

ABS Willow Bark Extract



botanical
Water Soluble Extract
 Natural Exfoliator
 anti irritant
 antioxidant activity

BACKGROUND

Growing an astounding 30m tall, the *Salix nigra*, or Black Willow tree is known for its remarkable tenacity. The willow's root strength and general resilience are but a few of the qualities that highlight it as the most commercially and economically important member of the *Salix* genus.

In addition to its modern industrial and manufacturing applications, Native American tribes such as the Patowatomi and Chippewa found uses for nearly all of the trees components. The roots were often manipulated to produce a variety of dyes, the bark was charred and crushed to be used as gunpowder, and the wood itself became the primary material used for artificial limbs due to its weight, density, and pliable nature.²

Medicinally, the Black Willow's extreme bitterness was found to be an effective substitute for Quinine amongst early American settlers. It has been documented that the trees inner bark contains the highest concentrate of its active chemical component.² Often used in a tea, the bark is effective in treating rheumatism, arthritis, dysentery, fevers, headaches, and some sources tout its efficacy for asthma and gout. Additionally, forming a pulp-like poultice from the bark is useful as a natural treatment for cuts, wounds, sprains, bruises and swelling. As a wash, willow bark extract is considered an astringent for healing psoriasis and other skin diseases.³ Even the leaves have been used internally for the treatment of minor fevers, colic, and other common ailments.

SCIENCE

Though they are of different families, *Salix Alba* (White willow) and *Salix nigra* (Black willow) are often used interchangeably due to their strikingly similar uses and composition. The primary chemical constituents of both species are tannin, an overarching term for a common polyphenolic compound, as well as

Code Number: 10200

INCI Name: *Salix Nigra* (Willow) Bark Extract

INCI Status: Approved

REACH Status: Complies

CAS Number: 84650-64-6

EINECS Number: 283-522-3

Origin: Botanical

Processing:

GMO Free

No Ethoxylation

No Irradiation

No Sulphonation

Additives:

Preservatives: None

Antioxidants: None

Other additives: None

Solvents Used: Water

Appearance: Colorless to Light Amber Liquid

Soluble/ Miscible: Water Soluble

100% Biodegradability

Microbial Count: <100 CFU/g,

No Pathogens

Suggested Use Levels: 2.0 - 5.0%

Suggested Applications:

Antimicrobial, Exfoliating, Problem Skin

Benefits of ABS Willow Bark Extract

- Versatile in Formulations
- Intense Moisturizing Benefits
- Strong Exfoliator
- Works with Problem Skin
- Natural Antimicrobial

ABS Willow Bark Extract

salicin, a glucoside of salicylic acid. While tannin only plays a small role in the active component of *Salix nigra* in which it is responsible for protein, amino acid, and alkaloid binding, it is important as a regulatory compound.¹ Salicin, a derivative of Salicylic acid, was first isolated in 1828 by German and French chemists working with White Willow (common European counterpart of Black Willow).

Upon ingestion into the human body, salicin is hydrolyzed to release salicylic acid in the stomach. Toward the end of the nineteenth century, salicylic acid was then converted into the synthetic compound, acetylsalicylic acid, the active ingredient in Aspirin. ABS Willow Bark Extract is derived from the bark of the black willow tree. ABS Willow Bark Extract contains 10% salicylates. In its standardized form, ABS Willow Bark Extract provides consistent levels of salicylates, commonly referred to as natural salicylic acid, allowing its use as an active ingredient.¹ ABS Willow Bark Extract is completely water soluble and can be used in any cosmetic formulation to enhance cell turnover, act as a natural anti-microbial agent, or as a replacement for synthetic salicylic acid.

