AA2G™ (Ascorbic Acid 2-Glucoside) from Hayashibara is natural vitamin C (ascorbic acid) stabilised with glucose. This combination allows the benefits of vitamin C to be conveniently and effectively used in cosmetic products. When creams and lotions containing AA2G™ are applied to the skin, an enzyme present in the skin, α-glucosidase, acts on the AA2G™ to slowly release the healthful benefits of vitamin C.

AA2G™ was originally developed as a quasi-drug cosmetic product in Japan to lighten the overall tone of the skin and reduce the pigmentation in age spots and freckles. Further research has shown other dramatic benefits and today AA2G™ is used all over the world – not only for whitening but also for brightening dull looking skin, reversing the effects of aging, and in sunscreen products for protection.

High stability

AA2G™ has **glucose** bound to the hydroxyl group of the second carbon (C2) of the **ascorbic acid**. The C2 hydroxyl group is the primary site of natural vitamin C's beneficial activity; however, this is the site where vitamin C is degraded. The glucose protects vitamin C from high temperatures, pH, metal ions and other mechanisms of degradation.

Sustainable vitamin C activity

When products containing AA2G™ are used on the skin, the action of α-glucosidase gradually releases vitamin C, providing the benefits of vitamin C effectively over a prolonged period of time.

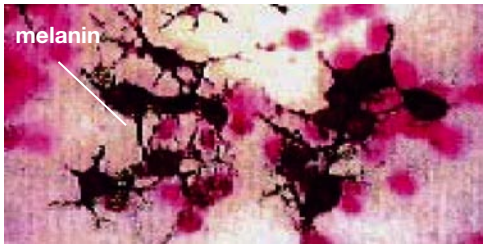
Formulation benefits

AA2G™ is more soluble than natural vitamin C. It is stable over a wide range of pH condition, especially at pH 5.0 – 7.0 which is typically used for formulation of skin care products. AA2G™ has been shown to be easier to formulate than other vitamin C preparations.

for brighter skin

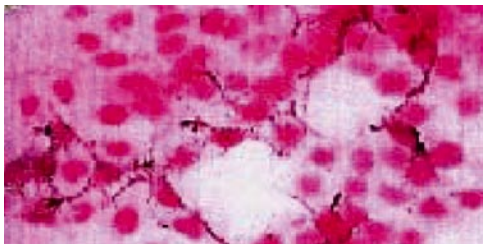
AA2G™ can function in essentially an identical manner to vitamin C, preventing pigmentation of skin by suppressing melanin synthesis in melanocytes. It also has the ability to reduce the amount of pre-existing melanin, resulting in a lighter pigmentation of the skin.

Without AA2G™



(x 200)

With AA2G™ (2.5mM)



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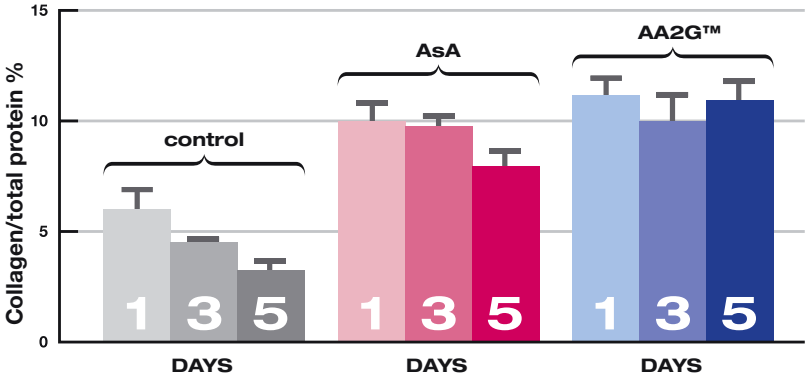
The efficacy of AA2G™ was tested using B16 melanoma cells treated for 12 hr with AA2G™ (2.5mM) or a placebo. Following treatment theophylline (0.5mM) was added to stimulate melanin synthesis, and the cells were tested after 48 hr for the presence of DOPA quinone (a precursor to melanin) using a histochemical stain. This shows that AA2G™ can prevent unwanted skin pigmentation.

[Yamamoto et al., Nishinihonhifuka, 58 (3), 439-443 (1996)]

for healthy skin

AA2G™ slowly releases vitamin C, which has been shown to promote the synthesis of collagen by human skin fibroblasts, thereby increasing the suppleness of the skin. AA2G™ can provide these benefits over a prolonged time period.

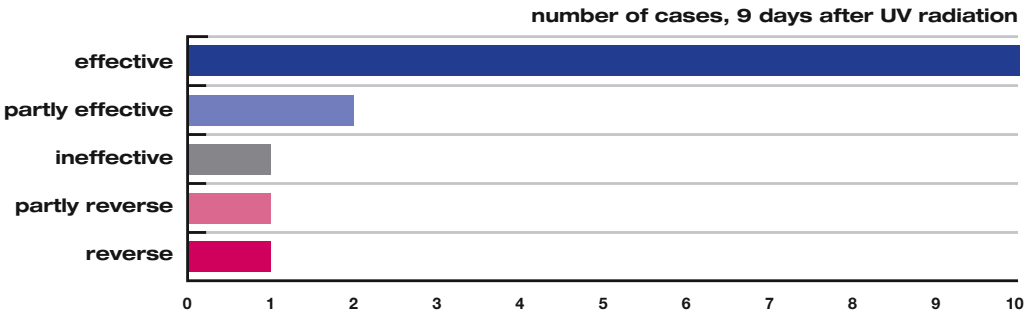


Human skin fibroblasts were incubated in the presence of a control, ascorbic acid (AsA; 0.25mM) or AA2G™ (0.25mM) for 1- 5 days. The percentage of collagen synthesis to total protein synthesis was determined. This shows that AA2G™ can promote collagen synthesis. Stimulatory effect of AA2G™ continued for the full 5 day period.

