

BotanicalsPlus

BP—Willow Bark Extract

Natural Source of Beta Hydroxy Acid



INCI Name: Water & Salix Nigra (Willow) Bark Extract

Key Benefits:

- Naturally-derived ingredient
- Gentle yet effective
- Perfect for oily skin, fights acne
- Reduces inflammation
- Opens clogged pores, loosens blackheads

Background

For centuries, Willow Bark Extract has been used in cosmetics and personal care products for its astringent, anti-inflammatory, antiseptic, soothing, and conditioning properties. Folklore states that it has been also used as a treatment for headaches and other ailments due to its aspirin-like properties. Willow Bark Extract contains salicylic acid, which is a natural exfoliant and a Beta-Hydroxy Acid (BHA) that is used in many acne treatments because of its ability to help skin shed dead cells and clear pores; it can also stimulate new cell formation.

Product Information

BP—Willow Bark Extract is an aqueous extract made from the freshly harvested bark of the Salicaceae and genus salix species of willow trees, typically containing approximately 10% natural salicylates comprised of salicylic acid, salicin, salicortin, fragilin, populin, traiantrin, vimalin, tannins, beneficial flavonoids, and some minerals, all of which act in concert as an analgesic on the skin and as a way to deliver naturally derived salicylic acid.

Our unique extraction and standardization (measured and confirmed on every batch through UV Vis Spectroscopy) assures a consistent standardized extract with a range of 9% to 12% salicylic acid in every batch. **BP—Willow Bark Extract** is a more gentle and effective β -hydroxy acid, without the risk of irritation typically caused by synthetically produced salicylic acid.

Typical Properties

Appearance @ 25°C	Colorless to light amber liquid
Odor	Characteristic
Color (Gardner)	4.0 Maximum
pH (Direct @ 25°C)	4.0 – 6.5
NVM (1g-1hr-105°C)	25.0% Minimum
Salicylic Acid (UV)	9.8 - 11.5%
Identification (FT-IR Spectra)	To Match Standard
Microbial Content	<100 opg, no pathogens
Recommended Use Level	1 - 10%

Product Applications:

- Skin care products for oily skin
- Anti-acne skin care products
- Skin brightening products
- Anti-aging skin care products

Clinical Study

A clinical study was performed comparing the effects of an aqueous gel containing 10% **BP-Willow Bark Extract** vs. a placebo gel without the extract. Twelve subjects, both male and female ranging in age from 23 to 65, were instructed to apply the gels twice a day, morning and evening, to their inside forearms. Measurements of skin elasticity and skin color were taken at the beginning (baseline) and after one and two weeks of application using a DermLab® Series SkinLab Combo instrument (Cortex Technology, Denmark).

The skin elasticity evaluation was based upon the response to a suction applied to the skin. Two parameters were recorded: the elevation distance of the skin upon application of the suction and the retraction time after the suction was stopped. The elasticity is reported as viscoelasticity (VE) in units of MPa (megaPascals) according to the following equation:

$$VE = E/R_{\text{normalized}}$$

Where E = Young's elasticity modulus and $R_{\text{normalized}} = R/260 \text{ msec}$

$$\text{Where } E = \varphi \rho \frac{r^4}{\Delta x \cdot s^3} = 0.3125 \cdot \frac{\Delta p}{\Delta x}$$

Δx = elevation of the skin (in m)

φ = constant

ρ = surface pressure (in Pa)

r = radius of the skin (0.005 m)

s = skin thickness (0.001 m)

R = skin retraction time (in msec)

