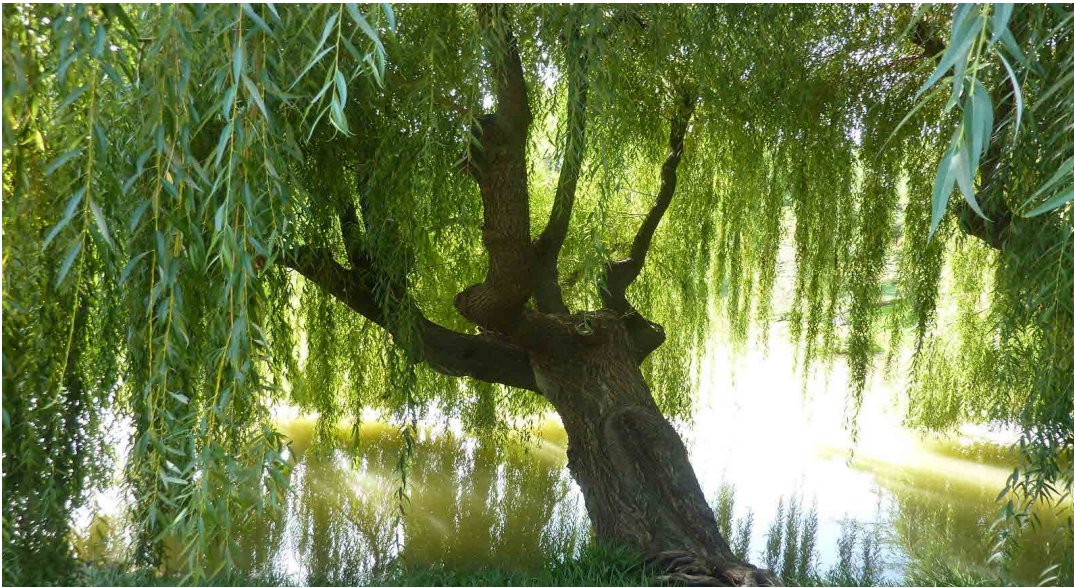


ABS White Willow Bark Extract Powder



standardized for salicylates
natural alternative to salicylic acid
 problem skin solution
 reduces redness + alleviates irritation + antimicrobial
 antioxidant protection
 and exfoliating properties
efficacious in a variety of applications

BACKGROUND

The White Willow (*Salix alba*) tree is a large tree that is native to North America, Asia and Central and Southern Europe. It is typically found near streams and rivers, where it can root near a constant water source. The tree is tall and slender and flowers each spring first with tiny yellow flowers, which are followed by long thin green leaves. There over 300 species of willow trees growing globally, yet only a few can be used medicinally. The White Willow belongs to the Salicaceae family. Other species that possess medicinal properties are the purple willow (*S.Purpurea*), violet willow (*S.daphnoides*), and crack willow (*S. fragilis*).

SCIENCE

White Willow is an ancient remedy that has been used to treat pain by Chinese physicians since 500 B.C. It has also been used in ancient Egyptian and Greek medicine. Hippocrates recommended chewing on the leaf to alleviate pain. Evidence of the use of White Willow as a medicinal herb also exists in Europe and the Americas. In the mid-1700's White Willow was used in England as a malaria remedy. In the Americas, the Cherokee, Blackfoot, and Iroquois Indians created a tea from the bark of the White Willow to relieve headaches, fever, and general aches and pains. Then in 1828, German and French chemists were able to isolate the principal active component, salicin, a glucoside of Salicylic acid, from the bark of the White 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 converted into the synthetic compound, acetylsalicylic acid, the active ingredient used to make aspirin.

Code Number: 10229

INCI Name: Salix Alba (Willow) Bark Extract
INCI Status: Approved
REACH Status: Complies
CAS Number: 84082-82-6
EINCS Number: 282-029-0

Origin: Botanical

Processing:

- GMO Free
- No Ethoxylation
- No Irradiation
- No Sulphonation

Additives:

- Preservatives: None
- Antioxidants: None
- Other additives: None

Solvents Used: N/A

Appearance: Free Flowing Powder

Soluble/ Miscible: Water/ Anhydrous

Ecological Information:

100% Biodegradability

Microbial Count: <100 opg,
No Pathogens

Suggested Use Levels: 1.0 - 10.0%

Suggested Applications: Exfoliation, Problem Skin, Antimicrobial, Increases Cellular Renewal, Antioxidant

Benefits of ABS White Willow Bark Extract Powder:

- Natural Salicylic Acid Alternative
- Standardized for 53.0 - 65.0% Salicylates
- Antimicrobial Action
- Promotes an Increased Cellular Renewal
- Excellent Antioxidant Protection
- Ideal for Problem Skin Applications