[Yamamoto et al., J.Nutr., 122, 871-877 (1992)]

for sunlight protection

Oxygen radicals, which are formed in the skin during its exposure to sunlight, are believed to cause skin damage and reddening of the skin. AA2G™ slowly releases vitamin C, which acts as a free radical scavenger, thereby reducing the amount of skin inflammation and roughness.

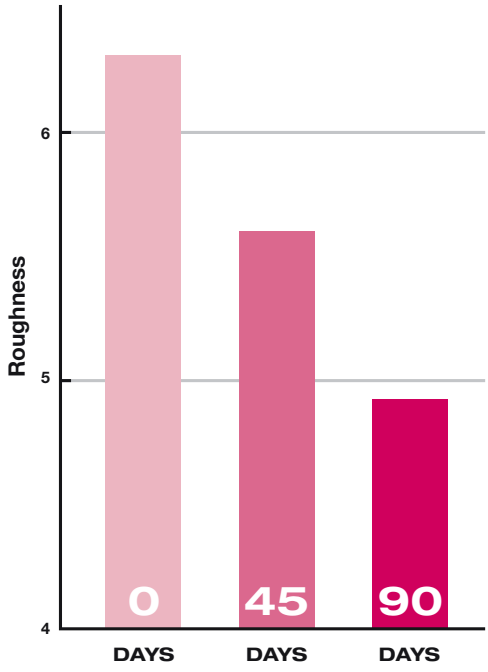


In a controlled test, creams containing 2% AA2G™ or placebo were applied at two places on the inside of the right arm of 15 healthy adults. The creams were applied three times a day for 6 consecutive days. During this treatment, the arms were irradiated with UVA and UVB once per day for a total of 3 days. This shows that AA2G™ can prevent UV skin damage as measured by a reduction in skin erythema.

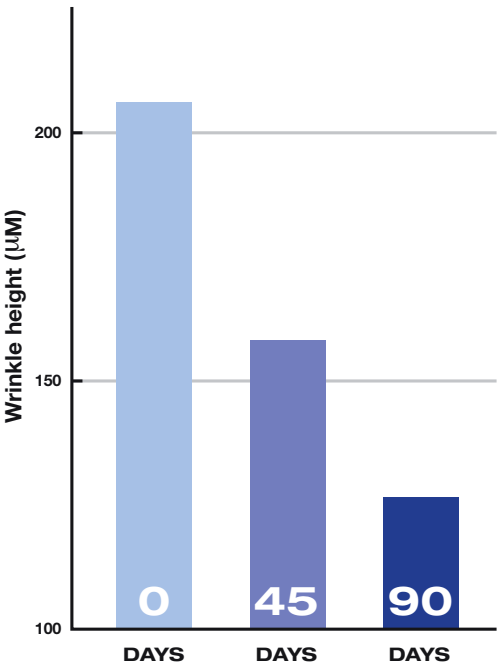
[Miyai and Yamamoto et al., Nishinihon J.Dermatol., 58 (3), 439 (1996)]

for younger looking skin

AA2G™ slowly releases vitamin C which acts to reduce fine lines and wrinkles, resulting in younger looking skin.



Sixteen female volunteers ranging in age from 37 to 55 years, applied a face cream containing 2% AA2G™. The change in mean roughness profiles was determined using silicone casts at onset and after 45 and 90 days. The results showed that there was a significant difference ($p < 0.01$) in reducing the roughness of the skin after 45 days of use and these beneficial effects continued with further use.



Sixteen female volunteers ranging in age from 37 to 55 years, applied a face cream containing 2% AA2G™. The change in mean depth of the wrinkle profiles was determined using silicone casts at onset and after 45 and 90 days. The results showed that there was a significant difference ($p < 0.01$) in reducing the average depth of wrinkles after 45 days of use and these beneficial effects continued with further use.

AA2G™

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AA2G™ is distributed in certain international markets by **DKSH Market Intelligence**.

For further information please contact:

DKSH
Market Intelligence

DKSH Holding Ltd
DKSH Management AG
Wiesenstraße 8
PO Box 888
8034 Zürich
Switzerland

Tel: +41-1-386 7272
Fax: +41-1-386 7550
Email: info@dksh.com
www.dksh.com

AA2G™ is manufactured by **Hayashibara International**

Hayashibara

Hayashibara International Inc.
Fetcham Park House
Lower Road, Fetcham
Leatherhead
Surrey KT22 9HD
United Kingdom

Tel: +44 (0) 1372 371 210
Fax: +44 (0) 1372 371 001
Email: info@hayashibara-intl.com
www.hayashibara-intl.com

International offices:

Denver London Moscow São Paulo Sydney Shanghai Bangkok Johannesburg Dubai