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PSOROLIN B – A NEW 'TAXON' IN THE TREATMENT OF PSORIASIS AND THE SCIENCE OF ELECTROCHEMICAL HOMEOSTASIS

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ABSTRACT

Psorolin B formulation is a herbal formulation and its electric conductance is achieved through the ingredients and herbal extracts, together compensate the electric conductance deficiency of the psoriatic skin and as a result drugs attach to the skin based on their ionic charge and that creates a better treatment micro environment for psoriatic skin which is the exclusive science of Psorolin B formulation and such science have been applied well both in the formulation framework as well as the selection of Siddha herbs. Details are presented in the paper.

KEYWORDS: Psoriasis treatment, Boswellia serrata, Boswellic acid, Salicylic acid, Vitamin D, Red ochre.

INTRODUCTION

The electric conductance of human skin is well established and the conductivity of skin differs at different anatomical sites and also is influenced by various environmental changes such as humidity, temperature, pollutants, wind velocity etc.[1,2,3] Besides all, the extent of skin damages and other pathological conditions also would influence the dermal electric conductivity. Due to the cascade effect of all the above factors, the electrolyte concentration over the skin may increase and or decrease and so shall the electric conductivity of the skin.[4,5,6]

A healthy, intact skin will be relatively a poor conductor of electricity especially when the electrolyte is less or is removed. Similarly, the hyper thickened skin region also would show poor electric conductance.

The skin that had endured damage due to various mechanical or pathological reasons is likely to show higher electric conductance due to the possible electrolyte build up.

In psoriatic skin, the hyperkeratotic accumulation of stratum corneum cells over epidermis is high especially during non-inflammatory stage and therefore the psoriatic skin will exhibit poor electric conductance and so shall the percutaneous drug absorption.[7]

The material (drugs) absorption through the skin is not aided just based on the size of the particle alone, but the solubility, thermal stability and ion exchange property of electric conductance etc., also known to influence drug absorption through the skin.[8]

Dermatological products meant for the treatment of psoriasis; the electric conductance property of the formulation needs to be balanced in order to compensate the dermal deficiency of electric conductance of the skin under psoriatic condition through selection pharmacological molecule (s) used in the formulation that are charge based.

It is therefore desired that the ionic matter in the formulation may automatically balance the electrochemical homeostasis of such product when they are intended to be used for the treatment of psoriasis where the skin conductance is poor.

Although the exfoliators may help to ‘even out’ the skin but most of the chemical exfoliators like lactic acid, salicylic acid etc., are bound to induce inflammatory reaction. Further the physical exfoliants may not help to address the above problem because the exfoliants may cause skin irritation.

The electric conductance balanced dermatological formulation for psoriasis may enhance greater dermal binding and sustained percutaneous permeation of the pharmacological constituents and also may help to avoid the exfoliation requirement and all the associated inadvertent inflammatory elicitations.

We in the present paper, report the electric conductance property of Psorolin B cream with select botanicals and its superior binding property over skin. Further the botanicals used in the cream are reported to have strong anti-psoriatic benefit since time immemorial. Details of the present study are reported in the paper.

MATERIALS AND METHODS

Different ingredients of the base cream and the active pharmaceutical agents were prepared in water as per the percentage used in the finished formulation. Then each preparation was measured for ionic strength using ionized solid based electric conductance.

Further the electric conductance of the direct current at three voltage level was tested and accordingly the electric conductance of the finished product was arrived theoretically as well as by direct measure.

Similarly for the direct measure of electric conductance multimeter was used.

Ionic strength vis-à-vis electric conductance

Total dissolved solids (TDS) for 8.8gm of various pharmaceutical agents conglomerate is 1320 with measured electric conductivity factor of 212.1. The electric conductance value of the above at 0.3gm is (212.1/8.8x0.3) is 7.23. The theoretically calculated electric conductance factor of the finished product is 8.57.

