

APPRAISAL OF EFFICACY OF TWO ANTI-DANDRUFF FORMULATIONS

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Summary

The relative efficacy of two commercially available anti-dandruff shampoos, one containing Selenium Sulfide and the other containing an antiseptic, was studied in 40 cases both subjectively and objectively.

Shampoo containing Selenium Sulfide was effective in 72.5% of the cases while the shampoo containing antiseptic was effective in 47.5% of the cases. Patient compliance was 57.5% for the former and 12.5% for the latter.

In 30% of patients either of the shampoo failed to show much improvement. Both the shampoos showed negligible side effects.

The aetiology of Seborrhoea Capitis-dandruff is unknown. Infection with bacteria or yeast, emotional, genetic and dietary factors, hormones and constitution have been implicated sometime or the other. Possibly one or more of all these factors are involved¹.

Excessive scaling of scalp skin constitutes dandruff. This is due to increased mitotic activity of epidermal cells. When it occurs singly, it is called dry dandruff. In wet dandruff, besides the proliferation of epidermal cells, the activity of sebaceous glands is increased. The immediate stimulus to secretion is provided by androgens². Epidermal cell kinetics in dandruff has been studied. After injection of H³ thymid-

ine, a high labelling index is seen in dandruff. The transit time of stratum corneum in dandruff is 3-4 days as against 28 days in normal skin. Surface area measurements of horny cells yield high values and qualitative changes in dandruff³.

Severe dandruff may not be curable but it is controllable. Mild cases can easily be controlled by regular physical washing of the scalp. Moderate to severe dandruff requires regular shampooing. There is no objection to shampooing the hair 2-3 times a week, provided it is not followed by vigorous combing, brushing and massaging. Such abuse may weaken the hair shaft leading to breakage⁴.

Treatment products available for dandruff fall into three therapeutic classifications⁵.

- (1) Wetting agents
- (2) Antiseptics, and
- (3) Keratolytics

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The aim of the present study was to do a comparative study of two anti-dandruff preparations having different modes of action on the excessive epidermopoiesis in dandruff. One contained Selenium disulfide (SeS₂) which acts as a keratolytic and cytostatic agent and the other contained an anti-septic agent.

Material and Method

Forty cases of mild to severe dandruff were selected at random for the present study. Patients were selected from various age groups. The patients were examined, treated and followed up regularly in the skin & S. T. D. Outpatient Department of a Government group of hospitals. A detailed history was taken particularly asking about previous therapy used for dandruff and its response. Patients were asked about the duration of the malady, itching, falling off of hairs, scaling, oiliness and associated seborrhoeic dermatitis. The patients were instructed that they are treating the scalp and not the hair. It was emphasized that the desquamating agent, i. e. the shampoo must have time to soften and loosen the scale. The shampoo must be kept on the scalp for 5-10 minutes. Patients were warned that the shampoo must not be used on open lesions, it should be prevented from going into the eyes and that its prolonged use may produce burning. It was seen that patient did not use any shampoo for at least two weeks prior to inclusion in this trial and were instructed not to use any hair dressings. The patients were grouped in Group A and B. Group A patients were given SeS₂ first and then the antiseptic shampoo. Vice-versa was done in Group B. Each shampoo was to be used twice a week for two weeks and then to be changed over. All the cases were examined weekly and followed for one month. The improvement, both subjective and objective, was noted and compared.

TABLE 1
Seborrhoea Capitis
Age & Sex Incidence

Years	15-20	21-25	26-30	31-35	Total
Males		3	2	2	7
Females	8	19	4	2	33
Total	8	22	6	4	40

Table No. 1 shows the sex and age incidence. 22 cases (55%) belonged to the age group of 21-25 years. Of the 40 cases, 33 cases (82.5%) were females.

TABLE 2
Duration of Dermatoses

Few Days	3	Few Months	19	Few Years	18
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Table No. 2 shows the duration of the Seborrhoea capitis. Most of the patients were suffering for a few months to a few years.

Table No. 3 explains the various complaints with which the patients presented themselves. 33 patients (82.5%) complained of itching. Of the 35 patients (77.5%) were women. After examination, the condition of scalp was graded as mild in 1 patient, moderate in 27 patients and severe in 12 patients.

TABLE 4
Seborrhoeic Capitis - Previous Therapy

No Previous Therapy	One form of previous therapy	More than one form of previous therapy
15	20	5

Table No. 4 shows that previous therapy was taken by 25 patients. These included various soaps, shampoos, hair-dressings, keratolytic agents and ultra-violet rays. The response ranged from poor to moderate to good but all were temporary.

Results

The response to the treatment was graded as excellent, good, fair and

TABLE 3
Seborrhoeic Capitis - Symptomatology

	Itching	Falling of Hair	Scaling	Oiliness	Seborrhoeic Dermatitis		
					Mild	Moderate	Severe
Males	6	4	6	2		5	2
Females	27	31	31	14	1	22	10

TABLE 5
Seborrhoeic Capitis - Type of Response

Shampoo	Excellent 75-100%	Good 50-74%	Fair 25-49%	Poor 1-24%	No Effect	Worse	Improvement %
Selenium Disulphide	5	9	10	5	11	Nil	75.5%
Antiseptic	1	7	8	3	17	4	47.5%

poor. The criteria for this gradation was the response and improvement of the various symptoms viz. itching, falling of hairs, scaling and oiliness. The patients were asked about the improvement of these symptoms and this was also confirmed by us. Regarding hair loss, patients were advised to gather all the hairs lost every day and count them and record them.