ABS White Willow Bark Extract Powder

Today, willow bark extract is still used as an herbal remedy, which acts as an anti-inflammatory and analgesic agent. In the cosmetic and personal care industries, willow bark extracts are employed as a natural source of salicylic acid. As reported by the Society of Investigative Dermatology (Washington 1996: Bennet, Scholz, et al.) willow bark extract provides the benefits of salicylic acid such as exfoliation, and anti-microbial action, without any of the typically associated irritation. The natural salicylates found in white willow bark provide UV protection and help decrease irritation. Additionally, white willow is useful in increasing the rate of cellular renewal, ensuring that dull, dead skin cells are exfoliated thus decreasing the likelihood of dry and/ or problem skin.

In its standardized form White Willow Bark Extract provides consistent levels of salicylic acid allowing its use as an active ingredient. Unfortunately, in commercially available extracts the salicylic acid levels rarely exceed 10%, making it difficult to formulate products with sufficient quantities in emulsion systems, and impossible to formulate in anhydrous systems.

BENEFITS

ABS White Willow Bark Extract Powder is standardized for 53-65% natural salicylates and provides formulators with the perfect alternative to synthetic salicylic acid products. This product is ideal for reducing inflammation and associated redness, plus, it acts as an efficacious antimicrobial. This water-soluble powder promotes seamless incorporation into a variety of formulas promoting all of the benefits associated with salicylic acid without the typical irritation!

ABS White Willow Bark Extract Powder boosts the power of a formula with standardized activity to create a clear, smooth, and youthful looking aesthetic.

EFFICACY

ABS White Willow Bark Extract Powder was evaluated for its ability to accelerate cell renewal by means of a traditional Dansyl Chloride protocol. A 5% Dansyl Chloride was prepared by dispersing Dansyl Chloride 95% (Sigma) in petrolatum. Approximately 0.2 g of the ointment was applied to three 2cm x 2cm locations on the volar forearm of 12 (M/F) subjects between the ages of 19 and 43. The material was allowed to remain in place for 24 hours at which time any excess ointment was removed. Two products were tested, with the remaining untreated site serving as the biological control. The products were applied in a randomized fashion to the designated area once a 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 White Willow Bark Extract Powder is capable of increasing cellular renewal by 27% when compared to the untreated biological control.

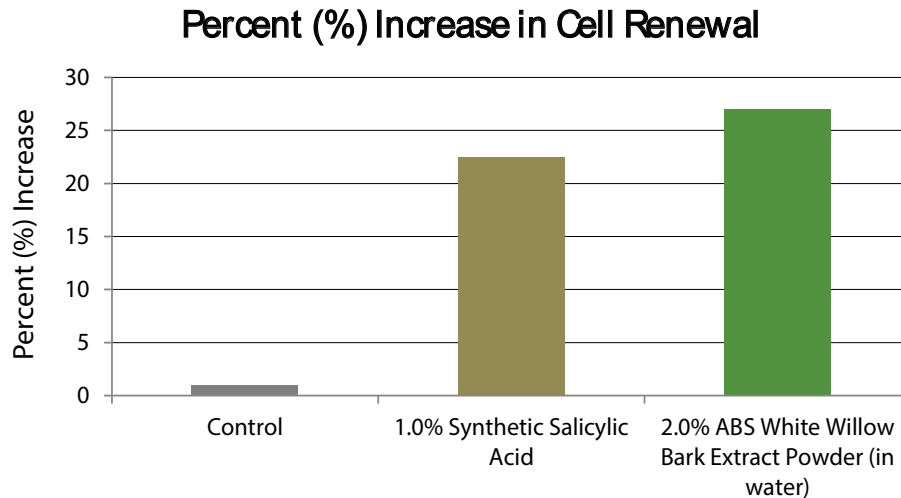


Figure 1. ABS White Willow Bark Extract Powder Increases cellular renewal rate faster than the untreated control and synthetic material in comparison tests

ABS White Willow Bark Extract Powder

Reactive oxygen species (ROS) are generated by normal cellular processes, environmental stresses, and UV irradiation. ROS are detrimental to cellular structures and functional molecules (i.e DNA, proteins, lipids) as they act as strong oxidizing agents or free radicals. The oxygen radical absorbance capacity (ORAC) assay is a standard method used to assess antioxidant capacity of physiological fluids, foods, beverages, and natural products. The assay quantitatively measures a sample's ability to quench free radicals that have the potential to react with and damage cellular components.

