

## **Meclosorb®**, a New Topical Antibiotic Agent in the Treatment of Acne Vulgaris: A Double-Blind Clinical Study

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The clinical effect on acne vulgaris of topical treatment with meclocycline sulfosalicylate and systemic treatment with peroral tetracycline (500 mg daily) was compared in a double-blind study of 60 patients treated for 8 weeks. The reducing effect of Meclosorb® cream and tetracycline tablets on the number of closed comedones, pustules, papules and cysts was marked and not significantly different. The effect of Meclosorb® on open comedones was weak and of slow onset. No side effects were registered. Topical treatment with Meclosorb® is an effective and safe alternative to systemic tetracycline treatment of acne vulgaris. *Key words: Acne; Meclocycline sulfosalicylate; Topical Treatment.* (Received December 23, 1983.)

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Systemic administration of tetracycline has proved to be effective in acne vulgaris (1, 2) and therefore tetracycline has been the drug of choice in many cases (3, 4, 5, 6). Topical tetracycline agents, however, have not proved very effective in the treatment of acne vulgaris (7, 8).

Meclosorb® is a newly developed antibiotic for topical treatment of acne vulgaris. The active agent of Meclosorb®, meclocycline sulfosalicylate, is a tetracycline derivative with the same spectrum as other tetracyclines, however with a much larger antibiotic activity against *propionibacterium acnes* than tetracycline hydrochloride (9).

Dermal and gastrointestinal absorption of meclocyline sulfosalicylate is negligible, wherefore topical treatment with meclocyline sulfosalicylate does not have the systemic adverse reactions seen after oral tetracycline therapy. Previous clinical studies have shown that meclocyline sulfosalicylate has a good effect on acne vulgaris (9, 11) and this study compares the clinical effect on acne vulgaris of topical Meclosorb® and peroral tetracycline (500 mg daily).

## PATIENTS AND METHODS

*Method.* A randomized, double-blind study was performed. Each patient was treated both topically, with a cream, and systemically, with tablets. Half of the patients were treated with Meclosorb® cream and placebo tablets, and half were treated with placebo cream and tetracycline tablets (250 mg). Treatment regimens were administered and assigned according to a randomized scheme based on random numbers.

*Medication.* Meclosorb® cream (manufactured by Thomae, West Germany, for Basoderm, Denmark): 1% meclocyline sulfosalicylate in cream vehicle. Placebo cream: Meclosorb® cream vehicle coloured with chinoline yellow E 104 and ferric oxide 26499. Tetracycline tablets (250 mg) DAK. Placebo tablets: placebo cores coloured with 0.1% riboflavin.

*Dosage.* Topical treatment: the cream was applied twice daily. Systemic treatment: 1 tablet twice daily. Patients were instructed not to take the tablets together with milk products, iron preparations or pharmaceuticals containing calcium, magnesium, aluminium or zinc.

*Patients.* 60 patients participated, 34 female and 26 male, aged 13 to 43 years, median age 20 years.

*Diagnosis.* 29 patients had acne vulgaris, grades 1–2. 29 patients had cystic acne, grades 3–4. One patient had acne excoriée, and 1 patient had rosacea cum acne. Duration of disease was from 1/2 to 23 years. Median 5 1/2 years.

*Previous treatment.* Most patients had previously been treated with various topical agents, as benzoyl peroxide, A vitamin acid or aluminium chloride hexahydrate as well as oral tetracycline. All acne treatment had been stopped prior to initiation of this study.

*Control and evaluation.* At the start of the treatment and at each follow-up visit after 2, 4, 6 and 8 weeks a clinical assessment was made, and the number of open and closed comedones, papules, pustules and cysts in a 5 cm diameter pre-chosen skin area was recorded. Topical and systemic side effects were registered. One patient from the Meclosorb® group failed to appear for the follow-up visits and was excluded.

*Statistical methods.* The statistical analysis was based on the change in the number of open and closed comedones, papules, pustules and cysts, and on changes in the sum of papules, pustules and cysts from outset of the trial till after 4 and 8 weeks' treatment. The nonparametric randomization test was used, computed according to total randomization of patients and not as a block randomization. In addition, the Student *t* test was applied.

