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Herbal Drugs In Dermatological Therapy

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SUMMARY

Revival of the concept of using herbal drugs in dermatologic therapy was first introduced at the Skin Institute to cure obstinate dermatoses. Ina ll, 105 herbal drugs were studied. The data presented is on 8 standard drugs as an example to justify the concept. The 8 drugs discussed are *Andropogon muricatus, Withania somnifera (Shwagandha), Swertia chirayita, Ammi majus Linn., Azadirachta indica, Hydnocarpus oil, Prunus amygdalus and Aloe vera.* Before discussing them, it is prudent to discuss the herbal concept that pertains to the drug via sense of heat (SOH), phagocytic coefficient, stress factor, metabolic influences and anti-bacterial action. Further, according to ancient physicians, natural whole herb is more effective and less toxic than its derivatives. Sense of heat is an accompaniment of diseases like urticaria, rosacea, endogenous dermatitis, eczema, etc. Besides qualitative and clinical assessment, quantitative methods like basal metabolic rate (BMR), IgE and Skin temperature were used. BMR showed a rise by 8.12% in males and 10.9% in females. Mean IgE level was raised in males (482 IT/ml), and in females (747,4 IT/ml). Body temperature of effected site measured by antitotronics was raised. These were nearly normalized along with salutary effects in dermatoses by *Andropogon muricatus* (Khas-Khas). Tension and stress play a significant role in etiology of some skin disease like vitiligo and alopecia areata. These have shown to benefit by administration of *Withania sominifera* (Ashwagandha). Also, 1000 mg of *Swertia chirayita* extract given daily to acne vulgaris patients for two months compared favourably with 100 mg of Doxycycline. Local application in both trials was similar. Even *Ammi majus* was found to be more effective than synthetic psoralens in management of vitiligo. Furthermore, it has less side effects than psoralen extracts.

Introduction

In the recent years, there has been a world-wide significant upsurge of interest in practice of oriental medicine, herbal drugs and Yoga.[1,2] Inspite of remarkable development in Western modern medicine, several newer kinds of ailments have been posing serious problems. This has warranted a new, more rational approach to medicine. Current modern approach is essentially hospital-based disease and drugs oriented, and thus has not yielded a satisfactory answer to the prevailing problems. Hence, it is felt that the practice of medicine should be built more as holistic system of medicine with emphasis on 'health' rather than 'disease', and on 'total care' rather than the 'drug therapy' for suppressing symptoms alone. This approach which is now being discovered as the future approach, in fact was already present in the oriental system of medicine, which is more relevant today than ever before.[3]

Furthermore, the toxic, irritant, sensitizing, biochemical, and immunological side effects in practicing Allopathic drugs is increasing and

causes serious morbidity.[4] This warrants the use of non-toxic natural herbal preparations for many disorders. With this background, the Author at the Skin Institute and School of Dermatology, New Delhi, India has revived a concept of using standardized herbal drugs in selected dermatoses.

Eight herbal drugs have been scientifically utilized to establish some concepts explaining the possible mechanism to Herbal Drugs that have salutary effect in many dermatological disorders. These included the following: 1. *Andropogon muricatus* (Khas), a cooling natural health stabilizer, 2. *Swertia Chirayita* (Chiraita), an effective natural blood purified, 3. *Ammi majus* (Grater ammi), a herbal stimulator and photosensitizing agent, 4. *Withania somnifera* (Ashwagandha), an anti stress revitalizer, 5. *Aloe vera* (Ghrita kumari) an immunomodulator, 6. *Prunus amygdalus* (Almond shell oil) an antiseptic, 7. *Azadirachta indica* (Neem oil) an antibacterial and immune response promoter, and 8. *Hydnocarpus kurzii* (Chaulmoogra oil) an anti leprosy drug.

