



Angiogenesis Inhibition and its Importance for Psoriasis

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ABSTRACT

In the present paper we have investigated the anti-angiogenesis benefit of *Aloe vera* and *Wrightia tinctoria* and the findings clearly suggest that these herbs are beneficial for the management of psoriasis. We are the first to establish the benefit of above herbs in a bathing bar formulation for psoriasis. The abundant clinical experience about the efficacy of Psorolin medicated bathing bar for psoriasis that already exist gains due merit from the present investigation. Findings of the study clearly suggest that Psorolin medicated bathing bar which is formulated with *Aloe vera* and *Wrightia tinctoria* will be quite useful for the management of psoriasis during inflammatory stage also. Details of CAM assay are presented in the paper.

Keywords: Cleanser for Psoriasis, Bathing bar, Soap, Angiogenesis.

INTRODUCTION

Patients with Psoriasis require special cleansers that should not have any irritant property, its pH should be balanced, super fatted and must be formulated with mild surfactant¹⁻³. Dr. JRK's Research and Pharmaceuticals has formulated an advanced bathing bar with the extracts of *Aloe vera* and *Wrightia tinctoria* to achieve the strong anti-inflammatory benefit for psoriasis. Psorolin Medicated Bathing Bar (PMBB) is formulated for psoriasis patients with the benefits of gentle exfoliation, moisturization and oil retention.

In our earlier study we have clearly established the anti-inflammatory benefit of *Aloe vera* and *Wrightia tinctoria* through protein denaturation assay⁴. Since the assay was *In vitro* in nature we pursued further to evaluate the anti-inflammatory effect of the above herbs in a near psoriasis like condition. We have used CAM assay model to evaluate the anti-inflammatory effect.

Chick chorio allantoic membrane (CAM) is an extra embryonic membrane which is rich in blood vessels and is widely used for the assay of angiogenic and anti - angiogenic effects of various substances⁵. The growing embryo of chick responds very well to treatment and if the treatment product is effective, it would increase the blood vessel formation. Any substance that has inflammatory property bound to increase angiogenesis. On the contrary the product that has anti-inflammatory effect may not induce angiogenesis. However, interpretation must be done in a collaborative manner to designate the inflammatory or anti-inflammatory nature of the product. In the present study we have evaluated the anti-angiogenesis effect of *Aloe vera* and *Wrightia tinctoria* by CAM assay. Findings of the study are presented in the paper.

MATERIALS AND METHODS

Chick chorio allantoic membrane is an extra embryonic membrane which is rich in blood vessels and is widely used in assessment of angiogenic and anti -angiogenic products. In the present study we have used 9 days old fertilized eggs. The eggs were surface sterilized and then incubated at 37°C for one day⁴. Then the eggs were observed under egg candling box to visualize the presence of blood vessels. A small hole was drilled in the air space to drain out the air. Further a small square shaped window was drilled out on the egg shell without damaging the membrane beneath. 10 eggs were used for each experiment.

Different concentrations of the herbal extracts of *Aloe vera* and *Wrightia tinctoria* were used for the study. The concentration used for the study was 5, 10 and 15 microgram per ml. The sample was loaded in sterilized methyl cellulose disc which was then carefully placed in the window made in the egg. The eggs were then incubated for further 3 more days at 37°C. After incubation the egg was opened and the extent of angiogenesis was observed. Saline was used as negative control and SLS was used as positive control.

RESULTS

Up to a concentration of 15 microgram per milliliter, the extracts of *Aloe vera* and *Wrightia tinctoria* did not induce angiogenesis. The combination of the above extracts at 1:1 ratio at a concentration of 30 microgram per milliliter did not induce angiogenesis. SLS at 3 micro grams per ml induced severe angiogenesis (Fig- 1).



CAM assay- Fig- 1

30 microgram per ml of extract combination



3 microgram per ml SLS treatment

DISCUSSION

Angiogenesis is a process where formation of several new blood vessels would take place from the existing blood vessels⁵. The role of angiogenesis has been implicated in various physiological and pathological conditions. In most of the inflammatory disorders, angiogenesis is quite common. Further most of the inflammatory mediators do elicit angiogenesis. Therefore, any substance that may elicit angiogenesis is likely to worsen psoriasis. Similarly, if the process of angiogenesis is retarded that can act as potential drug to manage inflammatory stage of psoriasis.

In our earlier study we have established that extracts of *Aloe vera* and *Wrightia tinctoria* significantly hindered protein denaturation suggesting indirectly about the anti-inflammatory benefits of the above herbs.

PMBB is a proprietary Siddha drug formulated with the extracts of *Aloe vera* and *Wrightia tinctoria*. The vast clinical experience of AYUSH healers in India has clearly suggested the anti-inflammatory benefit of PMBB. In order to further understand the likely mechanism of action of

Aloe vera and *Wrightia tinctoria* in reducing the inflammatory reaction we have performed the present study.

CONCLUSION

The present study has revealed that the two herbs such as *Aloe vera* and *Wrightia tinctoria* possess strong anti-inflammatory activity as they did not induce angiogenesis in CAM assay. The blood vessels of growing fetus of chick are quite sensitive and would ramify instantaneously when induced with an inflammatory agent. The complete anti-inflammatory effect of *Aloe vera* and *Wrightia tinctoria* proves that these herbs are extremely useful for psoriasis. *Wrightia tinctoria* has been studied extensively for its anti-psoriatic effect. We have earlier established the effect *Wrightia tinctoria* in inhibiting keratinocyte proliferation. Therefore, it was assumed that hyper-keratinization seen in the psoriasis may be reduced by *Wrightia tinctoria*. However, the anti-inflammatory benefit established by our present study suggests that *Wrightia tinctoria* may possess multiple therapeutic benefits and that may be the reason why the herb is very effective for psoriasis.

PMBB is formulated with *Aloe vera* and *Wrightia tinctoria*. We have already established the extracts of the above plants are well preserved in the bathing bar base both functionally and chemically. The superior therapeutic effect seen with PMBB may be due to the Siddha drugs such as *Aloe vera* and *Wrightia tinctoria*. This is the first scientific study proving both the importance and efficacy of a cleanser for psoriasis and how it should be formulated. We believe PMBB may revolutionize the treatment of psoriasis if the medical practitioners patronize and admixed PMBB in the treatment regimen of psoriasis.

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