BENEFITS

The Black Willow, the North American counterpart to the originally examined European White Willow, maintains the ability to function against the same, if not a wider variety of ailments. Due to its versatility, *Salix nigra* has become a prime candidate for cosmetic and person care applications. Willow bark extract has solidified itself as one of the principal herbal remedies to treat pain and act as an anti-inflammatory analgesic agent. Within the Cosmetics Industry, willow bark extracts are employed as a natural source of salicylic acid. As reported at the Society of Investigative Dermatology, Willow Bark Extract provides the benefits of salicylic acid such as exfoliation, and anti-microbial action, without any of the typically associated irritation from the active alone.³

EFFICACY DATA

As shown in figure 1, ABS Willow Bark Extract exhibited antioxidant activity comparable to 200µM Trolox®. The antioxidant capacity of ABS Willow Bark Extract increased as the concentration increased, as a result we can assure that its ability to minimize oxidative stress is dose dependent. ABS Willow Bark Extract began exhibiting antioxidant activity at a 0.0005% concentration and was designed for problem skin with exfoliation and antimicrobial properties. With the present study we can confirm that this unique ingredient is not only capable of providing functional benefits but it is also capable of providing potent antioxidant benefits when added to cosmetic applications.

ORAC Assay

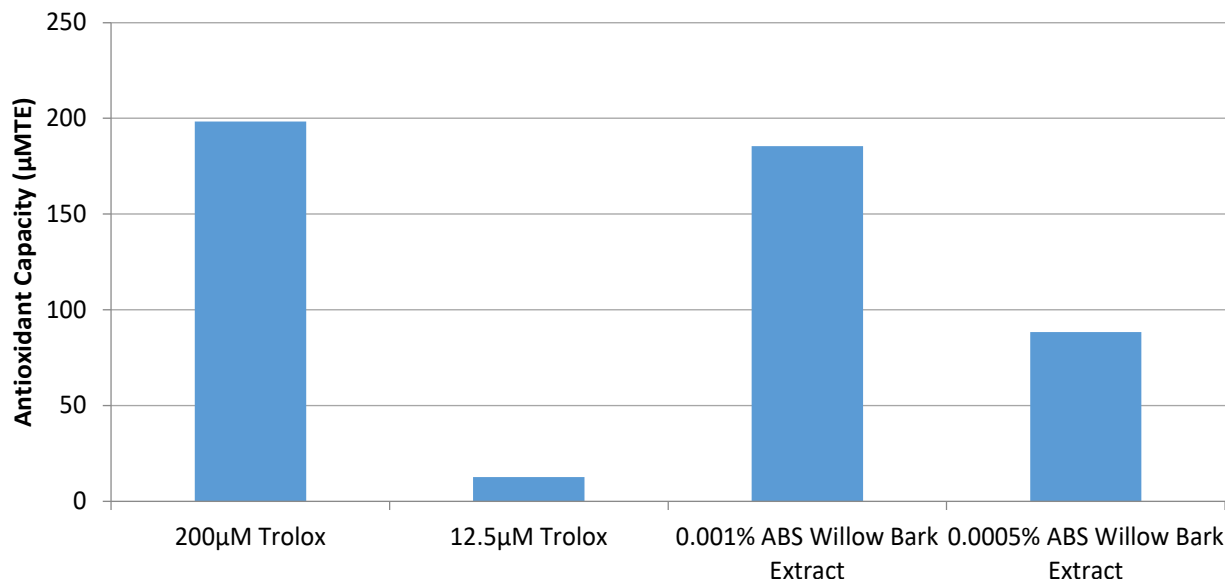


Figure 1. Antioxidant capacities

ABS Willow Bark Extract

COX-II Percent Inhibition

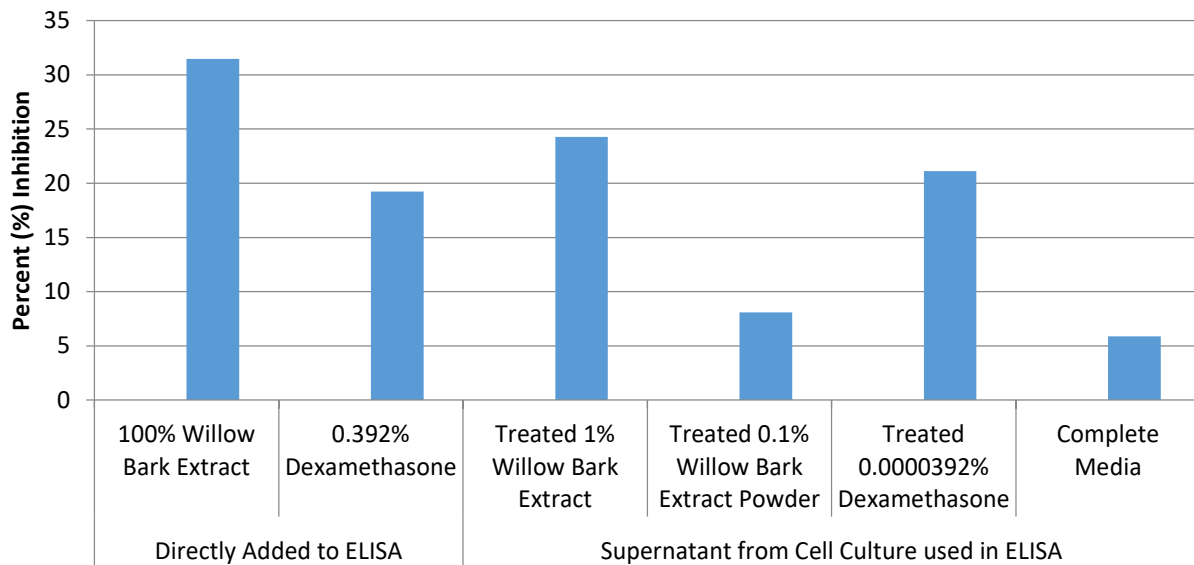


Figure 2. COX-II Percent Inhibition

COX-II, a precursor and indicator of inflammation was measured, As shown in figure 2, ABS Willow Bark Extract was able to inhibit COX-II production. This decrease in COX-II production indicates a reduced inflammatory environment which can decrease the signs of aging and photodamage. For these reasons, we can assume ABS Willow Bark Extract is suitable for cosmetic applications designed to provide anti-aging and anti-inflammatory properties. The data obtained from this study met criteria for a valid assay and the positive and negative controls performed as anticipated

IL-6 ELISA

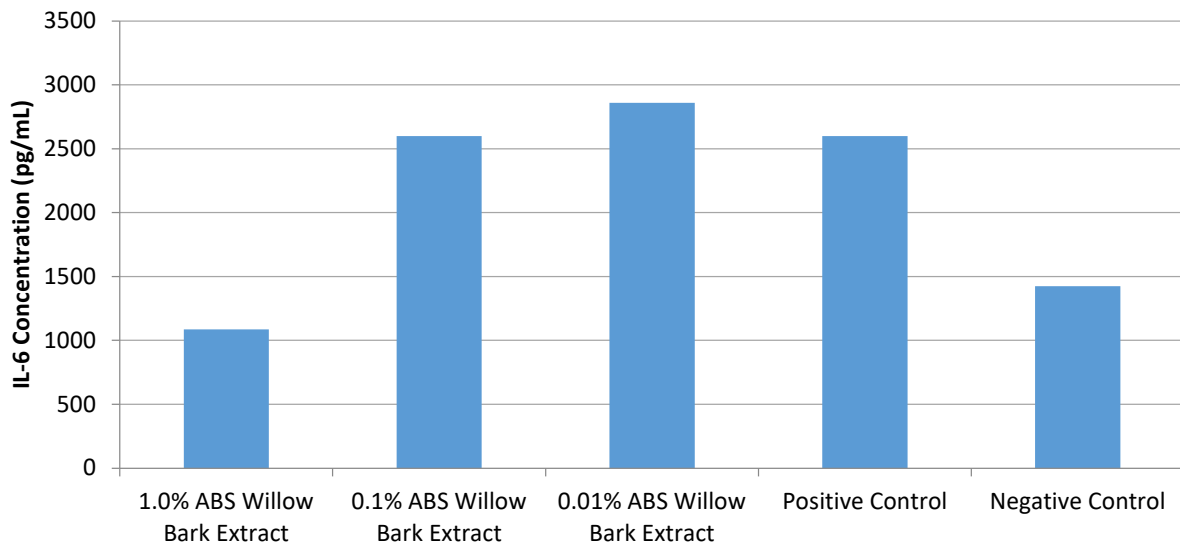


Figure 3. ABS Willow Bark Extract-treated fibroblasts IL-6 concentrations

As shown in Figure 3, ABS Willow Bark Extract exhibited anti-inflammatory effects on LPS-treated fibroblasts. As expected, the changes in IL-6 production using ABS Willow Bark Extract appears to be dose dependent. This decreases in IL-6 production indicates a reduced inflammatory environment which could decrease signs of aging and formation of fine lines as well as wrinkles.