1. *Andropogon Muricatus* (Khas-Khas)

Andropogon muricatus (Khas-Khas) is a herb belonging to family Gramineae. According to Nadkarini, it works where there is 'Daha' (buringing sensation). This plant is found in Coromandal Coast, Mysore, Bengal, Rajputana and Chota Nagpur. The part of plant used is fibrous wiry roots from the rhizome. The main constituents are: volatile essential oil, resin, coloring matter, a free acid, a salt of lime, oxide of iron, and woody matters. Being a cooling medicine, it is in form of infusion, a useful drink in fevers, inflammation, and irritability of stomach. Externally, a paste of root is rubbed on the skin to remove the oppressive heat or burning of body. By mixing it with red sandal wood and fragrant wood called Padma Kasta (all in powder) to tub of water, an aromatic bath is prepared. The decoction of roots of this plant was tried in dermatoses with SOH.[5]

Material and Methods

Total of 825 cases were included in the study. All the patients had some treatment with antihistamine and systemic steroids earlier without any relief. A detailed proforma was filled, and BMR, skin temperature, and Serum IgM levels were measured in each case. The patients were asked to take standardized decoction in the dosage of 2 teaspoonful three times a day mixed with water, and were called for follow up every fortnight. On each follow up, BMR, skin temperature, and serum IgE were done in selected cases. Any change in clinical condition of SOH[6] was noted. Of the 825 cases, only 429 patients turned up for the regular follow up for clinical assessment.

Standardization:

The objection raised by modern medicine clinicians is that herbal preparations vary from sample to sample, so that standardization of the herb is mandatory. The dried herb was phytochemically standardized. Chemical standardization was carried out taking volatile oil content as the only parameter. It was estimated by the Klevingers apparatus. Volatile oil content is 0.42-0.60.

Results

The results are shown in Tables 1 to 5. Side effects observed included: leg pains (4%), cold running nose (4%), bad taste (2%), and restlessness (3%).

Discussion

Patients suffering from drug eruptions, urticaria, allergy, erythrodermas, dermatitis, and rosacea commonly complain of Sense of Heat. This makes the treatment with regular antihistamines and related drugs rather difficult. We have shown that sense of heat is associated with statistically significant increase in IgE levels, BMR, and skin temperature. Administration of *Andropogon muricatus* in the form of standardized syrup shows that SOH was considerably decreased in patients with various dermatoses along with improvement in associated conditions.

Table 1. Response of different dermatoses with SOH.

Result	D&E	U	LE	TM&TK	Misc
Excellent Improvement	76	14	18	10	49
Good Improvement	125	48	11	20	26
Poor Response	57	16	13	5	8
Total	258	78	42	35	83

D&E: dermatoses and erythrodermas. **U:** urticaria. **LE:** lichenoid eruptions. **TM:** toxic melanosis. **TK:** toxic keratoderma. **Misc:** Miscellaneous.

Table 2. Effect of intake of *Andropogon muricatus* on blood pressure.

Ser.No	**Age/Sex**	**BP before treatment**	**BP after treatment**
1	26/M	130/80	130/74
2	25/M	118/78	124/70
3	20/M	118/80	124/64
4	25/M	120/84	10/80
5	27/F	124/74	124/70
6	35/F	128/80	110/70

Table 3. Effect of intake of *Andropogon muricatus* on skin temperature.

		Skin Temp (^{o}C) before treatment						**Skin Temp (^{o}C) after treatment**					
S.No.	**Age/Sex**	**I**	**II**	**III**	**IV**	**V**	**VI**	**I**	**II**	**III**	**IV**	**V**	**VI**
1	26/M	28.1	29.5	30.4	30.7	30.3	30.2	28.2	28.5	30.2	30.0	30.0	30.0
2.	25/M	29.6	28.8	30.1	29.6	31.0	33.0	29.2	29.0	30.0	30.1	31.5	33.5
3	20/M	28.0	28.6	29.9	30.2	32.4	34.0	28.0	28.5	29.9	30.1	32.2	34.0
4	25/M	27.8	27.5	29.6	29.2	30.4	32.0	27.8	27.7	29.5	29.2	30.2	31.8
5	27/F	27.5	27.8	29.5	29.4	31.2	33.5	27.5	27.7	29.4	29.4	31.2	33.5

I: Left palm, **II:** Right palm, **III:** Left sole, **IV:** Right sole, **V:** Forehead, **IV:** Right sole, VI: Body temperature.