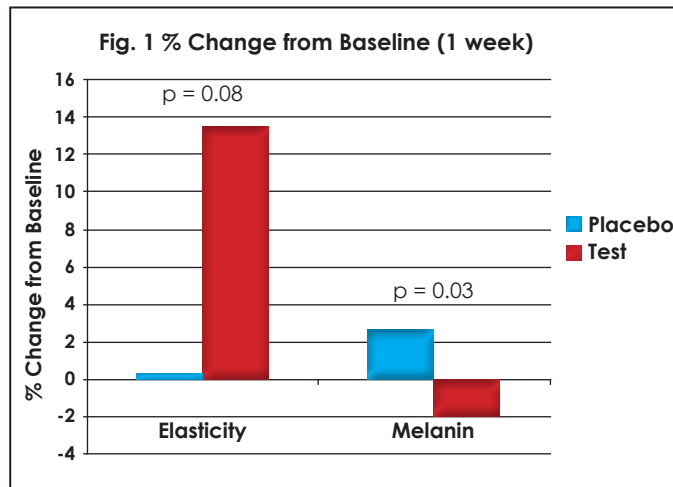
The skin melanin score is derived from the measurement of CIE L*a*b* values using the CIELab color space.

Study Formulations

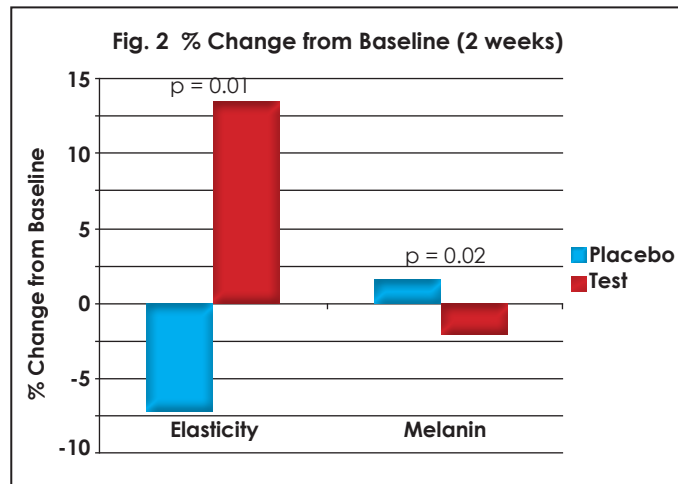
	Placebo	Test
Water	93.5%	83.5%
Jeethix® 305 (Polyacrylamide (and) C13-14 Isoparaffin (and) Laureth-7	6.5%	6.5%
BP-Willow Bark Extract	–	10%
Phenoxyethanol	1%	1%

Results

The one week results are shown in Figure 1. The test formulation showed a 13.5% increase in the mean elasticity score from baseline vs. a 0.3% increase for the placebo. The difference between these scores was close to statistical significance (paired two-tailed t-test, $p=0.08$). The mean melanin score for the test formulation showed a 2% decrease from baseline vs. a 2.7% increase for the placebo. This difference was statistically significant ($p=0.03$).



The two week results are shown in Figure 2. The test formulation showed a 13.5% increase in the mean elasticity score from baseline vs. a 7.3% decrease for the placebo. The difference between these scores was statistically significant ($p=0.01$). The mean melanin score for the test formulation showed a 2.2% decrease from baseline vs. a 1.5% increase for the placebo. This difference was statistically significant ($p=0.02$).



Results Summary

Because aging of the skin is accompanied by a decrease of skin elasticity, skin elasticity measurements are useful for the quantitative evaluation of age-related changes. Skin's elasticity is determined by its state of hydration as well as its underlying structural fibers, collagen and elastin. Young skin, which is well hydrated and has a well-developed network of structural fibers, will have a high viscoelasticity measurement. As the skin ages, it loses the ability to retain moisture and there is a breakdown of the collagen and elastin network, resulting in sagging, wrinkles, and a loss of tone. This will be reflected in a lower viscoelasticity measurement. The application of a gel containing 10% **BP-Willow Bark Extract** twice a day for two weeks resulted in a statistically significant 21% higher skin viscoelasticity measurement than a placebo gel. This suggests that this product will be useful in a skin care product designed to firm and plump the skin to reduce the visible signs of aging.

In addition, the test gel resulted in a statically significant 4% lower melanin score compared to the placebo gel. This suggests that **BP-Willow Bark Extract** will be useful for evening skin tone and reducing the appearance of pigmented spots.

BotanicalsPlus



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