Oxygen Radical Absorbance Capacity (ORAC) assay was conducted to assess the antioxidant capacity of ABS White Willow Bark Extract Powder. The antioxidant protection of the sample can be calculated by comparing it to a set of known standards. Trolox®, a water soluble vitamin E analog, with known antioxidant capabilities is used in this ORAC assay as the standard for measuring the antioxidant capacity of unknown substances. Trolox® equivalency is used as the benchmark for antioxidant capacity of mixtures since it is difficult to measure individual components. ABS White Willow Bark Extract Powder exhibited antioxidant activity comparable to 200µM Trolox®. The antioxidant capacity of ABS White Willow Bark Extract Powder increased as the concentration increased, as a result we can assure that its ability to minimize oxidative stress is dose dependent.

ORAC Assay

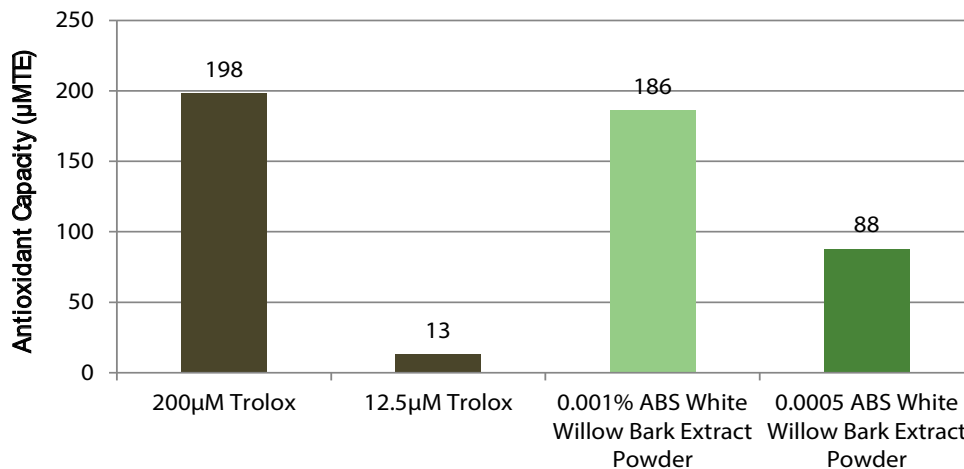


Figure 2. Antioxidant capacity of ABS White Willow Bark Extract Powder in comparison to Trolox®

An *in-vivo* study was conducted over a period of four weeks to evaluate the effect on skin density of ABS White Willow Bark Extract Powder. 10 M/F subjects between the ages of 23-45 participated in the study. Results indicate that this material is capable of significantly improving skin density compared to the control.

Comparative Difference in Skin Density

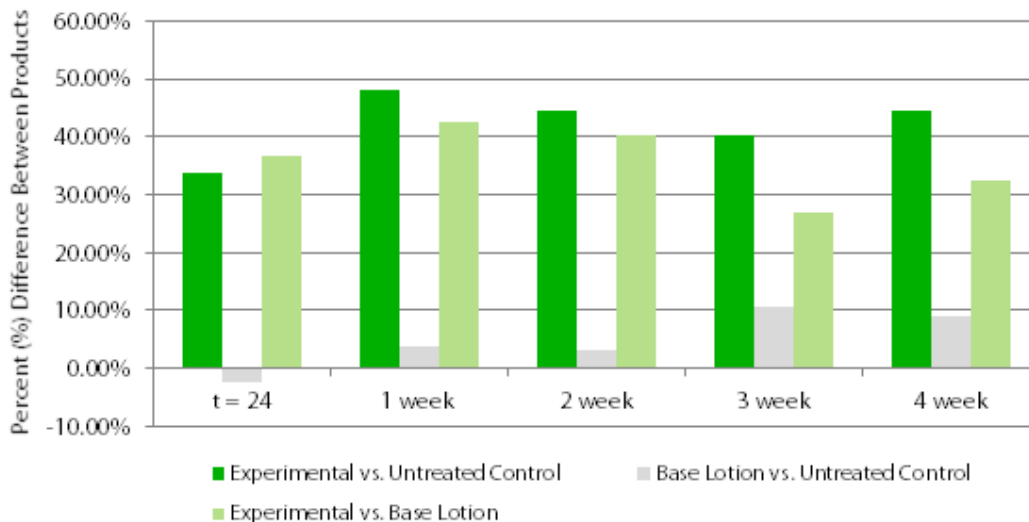


Figure 3. High Resolution Skin Imaging Results Measuring Skin Density

ABS White Willow Bark Extract Powder

A Double Challenge Test was completed using 2.0% ABS White Willow Bark Extract Powder in a generic cream base formulation. Samples were inoculated with *E. coli*, *P. aeruginosa*, *S. aureus*, *A. brasiliensis* and *C. albicans*. During the first 28-day incubation period, samples were periodically collected and tested for the presence of these microorganisms. Following this initial 28 days of incubation, the cream samples were then re-inoculated with the microbial cultures and sampled over an additional 28-day period. The graphs below show the positive antimicrobial results for ABS White Willow Bark Extract Powder .