Table 4. Effect of intake of *Andropogon muricatus* on BMR (CAL/Hr./M2).

S.No.	Age/Sex	Weight Kg	Height	BMR before treatment	BMR after treatment
1	26/M	55	5'3"	48	48
2	25/M	55	5'5"	42	42
3	20/M	56	5'6"	26	28
4	25/M	66	5'6"	56	54
5	27/F	48	4'11"	30	33

Temp. = 22 °C.

Table 5. Effect of intake of *Andropogon muricatus* on IgE IU/ml level.

S.No.	Age/Sex	Disease	IgE before treatment	IgE after treatment
1	25/M	CU	>1000	580
2	25/M	ED	>1000	>1000
3	20/F	U	>1000	318
4	16/F	AA	220	120
5	18/F	AD&AV	>1000	440
6	35/M	ED	>1000	510
7	34/F	U	220	130
8	1.5/M	ED	>1000	390
9	13/F	AD	280	200
10	21/M	U	>1000	225

Table 6. Clinical results of *Swertia chirayita* in acne vulgaris.

Result	2 weeks	4 weeks	6 weeks	8 weeks	10 weeks	12 weeks
Poor	54	14	9	6	-	-
Fair	16	32	23	18	14	10
Good	-	24	32	35	35	35
Excellent	-	-	6	11	15	19

Poor: no/slight change, **Fair:** >25% decrease in the lesions, **Good:** >50% decrease in the lesions, **Excellent:** >75% decrease in the lesions.

The exact mechanism of action of *Andropogon muricatus* is not known, but lowering of IgE, BMR, skin temperature with the associated SOH in the patient could be one possibility. Secondly, it is now being increasingly realized that a herbal formulation may have biological properties different from the active ingredients contained in it. The so-called inert additives do modify the biological behaviour of pure chemicals especially the kinetic properties. Therefore, as long as uniformity of formulation is assured and biological effect is demonstrated (as in this case), modern medicine should have no hesitation in accepting such a herbal formulation.

2.*Swertia chirayita* (Buch ham, Family Gentianaceae)

Swertia chirayita has been claimed to be effective in some skin diseases in Ayurvedic, Siddha and Unani system of medicine. The author has found the herb to be effective in various diseases including skin disease. In his preliminary clinical studies, he found that this herb is effective in several types of cutaneous infections including pyodermas.[7]

According to Ayurvedic literature, the herb is effective in ulcer healing, leprosy, scabies, and itching, inflammation, and against all types of germs, bacteria and viruses.

The present study was designed to investigate the salutary effect of *Swertia chirayita* on 70 patients of acne vulgaris and to point out its probably mechanism of action.

Material and Methods

Patients with typical acne vulgaris were graded as Grades I, II, III and IV. The patients were divided into two groups. One group was given Chiraita in a dose of 250 mg b.i.d. for three months and the other was given Doxycycline in a dose of 100 mg b.i.d. for two days followed by 100 mg once daily for three months.

Standardization:

The dried herb (whole plant) was authenticated by the pharmacological method of analysis, and then it was subjected to chemical analysis.

The physiochemical data showed the following:

1. Total Ash	5.4%
2. Acid Insoluble Ash	0.8%
3. Bitter principle	1.49%
4. Zinc Content	0.8 mg/gm
5. Tannins	-ve

Laboratory investigations:

Phagocytic index of S. Chirayita was studied before and after treatment using Behl's modification of Broker et al.'s technique.[8]

Results

The results of follow up of 70 cases of acne vulgaris treated with S. Chirayita are summarized in table 6.

