

EXTRACT OF SALIX ALBA AN EFFICACIOUS SAFE REMEDY FOR PROBLEM SKIN



**Novel functional ingredients for
multi-purpose formulations**



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CAMPO® Multi-Purpose Cosmetic Base Chemicals & Active Ingredients

CAMPO® Novel Functional Active Cosmetic Ingredient & Raw Materials

An Extract of *Salix alba* An Efficacious Safe Remedy for Problem Skin

Introduction

Current research has been shown that in their daily fight for survival, plants employ a host of defense mechanisms. An important facet of their immune response involves endogenous signal molecules, many of which have been identified. Salicylic acid has been identified as one of these molecules. It functions directly in the plant defense response to pathogens.

Salix alba, or white Willow, is tree found throughout North America, Asia and Europe. The bark of the tree is the main source of; as well as the flowers and leaves are also sources of Salicylic acid -like ingredients. When added to cosmetic formulation, the extract can increase cell renewal and boost the anti-microbial capabilities of the formulation. Even though the extract is a source of Salicylic acid -like ingredients and is able to contribute effects similar to those seen from Salicylic acid, it has none of the drawbacks associated with synthetic salicylic acid -mainly irritation. The extract is a safe way to get the benefits of a β -hydroxy acid (BHA) without the risk of irritation.

Next generation of skin care for aging skin?

At the **recent American Academy of Dermatology meeting held in San Francisco** (March 1997), (DCI, April 1997) prominent dermatologists confirmed their belief that the beta hydroxy, salicylic acid is the next generation of products for improving the appearance of aging skin. After reviewing comprehensive data, the dermatologists agreed the beta hydroxy, salicylic acid is a superior exfoliant that improves the appearance of aging, sun-damaged skin without all the irritation associated with the popular alpha hydroxy, glycolic acid.

Dr. Albert Kligman, professor emeritus of dermatology at the University of Pennsylvania School of Medicine, concluded: "Salicylic acid is effective in reducing the appearance of fine lines and wrinkles, and improving overall facial texture because it exfoliates both the skin surface and within pores, without all the irritation commonly associated with the alpha hydroxy, glycolic acid." It has been found that beta hydroxy, salicylic acid is effective with as little as one-fifth the concentration typically found in products containing glycolic acid, the most commonly used alpha hydroxy acid. In a single study comparing a 1.5 percent salicylic acid product and an 8+ percent glycolic acid product, the salicylic acid product was shown to be a more effective exfoliant.

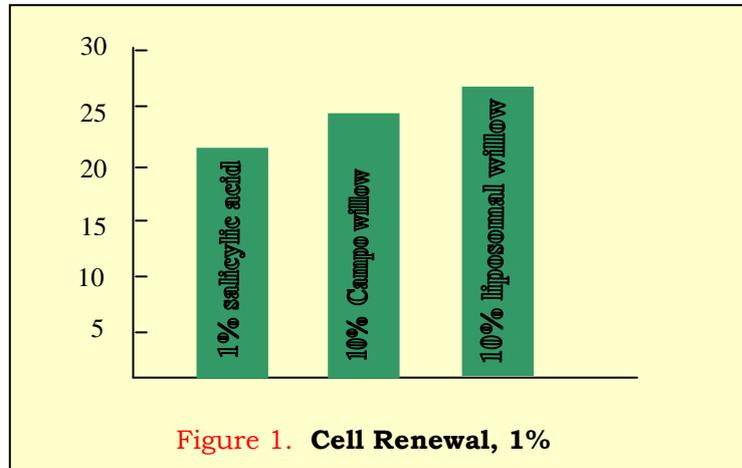
Its superior exfoliation action is thought to be attributed to its lipid- or oil-solubility.

It concentrates its exfoliation action in the lipid-rich outer layers of the skin, where the skin's natural rate of exfoliation reduces with aging, causing a buildup of dry, dull skin flakes.