ABS Willow Bark Extract

ABS Willow Bark Extract was combined with water and EDTA to obtain a 3% final concentration. The following titers of microorganisms were added separately to these solutions, and quality control testing was done on the following days. Each 28-day test was repeated 3 times consecutively on the same test solution (total of 84 days).

Antimicrobial Insult Test 1

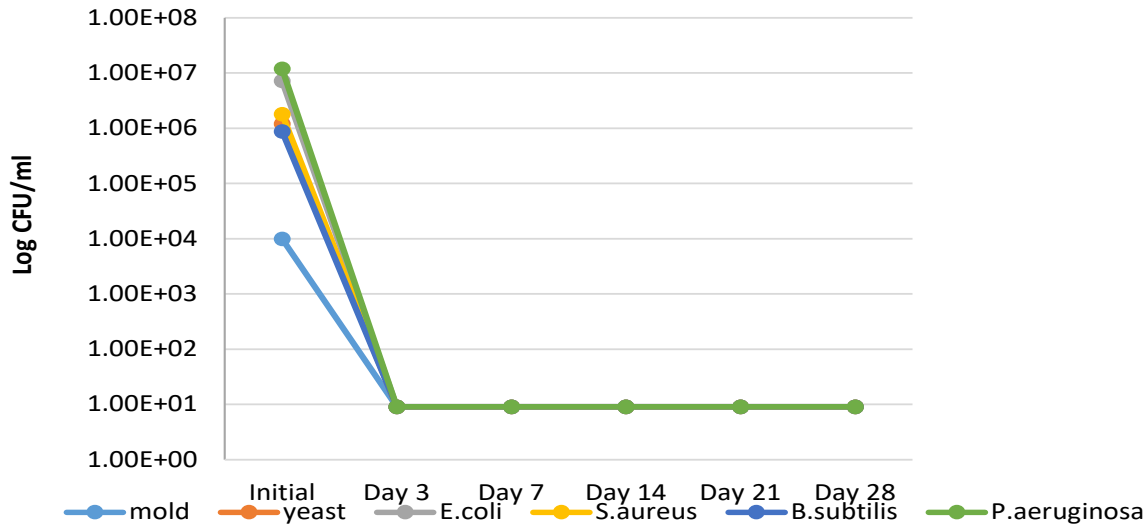


Figure 4. 3% ABS Willow Bark Extract solution was inoculated with selected microorganisms. on day 0

Antimicrobial Insult Test 2

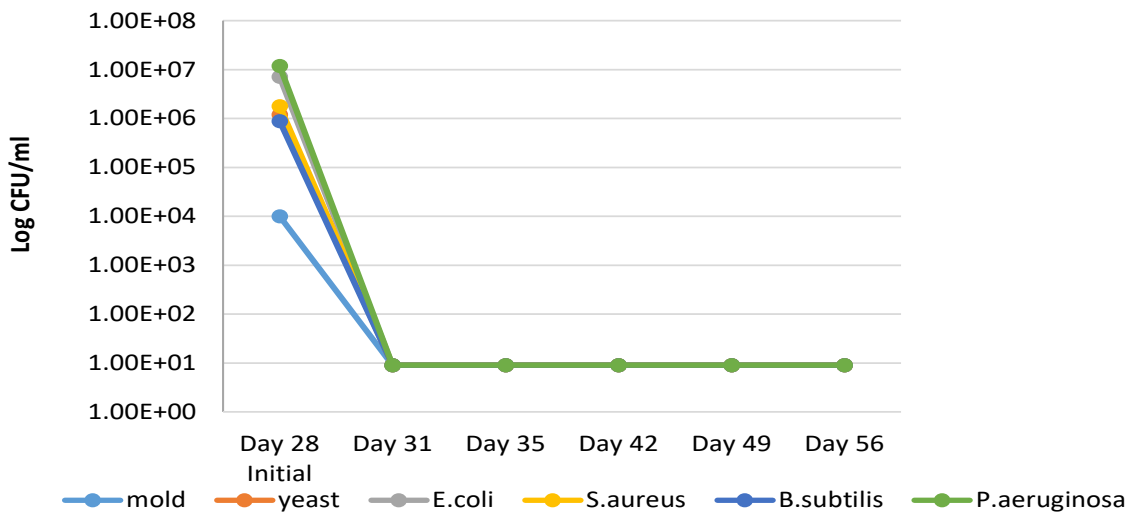


Figure 5. 3% ABS Willow Bark Extract solution was re-inoculated with the selected microorganisms on day 28.