## RESULTS

The results of the study can be seen from Table I. The two regimens, Meclosorb® cream and tetracycline tablets, have been analysed for their effect on acne vulgaris after 4 and 8 weeks' treatment. On a 5% significance level the two regimens did not show any significant differences in terms of their reducing effect on the number of closed comedones, pustules, papules and cysts, or the sum of pustules, papules and cysts. Tetracycline reduced the number of open comedones during the 8-week treatment period, while Meclosorb® caused a transient increase in the number of open comedones during the initial 4 weeks of treatment followed by a reduction during the period 4–8 weeks. No side effects due to either Meclosorb® or tetracycline were observed.

## DISCUSSION

Topical antibiotic treatment of acne vulgaris instead of systemic treatment is important as it is logical only to treat the affected skin instead of the whole organism. Topical antibiotic

Table I. Results from treatment of acne vulgaris

Treatment period	Symptom	Treatment				p-Value <sup>c</sup>
		Meclosorb		Tetracycline		
		$\bar{x}_0^a$	% diff. <sup>b</sup>	$\bar{x}_0^a$	% diff. <sup>b</sup>	
0-4 weeks	Open comedones	3.7	62	5.8	-29	2%
	Closed comedones	5.6	-36	10.9	-70	2%
	Papules	4.0	-28	2.8	-64	74%
	Pustules	2.9	-41	2.8	-57	64%
	Cysts	2.1	-76	2.0	-80	100%
	Pa. + pu. + cy.	6.5	-49	6.0	-67	55%
4-8 weeks	Open comedones	4.3	-30	6.1	-43	64%
	Closed comedones	6.3	-24	11.2	-17	73%
	Papules	3.1	-19	2.1	19	26%
	Pustules	2.7	-22	2.9	-31	52%
	Cysts	2.3	-13	1.9	-5	45%
	Pa. + pu. + cy.	6.0	-18	5.8	-12	56%
0-8 weeks	Open comedones	4.2	21	5.0	-74	4%
	Closed comedones	6.3	-60	9.8	-83	9%
	Papules	3.1	-77	3.0	-63	81%
	Pustules	2.7	-63	2.5	-80	66%
	Cysts	2.5	-92	2.0	-85	44%
	Pa. + pu. + cy.	6.2	-76	6.0	-77	94%

<sup>a</sup> Mean basic count (week 0) based on 27 patients treated with Meclosorb® and 23 patients treated with tetracycline at the registration of the 0-4 weeks' difference, 23 and 22 patients, respectively, at the registration of the 4-8 weeks' difference, and 24 and 29 patients, respectively, at the registration of the 0-8 weeks' difference, out of a total of 29 patients in the Meclosorb® group and 30 patients in the tetracycline group.

<sup>b</sup> Mean percent difference on basic count.

<sup>c</sup> p-Value in randomization test.

treatment offers a number of advantages over systemic treatment, mainly because the consumption of antibiotic is far less in topical treatment than in systemic treatment (13).

So far, no local adverse reactions to meclocycline sulfosalicylate have been observed, whereas quite a few patients being systemically treated with antibiotic agents have side effects.

The result of this study shows that topical treatment with meclocycline sulfosalicylate has a good effect on pustular and cystic acne vulgaris. After 8 weeks an approximate 70% reduction in the number of papules/pustules and an approximate 90% reduction in the number of cysts was achieved, equivalent to the results after systemic tetracycline.

Meclocycline sulfosalicylate showed no overall effect upon open comedones, whereas a drastic reduction in the number of papules, pustules and cysts was recorded. Previous reports have shown that topical tetracycline principally reduces the number of papules, pustules and cysts (7). However, as stated above, the prospects of meclocycline sulfosalicylate reducing the number of open comedones in the long term cannot be excluded.

In this study no side effects were registered, neither in the meclocycline sulfosalicylate regimen, nor in the tetracycline regimen. These findings are in agreement with previous studies (9, 11, 14, 15, 16).

An argument against the treatment of acne vulgaris with topical antibiotics is the risk of developing resistant bacteria strains (17, 18) but it has to be pointed out that the consump-

tion of antibiotics is far less when topically applied than in systemic treatment. In a regimen using 500 mg tetracycline per day, the daily renal excretion is approx. 100 mg unmetabolized tetracycline per person (19), while the consumption of antibiotics in topical meclocycline sulfosalicylate treatment does not exceed 20 mg meclocycline daily, and the risk of developing resistance is therefore far greater in systemic than in topical antibiotic treatment.

The good clinical results achieved with meclocycline sulfosalicylate in the topical treatment of acne vulgaris, both in previous tests (9, 11) and in this study, and the low frequency of side effects, as well as the low risk of developing resistant bacteria strains, suggest Meclosorb® to be an alternative to the traditional systemic treatment with tetracycline.

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