

## Arbutin

### Description

The glycoside Arbutin, also known as beta-arbutin, is an active ingredient that is specifically suitable for skin lightening applications. When applied topically, Arbutin can inhibit the production and formation of melanin by greatly reducing tyrosinase activity. Especially spots and freckles are due to hyperpigmentation and Arbutin can reduce the tyrosinase activity at low concentrations. Therefore, Arbutin is an effective and approved ingredient for skin lightening. Pigmentation, such as freckles in the skin, is caused by enhanced melanin production or melanocyte proliferation due to such factors as UV rays. Hyperpigmentation can be prevented by either reducing the tyrosinase activity, decreasing the melanocyte functions, decreasing dopa to prevent its autooxidation or suppressing inflammatory responses.

Because Arbutin is a glycosylated hydroquinone, numerous studies have demonstrated, that Arbutin is as effective as hydroquinone, but less toxic. It is believed to act by a slow release of hydroquinone due to hydrolysis, which, in turn, suppresses melanin synthesis by inhibiting the enzyme tyrosinase. Arbutin appears to have fewer side effects than hydroquinone at similar concentrations - presumably due to its slow release. It acts as a substrate for tyrosinase and therefore reduces tyrosinase activity dose dependent.

### Efficacy

- reduces hyperpigmentation:  
blocks epidermal melanin biosynthesis by inhibiting enzymic oxidation of tyrosine and dopa
- promotes lightening and an even skin tone on all skin types
- diminishes senile lentigo
- reduces age spots
- minimizes liver spots
- reduces the degree of skin tanning after UV exposure

### Appearance

white crystalline powder

### INCI

Arbutin

### Registration

CAS-No.....497-76-7

EC-No.....207-850-3

### Preservatives / Stabilizers

none



Nature needs no cosmetics,  
but cosmetics need nature

## Arbutin

### Characteristics

assay..... $\geq 99.0\%$   
melting point..... $199.0 - 201.0^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$   
specific rotation..... $-66^{\circ} \pm 2^{\circ}$   
pH value (1% solution).....5.0 - 7.0

molecular formula..... $\text{C}_{12}\text{H}_{16}\text{O}_7$   
molecular weight.....272.25 g/mol  
synonym:  
 $\beta$ -D-glucopyranoside, 4-hydroxyphenyl

### Application

facial creams and lotions  
face masks  
gels and ampoules  
body lotions

### Application concentration

skin care formulations.....1 - 5 %

### Incorporation

Arbutin should be blended into the water phase or added at the last step of formulation cold or below  $70^{\circ}\text{C}$ . Recommended pH 3.5 - 6.5.

Arbutin is soluble in water (also cold-water with  $20^{\circ}\text{C}$ ) and slightly soluble in ethanol. It is insoluble in IPP and mineral oils.

Arbutin is compatible with UV-filters and ethanol (up to 50 % in the formulation). Avoid strong oxidizing agents.

### Toxicology

non hazardous in normal use concentration

### Storage & Shelf life

Arbutin should be stored in tightly sealed containers at a dry and light protected place at  $10 - 25^{\circ}\text{C}$ . Keep away from heat and open flames. Store away from oxidizing agents.

In closed original containers the shelf life is 24 months.