Table No. 5 shows the type of response to our treatment. The results were graded excellent when the response was 75-100%. 5 patients with SeS₂ and 1 patient with antiseptic shampoo were graded excellent. Good results when the response was 50-74% was seen in 9 patients with SeS₂ and 7 patients with antiseptic shampoo. Fair results when the response was 25-49% was seen in 10 patients with SeS₂ and 8 patients with antiseptic shampoo. The results were graded poor when the response was 1-24% and was seen in 5 patients with SeS₂ and 3 patients with antiseptic shampoo. 11 patients reported they had no effect good or bad with selenium and 17 patients reported similarly with antiseptic shampoo. No patient using SeS₂ complained that his scalp condition after using the shampoo was worse. However, 4 patients on antiseptic shampoo complained that their seborrhoea

capitis was worse after its use. Overall percentage improvement with SeS₂ was 75.5% while with antiseptic shampoo it was 47.5%.

TABLE 6
Seborrhoeic Capitis - Side Effects

Shampoo	None	Slight	Severe
Selenium Disulphide	33	3	1
Antiseptic	38	3	1

Table No. 6 Some people are allergic to anti-dandruff preparations and may complain of mild itching, burning, skin rash or exfoliative dermatitis. It has been reported that SeS₂ makes scalp greasy⁶ and this fact was also kept in mind. In this table we have shown the side effects with both the preparations. Majority of the patients tolerated the shampoos well. Three patients with SeS₂ and three with antiseptic shampoo had mild side effects like slight itching, burning, etc. One patient using SeS₂ and one using antiseptic shampoo had severe reaction in the form of skin rash and exfoliative dermatitis and the treatment was stopped. They were given other appropriate treatment.

Table No. 7 Patients were asked about the preference of the shampoos. 23 patients (57.5%) preferred SeS₂,

5 patients (12.5%) preferred antiseptic while 12 patients (30%) said both are ineffective. The patients were further asked about the qualities of the shampoos regarding lather, pleasantness and effectiveness of shampoo. 28 patients (70%) opted saying SeS_2 gives good lather while 11 patients (27.5%) said antiseptic gives good lather. 27 patients (67.5%) said SeS_2 is pleasant while 13 patients (32.5%) said antiseptic is pleasant. 28 patients (70%) said SeS_2 is effective while 7 patients said antiseptic is more effective. 5 patients were uncertain about the efficacy.

TABLE 7
Seborrhoeic Capitis - Preference

Shampoo	Lather	Pleasant	Efficacy
Selenium Disulphide	28	27	28
Antiseptic	11	13	7
None	1	—	5
Selenium Disulphide Preferred			23
Antiseptic			5
Both are Ineffective			12

Discussion

The epidermopoesis in dandruff is remarkably suppressed by the cytostatic action of selenium sulphide as indicated after H^3 glycine labelling. The labelling index comes to normal value under the influence of SeS_2 , as also the transit time of stratum corneum which is slowed down^{7,8}. Two most popular and fast selling preparations were chosen for the present study.

The patients were properly briefed regarding the usage of shampoos. Each patient used both shampoos one after the other. Most of the patients were educated and comprised of nurses, medical students and doctors. Their impressions together with our findings were recorded weekly. Majority of our patients - 33 (82.5%) out of 40 cases were females. This may be due to the fact that ladies keep long hair in our country and are cosmetically more con-

scious about their hair. Majority of our patients (55%) were in the age group of 21 - 25 years and were suffering for quite sometime. This is natural since seborrhoeic gland activity is more in this age group. They had used various anti-dandruff agents and formulations with varying results. The improvement was temporary and is a fact because no sooner one stops the treatment, the dandruff returns.

Regarding the usage of shampoos, Chesterman^{5,7} says "Any shampoo, medicated or not, should be used at least twice in succession and preferably 3 times in one shampooing. The hair should be washed twice or thrice a week depending upon the severity of dandruff. Use of medicated shampoo appears to be based on sound pharmacology". He reports consistent results with SeS_2 but warns that selenium sulfide compound can increase oiliness of scalp and hair. He further cautions that the hands and finger nails must be carefully cleansed to avoid accumulation of SeS_2 and possible toxicity.

In our study, both the shampoos gave good results as shown in Table No. 5. However, overall percentage improvement with SeS_2 was 75.5% while that with antiseptic shampoo was 47.5%. Most of the patients tolerated the shampoos well. Six patients, three with each shampoo, had mild itching, burning, etc. but were encouraged to continue the therapy. One patient with SeS_2 and one with antiseptic shampoo complained of exfoliation of skin and were given suitable alternative therapy. We did notice excessive oiliness of hair and scalp in some patients using SeS_2 . Pipkins⁸ reports that if SeS_2 makes scalp greasy application of 70% ethyl rubbing alcohol (Lavacol) 2-3 times a week followed by drying this with towel is useful.

Beerman⁶ reports that selenium sulphide is of value in dandruff but its

use may be followed by increased oiliness but our patients did not complain of hair loss. All the forty patients used both the shampoos. Out of 40, 23 patients (57.5%) preferred selenium and 5 patients (12.5%) opted for anti-septic shampoo. It was interesting to note that while majority preferred SeS_2 , 12 patients (30%) complained that both the shampoos are ineffective. These 12 patients did not follow our instructions properly and, hence, there was no response.

Our study showed that both shampoos are good. However, selenium is better as compared to antiseptic shampoo and hence, majority of our patients opted for selenium shampoo. The side effects for both are negligible. While most of the shampoos, including the present antiseptic shampoo, are available over the counter, unfortunately selenium sulphide, one of the best, requires a prescription⁹.

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