ABS Willow Bark Extract

Antimicrobial Insult Test 3

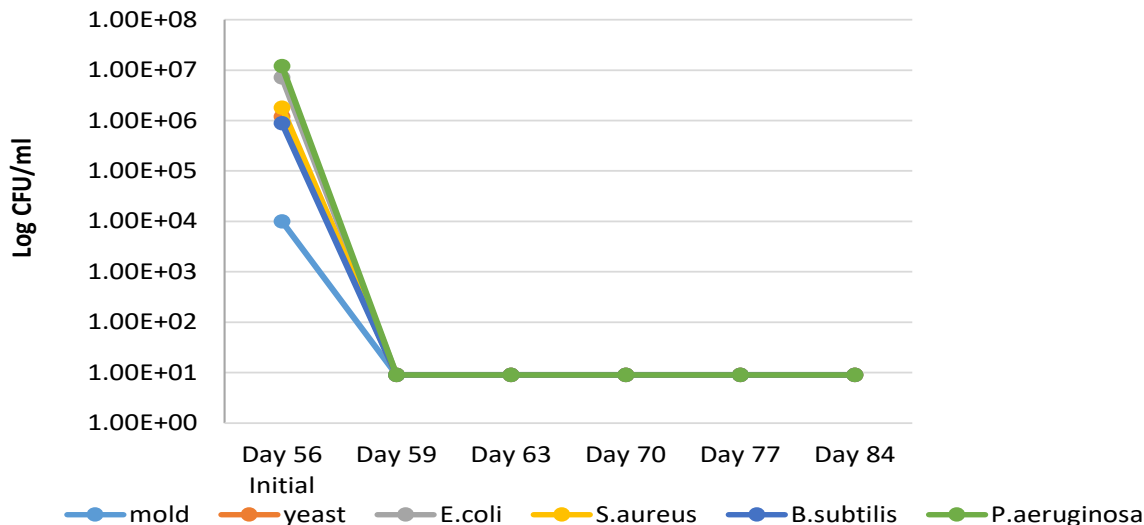


Figure 6. 3% ABS Willow Bark Extract solution was re-inoculated with the selected microorganisms. on day 56

ABS Willow Bark Extract was evaluated for its ability to accelerate cell renewal by means of a traditional Dansyl Chloride protocol. Two products were tested, with the remaining untreated site serving as the biological control. The products were applied in a randomized fashion. Approximately 50 microL of product was applied to the appropriate test site once per day. The sites were then examined daily under ultraviolet light (SL-3660 Long Wave Ultra Violet, Black Light Eastern Corp., Westbury, Long Island, NY) for fluorescence. The test was continued until no fluorescence was detectable at any site. The values listed reflect the average time for each product. The results indicate that ABS Willow Bark Extract is capable of increasing cellular renewal by 27% when compared to the untreated control.