2.0% ABS White Willow Bark Extract Powder

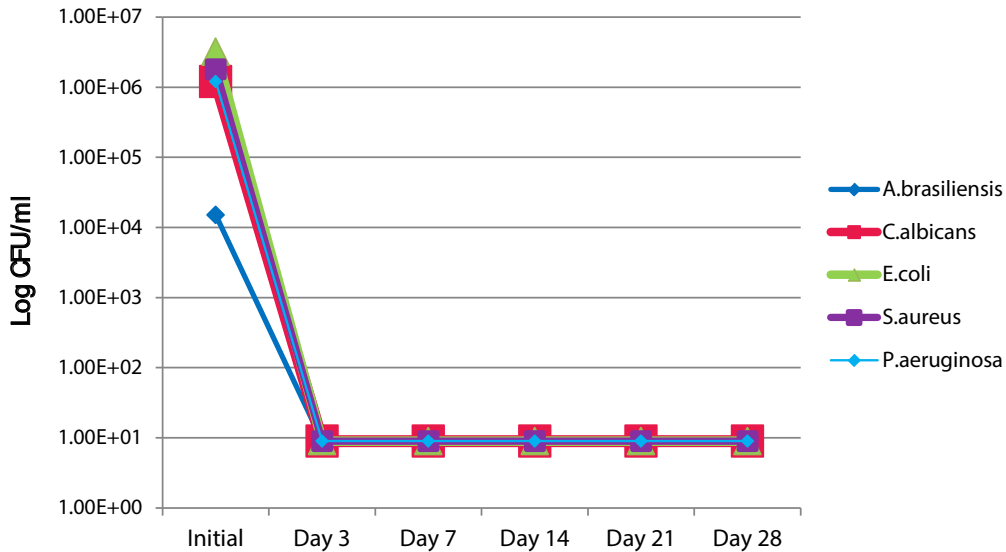


Figure 4. 2.0% ABS White Willow Bark Extract Powder inoculum with microorganisms

2.0% ABS White Willow Bark Extract Powder

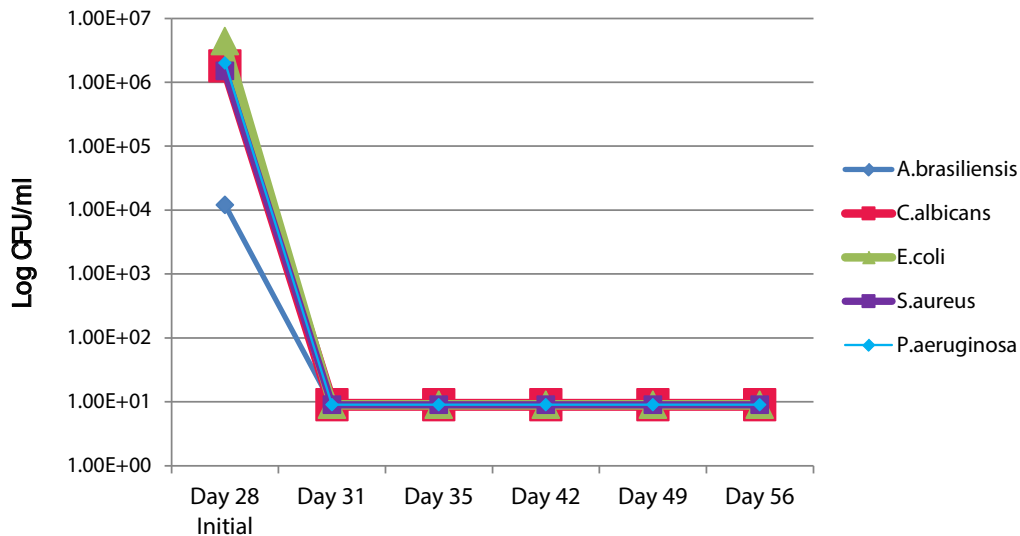


Figure 5. 2.0% ABS White Willow Bark Extract Powder re-inoculum with microorganisms

Active Concepts LLC • Lincolnton, USA • www.activeconceptsllc.com • Tel +1 704-276-7100 • info@activeconceptsllc.com



Active Concepts, America Latina
 Monterrey, N.L. Mexico
www.activeconcepts.com
 Office: +52 (81) 1971 9846
info@activeconcepts.com

Active Concepts S.r.l.
 Milano ITALY
www.activeconcepts.it
 Tel +39 02 90360719
info@activeconcepts.it

Active Concepts LLC, Asia
 Kaohsiung, Taiwan
www.activeconceptsllc.com
 Tel + 886 73599900
josephyeh@activeconceptsllc.com