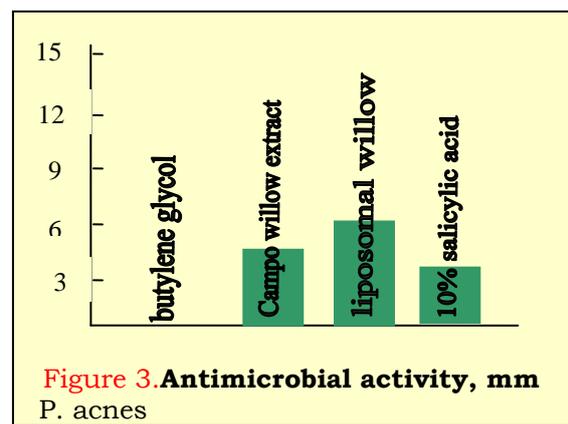
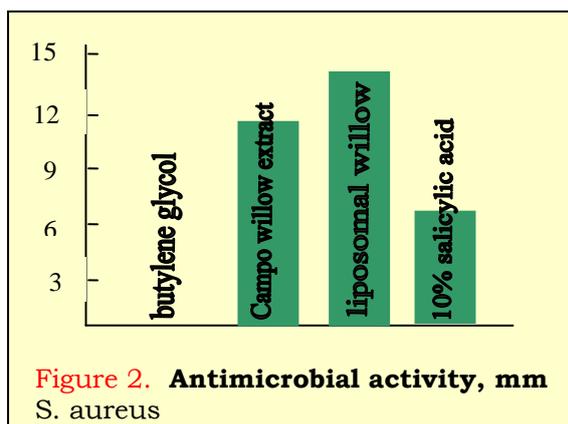
According to Dr. Kligman, betas also exfoliate within the pores, a benefit not seen with the glycolic acid product tested. Glycolic acid is water-soluble, which may lead to its localizing more deeply in the skin, possibly accounting for its observed higher level of irritation. "Salicylic acid was preferred by the study participants," commented Kligman. "If women think a product is too strong or too irritating for their skin, they typically won't use it as often as they should or they won't use enough of it, clearly impacting the product's effectiveness."

Materials and Methods

The cell renewal capabilities of Campo Willow Extract and the Campo Liposomal Willow Extract were tested versus the cell renewal capabilities of 1 % salicylic acid. The concentration of the Extracts were 10%, which corresponds to 1% concentration of salicylic acid. A dansyl chloride protocol was followed using twenty –four female panelists. Results are shown in Figure I.



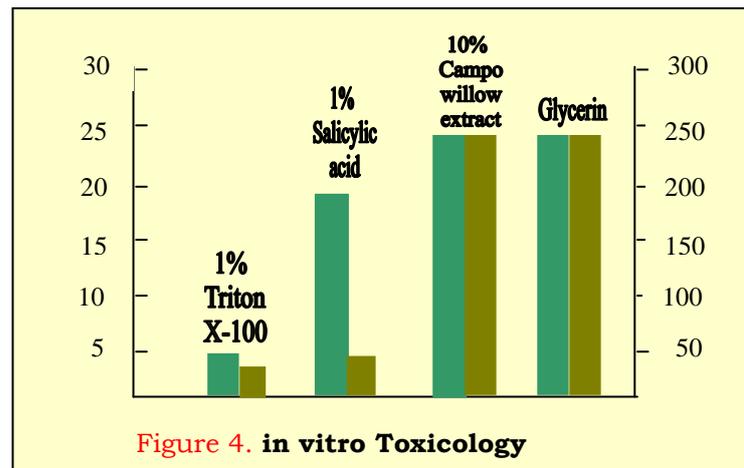
The antimicrobial activity of the Campo Willow Extract and the Campo Liposomal Willow Extract tested and compared to the salicylic acid. The Extracts were tested at 100% concentration and the salicylic acid was at 10 % concentration. Zone of Inhibition protocol was followed where the organisms was streaked onto agar allowed to grow to influence. A sterile blank paper disk was placed on the agar and the test material was dispensed onto the disk. The agar plates were incubated and after the appropriate time, the zone of clearance around the paper disks was measured in millimetres. Organisms tested were *Staphylococcus aureus* and *propionibacterium acnes*, two of the skin flora implicated in the formation of acne. Results versus *Staphylococcus aureus* are shown in Figure II. Results versus *Propionibacterium acnes* are shown in Figure III