Discussion

Mechanism of action of *S. Chirayita:* Phagocytes (polymorphonuclear leukocytes) of blood play an important role in cure and control of skin infections. We, at the Skin Institute have studied the response of phagocytic index to *S. Chirayita.* Powdered stem portion of chiraita was given to patients in capsule form and the Phagocytic Index was studied before and after the administration of chiraita in 21 patients. The method adopted was Behl's modification of the technique of Broker at al.'s.[8] With increase of Phagocytic activity, the patient is able to digest the organisms at a faster rate. In our clinical studies we found that chiraita is useful in chronic pyodermas, acne vulgaris, seborrhoeic folliculities, infective eczema, and furunculosis.

As its prolonged administration seems to increase the phagocytic activity, the polymorphonuclear leukocytes of the patients are able to digest the invading bacteria more

Table 7. *Ammi majus* trial. Response to treatment at 3 months.

AM			TMP		
Response	**No.**	**Percent.**	**Response**	**No.**	**Percent.**
Good (3+)	3	20	Good	1	6.7
Fair (2+)	1	6.7	Fair	2	13.3
Slow (1+)	9	59.9	Slow	6	40
Poor/Nil	1	6.7	Poor/Nil	1	6.7
Withdrew	1	6.7	Withdrew	5	33.3
Total	15	100		15	100

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Table 8. *Ammi majus* trial. Incidence of adverse effects.

AM			TMP		
Major	**No.**	**Percent.**	**Major**	**No.**	**Percent.**
New lesions	1	6.7	Severe nausea/vomiting	1	6.7
			New lesions Photosen.	2	13.3
			Eczema	1	6.7
			Urticaria	2	13.3
Minor	**No.**	**Percent.**	**Minor**	**No.**	**Percent.**
Abdom. Pain	1	6.7	Abdom. pain	1	6.7
Giddiness	1	6.7	Giddiness	2	13.3
Pruritus	1	6.7			
Total	**4**	**26.8**	**Total**	**9**	**60**

Total patients: 15 each in HAM and TMP.

Table 9. Results of local application of *Aloe vera* in seborrheic dermatitis.

No. of patients	**M/F**	**Improvement**	**No improvement**	**No follow-up**
13	6/7	6	3	4

Table 10. Results of local application of *Aloe vera* in dandruff and hair loss.

No. of patients	**M/F**	**Improvement**	**No Improvement**	**No follow-up**
20	8/12	9	-	11

fast and effectively. Furthermore, it helps to control constipation. Its zinc content is an added advantage.

3.*Ammi Majus Linn.* (Family umbelliferae / Alpaceae)

Ammi majus, a glabrous herb with reddish brown fruits was standardized on the basis of furocoumarin content.[9] We have conducted a comparative study on *Ammi majus* with Trimethyl Psoralen (TMP) in vitiligo. Thirty patients of vitiligo were selected to test the efficacy and safety of Ammi majus.[10] Both the drugs were given in yellow color capsules in dosages of 500 mg and 25 mg respectively, three times a week followed by exposure to sunlight, over a period of 3 to 6 months. *Ammi majus* microfine pulverized powder was encapsulated in hard gelatin capsules.

In addition to routine blood tests, liver function tests to exclude hepatotoxicity were also performed. The effective response in this purposeful short duration study was repigmentation of skin which was graded as good (30 to 50%), fair (10 to 29%), and poor (less than 10%). The response to treatment is shown in Table 7, and adverse effects in Table 8.

In conclusion, *Ammi majus* was found to be more effective, less toxic, and cheaper (saves you the cost of extraction) than TMP in cases of vitiligo.

4.*Withania Somnifera* (Family Ashwagandha - Solanaceae)

The plant is used both in ayurvedic and Unani system of medicine. The various preparations and forms of 'Ashwagandha' i.e. power docoction, oil, smoke, poultice etc. have been suggested for the cure of various disorders such as leprosy, nervous disorders, intestinal affections, venereal diseases, rheumatism, emaciation of children as a tonic for all kinds of weakness, and also to promote vigour and stamina.[11]

It is used as an external application in scabies and ulcers. Internally, the powder of dried root is used as an adjuvent in the treatment various cutaneous diseases such as vitiligo, alopecia areata, and other chronic cutaneous disease that are associated with psychosomatic factors and stress. The antistress activity of root has been reported.

