Import and distribution for Serbia: Farmadria DOO
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TECHNICAL DATA SHEET

Product Name: Alpha-Arbutin

INCI Name: Alpha-Arbutin

CAS: 84380-01-8

Chemical Class: Phenol, Carbohydrate

Functional Category: Skin Lightening Agent, Skin Conditioner, Antioxidant

IUPAC Name: (2R,3S,4S,5R,6S)-2-Hydroxymethyl-6-(4-hydroxyphenoxy)oxane-3,4,5-triol

Description: Alpha-Arbutin is a cosmetic ingredient renowned for its skin-lightening properties. It works by inhibiting the enzyme tyrosinase, which is essential for the production of melanin, the pigment responsible for skin color. Due to this property, it is used in skincare products to even out skin tone and reduce the appearance of dark spots and hyperpigmentation. Alpha-Arbutin is gentle on the skin, making it suitable for use in various cosmetic formulations, including serums, creams, and lotions. Unlike hydroquinone, Alpha-Arbutin delivers effective results with minimal risk of irritation, making it ideal for individuals with sensitive skin. It is a stable ingredient, meaning it retains its effectiveness over time, even when combined with other active ingredients. Alpha-Arbutin appears as a fine white powder with a crystalline structure and is soluble in water and alcohol. Its solubility may vary depending on the pH level of the solution. It is typically used in cosmetic formulations with neutral or slightly acidic pH values. Alpha-Arbutin can be sensitive to light and heat. It is a natural ingredient derived from the plant Arctostaphylos uva-ursi (bearberry). Research has shown that alpha-arbutin works synergistically with other skin-lightening agents, including tranexamic acid, vitamin C, niacinamide, and retinaldehyde (retinal).

Mechanism of Action: Under normal conditions, melanin synthesis begins in specialized skin cells called melanocytes, where the enzyme tyrosinase catalyzes the chemical reaction that converts the amino acid tyrosine into DOPA (dihydroxyphenylalanine) and then into DOPA-quinone. These compounds further transform into different forms of melanin, such as eumelanin (dark pigment) and pheomelanin (light pigment). The amount and type of melanin produced in the skin depend on genetic factors and exposure to UV radiation, hormonal changes, and other influences. Alpha-Arbutin acts

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by inhibiting tyrosinase activity. When applied to the skin, alpha-arbutin is absorbed into melanocytes and binds to the active site of the tyrosinase enzyme, preventing it from catalyzing the normal conversion of tyrosine into melanin. This competitive inhibition means that alpha-arbutin competes with tyrosine for binding to tyrosinase, thereby reducing melanin production. Unlike some other tyrosinase inhibitors that can act aggressively on cells and cause irritation, alpha-arbutin is less toxic and better tolerated. Its chemical structure allows it to act effectively but gently, reducing melanin production without causing harmful effects to surrounding tissues. This makes it suitable for use in everyday cosmetic products, enabling gradual and safe skin lightening.

Benefits:

- ***Skin Lightening:*** Alpha-Arbutin is well-known for its skin-lightening capabilities. It helps reduce hyperpigmentation and dark spots on the skin.
- ***Reduces Discoloration:*** It effectively diminishes discolorations caused by sun exposure, aging, or acne, helping to even out skin tone.
- ***Antioxidant Protection:*** Alpha-Arbutin has antioxidant properties that help neutralize free radicals. It aids in protecting the skin from oxidative stress and premature aging.
- ***Suitable Alternative:*** Compared to other skin-lightening ingredients like hydroquinone, alpha-arbutin is considered a milder and less irritating option, making it suitable for people with sensitive skin.

Usage: Alpha-Arbutin is used in various cosmetic products, such as serums, creams, and lotions, primarily for its ability to lighten skin and even out skin tone. It is recommended to use Alpha-Arbutin in concentrations ranging from 0.1% to 2%. Lower concentrations, around 0.2%, are usually sufficient for achieving an even skin tone and mild lightening, while higher concentrations, up to 2%, are used to treat more pronounced issues like hyperpigmentation and dark spots. The optimal concentration depends on the type of product and desired effect. For example, lower concentrations may be used in daily creams or lotions for skin care, while higher concentrations may be used in more intensive treatments like night serums or specialized dark spot creams. Alpha-Arbutin is compatible with a wide range of other active ingredients, such as vitamin C, niacinamide, and hyaluronic acid, allowing its integration into various formulations without losing efficacy. When formulating products, it is important to maintain a stable pH level to ensure Alpha-Arbutin's maximum effectiveness; the recommended pH is between 4.0

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and 6.5. Given that alpha-arbutin is more active than beta-arbutin, the Scientific Committee on Consumer Safety (SCCS) recommends using it in concentrations up to 2% in facial creams and up to 0.5% in body lotions. Beta-arbutin can be used in concentrations up to 7% in facial creams. For external use only.

Source Materials: Derived from hydroquinone and dextrins

Production Method: Alpha-Arbutin is obtained through the reaction of hydroquinone and dextrin (sugar) using glycosylation enzymes.

Animal Testing: The substance has not been tested on animals.

GMO: Not GMO

Vegan: Does not contain animal-derived components