The extracts were also safety tested using a variety of in vivo and vitro protocols . The CAMVA was used to determine irritancy. This in vitro assay determines the irritancy of a test compound based on its ability to induce hemorrhage on the chorioallantoic membrane of a chicken egg. Two other in vitro tests were run on Campo Willow Extract- EpiDerm and Epi-Ocular. EpiDerm is a three - dimensional system composed of human epithelial cells to which the test compound is applied. After incubation, the number of viable cells is measured using the MTT conversion assay.

An ET₅₀ is determined, which gives an idea of potential skin toxicity. EpiOcular is a three-dimensional system composed of stratified human keratinocytes to which the test material

is applied. After incubation, the number of viable cells is measured using the MTT conversion assay. An ET_{50} is determined, which gives idea of possible ocular irritation. Results are shown in Figure IV.



A fifty -person RIPT was run on Campo Liposomal Willow Extract to assess its ability to induce skin irritation and sensitization. The method is modified from the 200 person methodology cited in the reference Appraisal of the Safety of Chemicals in Food, Drugs, and Cosmetics. The material was tested at 100% concentration and underwent nine inductive patchings.

Results

Results from the cell renewal testing are found in Figure I. Campo Willow Liposomal Extract was found to increase stratum corneum turnover more so than salicylic acid - 24 % was opposed to 22 %. The liposomal form of Campo Willow Extract gave a 26.1% increase. Figure II gives results on the antimicrobial activity against *Staphylococcus aureus*. Campo Willow Extract and Campo Liposomal Willow Extract performed the best, giving zones of clearance of 11mm and 13mm respectively, as compared to a 6mm zone of clearance of salicylic acid. Against *Propionibacterium acnes* (shown in Figure III) , Campo Willow Extract gives a zone of 4mm, Campo Liposomal Willow Extract is 6mm and salicylic acid is 3mm.

The CAMVA gave an RC_{50} value of 28%. This value is indicative of a material that is not a primary irritant. The results for EpiDerm and EpiOcular are detailed in Figure IV. For Campo Willow Extract, the ET_{50} for the EpiDerm was >24 hours and for the EpiOcular it was >240 minutes. In comparison, salicylic acid yielded ET_{50} values of 19.3 hours for EpiDerm and 14.8 minutes for EpiOcular . Campo Willow Extract gave scores similar to the scores of glycerine, whereas salicylic acid scored more closely to Triton X-100, the positive control for the system.

Discussion

The efficacy results given above indicate a material that has cell renewal and antimicrobial activities that are better than salicylic acid. Campo Liposomal Willow Extract and Campo Willow Extract are more better able to increase turnover of the stratum corneum and also have more in vitro antimicrobial activity against *Staphylococcus aureus* and *Propionibacterium acnes*. Coupled with this increased efficacy, Campo Willow Extract and the Campo Lposomal Extract have less irritation potential than salicylic acid. The safety testings done on Campo Willow extract and Campo Liposomal Extract clearly shows this. The EpiDerm and The EpiOcular Assays made actual comparisons between Campo Willow Extract, Campo Liposomal Willow Extract and salicylic acid, and both of the Campo natural extracts proved to be much less irritating.

Conclusion

Campo Willow Extract and Campo Liposomal Willow Extract are safe, efficacious natural extracts for use in a variety of cosmetic formulations.

Many international brand name cosmetics containing BHA can be created by these 2 BHA rich Campo ingredients extracted from Willow Tree such as the Multi-Fruition for which the formulary guide is given below.; and other OIL OF OLAY Age Defying Series; Clinique Turnaround Cream, and Almay Time-Off Revitalizers.

BHA are FDA-approved to remedy Acne and in Acne Prevention Cosmetics up to 2% of BHA levels.