In the above Psorolin B formulation, the electric conductance property of all the pharmaceutical ingredients are well preserved and the conductance value was 7.23 with the addition of the base ingredients providing the final conductance factor of Psorolin B as 8.57 at theoretical level and 9.9 as measured level. Table-1

Test materials	**Conc. tested (%)**	**TDS**	**Conductivity factor arrived from formula Decimal unit of electrical conductivity, which by definition is equal to 10 microsiemens per centimeter (µS/cm). 1 CF = 10 µS/cm**	**Measured Electric conductance 2200**
Boswellia serrata	1.0	228	32.5	22.3
Wrightia tinctoria	3.3	873	124.7	07.2
Cynodon dactylon	3.3	418	59.7	10.9
Hydnocarpus igdhiana	0.5	200	28.5	11.5
Red ochre	0.2	016	2.28	21.4
Vitamin D	0.1	0	0	06.7
Vitamin E	0.1	003	0.42	04.5
Salicylic acid	0.3	353	50.4	112.6
Combination of the above	8.8	1320	188.57	212.1
Finished product	0.3	60	8.57	9.9

Electric conductance of various ingredients over skin at static and normal level

All the ingredients showed same level of electric conductance property over skin under both static and normal level. Table -2

Ingredients	Electric conductance value over skin at 2000mV	
	Static level	Normal
Boswellia serrata	037	036
Wrightia tinctoria	028	029
Cynodon dactylon	031	032
Hydnocarpus igdhiana	032	032
Red ochre	041	041
Salicylic acid	072	071
Combination of the above	080	081
Finished product	079	080

DISCUSSION

The skin is the outermost layer of the body and offers great protection from wide range of external factors such as chemicals, ionizing and non-ionizing rays and to some extent from physical assault.

The electric conductance of the skin is well known and further the static electricity is greatly activated when a friction is exerted over skin and such static current is known to facilitate the binding of various organic and inorganic molecules.

Although the electric conductance plays a role in the binding of bio or inorganic molecules over skin but the reference of electric conductance in the context of skin refers to both static electricity and electric conductance.

However the electric conductance property of skin can vary not only from region to region but also due to various dermatological problems such as damage, inflammatory response, hyper keratosis, infection etc. When the skin thickens irregularly due to keratinocyte turnover cycle abrogation as in the case of psoriasis, the static electricity property of the skin may remain constant but the electric conductance property of the skin can diminish greatly.

In the case of infection or inflammation, the static electric property of such skin region may be the least but the electric conductance can be high due to high level of electrolyte accumulation in the form of serum, blood, water etc. The dermatological products used for the treatment of psoriasis where the skin is thick (non-inflammatory stage), the topography is highly uneven and the static electricity scope is high but the electric conductance property is

poor; the product must have high electric conductance property and the pharmaceutical active molecule (s) also must carry charge in order to bind over the skin.

The product for the treatment of psoriasis must have enough electric conductance property and only then the product can bind and can therapeutically active.

In the present investigation we have evaluated the electric conductance factor of different ingredients of an advanced anti-psoriatic Siddha formulation individually and collectively and also the same was calculated and arrived theoretically.

The findings clearly show that Psorolin B has the electric conductance factor of about 8 both by calculation and theoretically arrived methods.

Most of the botanicals (Siddha drug ingredients) are found to carry electric conductance property and which is higher than the base armamentarium and therefore their competitive binding over the psoriatic skin is based on the charge. Such charge is necessary for the biomolecule(s) because the psoriatic skin due to hyper thickening show poor electric conductance.

The red ochre, salicylic acid and the combination of herbs due to their charge, binds over the skin competitively and thereby ensures their sustained therapeutic value. The binding property of different ingredients over skin vis-à-vis their charge showed a direct correlation irrespective of static electricity due to friction or the electric conductance.

Considering the anti-psoriatic benefit of various herbs as documented in the literature of ancient siddha system of healing practices, the charge based binding of the herbs is expected to deliver better therapeutic effect. We have taken utmost care to engineer the base armamentarium of Psorolin B in order to preserve and fortify the electric conductance of various botanicals.

Our findings clearly proves that Psorolin B will not only be effective for the treatment of psoriasis but our electric conductance based approach also may turns out to be a path breaking treatment strategy for the incurable psoriasis in near future.

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