We have used Ashwagandha powder once and twice daily in 250 or 500 mg capsules as an adjuvent to dermatological therapy in patients of vitiligo and psoriasis. The salutary antistress activity of the herb was gratifying to the patients.

5.*Aloe Vera Linn.*

There are more than 300 species of Aloe. Aloe barbadensis is now referred to by Botanists as *Aloe vera.* Literature is replete with historical uses of the plant on the self treatment of bruises and cuts, by applying leaf of *Aloe vera* to wounds. Aloe could also heal infections of the skin, X-Ray burns, cutaneous Leishmaniasis, dermatitis, and cures also chapping and hair loss. Furthermore, application of *Aloe vera* is useful in seborrheic dermatitis.

A preliminary report on the effectiveness of local application of Aloe vera in 13 patients with seborrheic dermatitis is shown in Table 9. Table 10 illustrates the results of application of Aloe vera in 20 patients with dandruff and hair loss. Comparative studies with Ketoconazole are in progress.

6.*Azadirachta Indica* (Neem oil)

Neem was found to be effective in various skin diseases such as furunculosis, arsenical dermatitis, ulcers due to burns, herpes labialis, scabies, seborrheic dermatitis, bleeding gums and pyorrhea. It has antifungal properties as well. *Tinea rubrum* growth is inhibited by it. Decoction of leaves is antiseptic; it is used in ulcers and eczemas. Root is used in leucoderma and for blood impurities. The author has also tried Neem oil in various dermatosis.[13]

7.*Prunus Amygdalus* (Almond shell oil)

Almond shell oil (ASO) has shown promising results both, in vitro and vivo. Cases of pyogenic infections were taken from the

OPD at the Skin Institute, and sensitivity of various organisms against ASO was tested. Certain other agents like *Juglans regia* (walnut), *Prunus armenica* (apricot), and *Dalbergia sissoo* (Sheesham wood) were also tested, but they were found much inferior to ASO.

Bacteriological studies revealed that 75-88% sensitivity was noticed with ASO among common pathogens such as staphylococcus aureus, streptococcus betahaemolyticus, and pseudomonas pyocyaneus.[14]

Therapeutic use of *Prunus amygdalus* includes: pyodemas, infected eczema, folliculitis, pityriasis capitis, p. alba, seborrheic dermatitis, ulcers, burns, wounds, chicken-pox, vaccinia, and pemphigus.

The results of our clinical trial are shown in Tabel 11.

8.*Hydnocarpus Kurzii* (Chaulmoogra)

Hydnocarpus kurzii has been used in oriental medicine against leprosy for many centuries. During the recent years, it has come to be recognized in the Western medicine as a valuable remedy in leprosy. The oil is widely used in India and other countries. The chief sources of oil in India are *H. wightiana* and *T. kurzii. H. Wightiana* grows in gardens and accessible places all over South India, so that seeds can be obtained quite fresh. *T. kurzii,* on the other hand, grows out of the way places where its seeds can not be gathered easily during the rainy season when the fruit falls, and in consequence, it is not easy to get fresh seeds for extraction of the oil. The oil derived from *H. wightina* is, therefore, preferred to the others.[15]

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Table 11. Results of clinical trial with *Prunus Amygdalus* (ASO) (40-50%).

Disease	No. of cases	Good response	No or poor response	Side effects
Pyodermas (Impetigo)	24	22 (91.6%)	2	Mild irritation
Folliculitis	20	12 (60%)	8	Irritation in 3
Ulcers	10	9 (90%)	1	-
Operative wounds	6	6 (100%)	-	Complained of itching (2)
Total	60	49(81.6%)	11(18.4%)	

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