Cellular Renewal

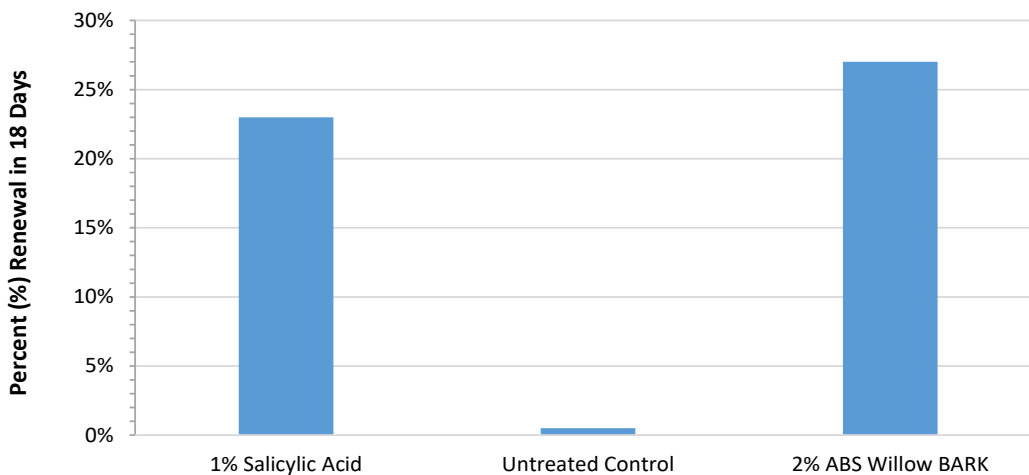


Figure 7. Cellular Renewal over 18 days

ABS Willow Bark Extract

As evidenced in a 4 week efficacy study of ABS Willow Bark Extract on skin, skin density was improved by 33.59% after 24 hours and by 44.42% after 4 weeks when compared to the untreated control. When compared to the base cream ABS Willow Bark Extract improved skin density by 36.72% after 24 hours and after 4 weeks ABS Willow Bark Extract improved density by 32.41%. Results indicate that ABS Willow Bark Extract is capable of improving skin density when compared to both the untreated control as well as the base lotion. ABS Willow Bark Extract has a strong positive effect on skin's density when used at recommended use levels. .

Comparative Difference in Skin Density

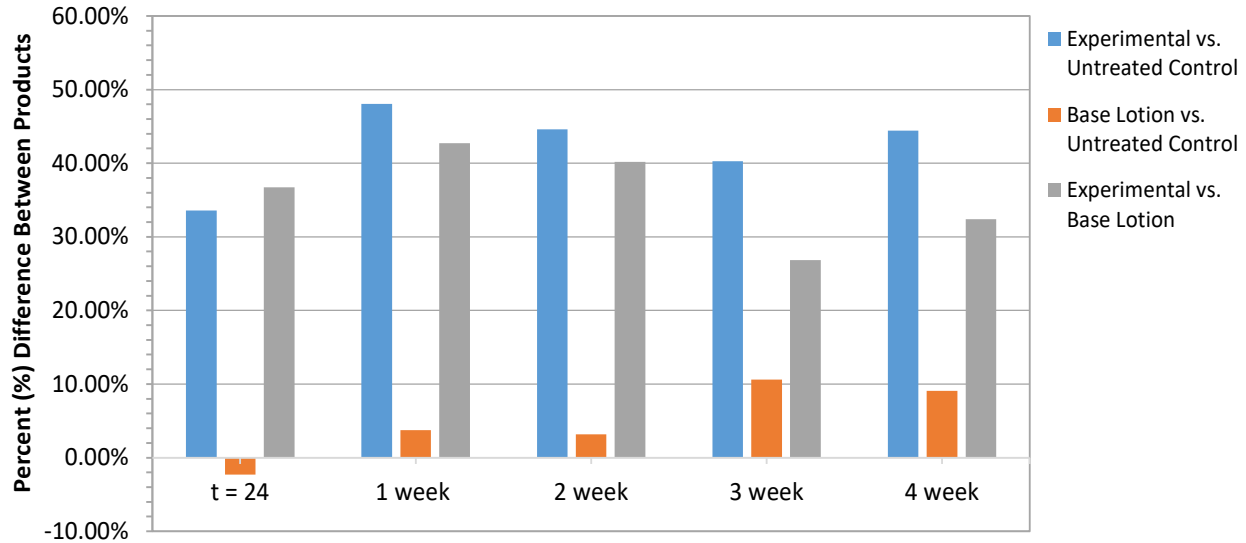


Figure 8. High Resolution Ultrasound Skin Imaging Results

References

- 1) Chrubasik et al. 2000. The American Journal Of Medicine. Treatment of low back pain exacerbations with willow bark extract: a randomized double-blind study. 109(1): 9-14
- 2) Schmid et al 2001. Pharmacokinetics and Disposition. Pharmacokinetics of salicin after oral administration of a standardized willow bark extract. 57: 387-391
- 3) Blumenthal et al. 2000. Published Works. Herbal Medicine: Expanded Commission E. Monographs. 1st ed. US: 519+