

## S-FACTOR OF LIVER EXTRACT IN ACNE VULGARIS

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Although the rationale for use of crude liver extract in the management of acne vulgaris has not been definitely established, many dermatologists consider it to be helpful. Sutton,<sup>1</sup> in 1928, first recommended liver in the form of a liver diet. Later Marshall\* isolated from boiled liver extract a substance which proved to have therapeutic value for acne vulgaris; this he called S-factor or "skin factor." His work precipitated clinical studies by Lichenstein and Stillians<sup>2</sup> and by Boreen.<sup>3</sup> Although over half the patients in each series improved, the results were considered disappointing not only from the standpoint of effectiveness of treatment but also that of length of time required for improvement. These unenthusiastic reports apparently discouraged other investigators, for no further studies were published until 1948, when Walters<sup>10</sup> emphasized the value of crude liver and boiled liver extracts as supportive therapy. Nierman<sup>11</sup> noted definite improvement when S-factor was administered to 22 patients with cystic acne in whom routine therapy had failed. Among others who have observed the value of liver in the management of acne are Stokes and Sternberg,<sup>12</sup> Andrews, Domonkos, and Post,<sup>13</sup> and Mitchell-Heggs.<sup>14</sup> Whereas its value has been the subject of considerable controversy, no absolutely nullifying report has been found. In an attempt to confirm the presence of an acne-inhibiting substance in crude liver extract, we undertook a large-scale clinical evaluation of the S-factor.

### MATERIALS AND METHODS

One hundred nineteen male patients and 31 female patients with acne at a large military installation † were treated with injections of S-factor ‡ and minimal supportive routine treatment. Of these 150, 11 were considered to have mild acne, 59 moderate, 52 moderately severe, and 28 extremely severe. S-factor was injected intramuscularly in doses varying from 1 to 2 cc. twice a week to 1 to 3 cc. daily, but most patients received 2 cc. three times a week, which was considered the optimal dosage. The supportive regimen employed consisted in (1) scrubbing the skin three times daily with a soapless detergent (pHisoderm) or sulfur soap; (2) shampooing the hair twice a week, as well as omitting the use of hair oil, and (3) eliminating from the diet a short list of foods rich in fat. In addition, acne surgery was performed when necessary, and topical and systemic administration of antibiotics was prescribed if pyoderma or folliculitis was present. No lotions, hormones, vitamins, vaccines, ultraviolet rays, cryotherapy, or roentgen rays were employed in these patients during this study.

Inspection of the data in the accompanying Table reveals that results were better in the group of patients receiving longer treatment. Improvement was observed in all grades of severity in approximately the same percentage of patients. The supportive regimen, although minimal, must be credited with at least a portion of the benefits observed. Nevertheless, results were superior to those that could be expected from supportive measures, psychologic factors, or spontaneous remissions. The evidence, therefore, would suggest an inhibitory effect of S-factor on the disease.

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\*References 2 to 7.

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‡S-factor (trade name, Kutapressin) was supplied by Kremers-Urban Co., Milwaukee.

*Addition of S-Factor to Typical Therapeutic Regimen.*—S-factor was added to a modern therapeutic regimen for acne in 76 private patients, in an attempt to determine if injections of this substance would decrease the time required for treatment, the over-all severity of the disease, or scarring. It readily became apparent that benefits derived from S-factor were too well concealed among results obtained from other measures to permit proper scientific evaluation of its effects. However, a study of these 76 patients yielded the following clinical impressions: (1) patients who receive S-factor improve slightly more than those who do not; (2) injections three times a week result in greater improvement than injections at weekly intervals; (3) cystic acne appears to be a good indication for use of the substance, and (4) acne indurata and acne of the hyperkeratotic follicular type do not respond well to this drug. Furthermore, injections of S-factor were less painful than those of crude liver extract and were accompanied by no untoward reactions in this study. Objective evaluation of any product used in treating acne, of course, must be made under controlled conditions, as in the first series of patients.

#### COMMENT

The mechanism for the therapeutic effect of liver on acne remains obscure. It has been attributed by various workers to the B vitamins, which decrease retention of tissue fluid,<sup>15</sup> to injection of a foreign material,<sup>16</sup> to correction of associated anemic states,<sup>8</sup> and to the vasoconstricting action of the S-factor, with resultant decreased tissue edema and stasis.<sup>7</sup>

#### Results of Treatment of Acne Vulgaris by S-Factor in 150 Patients

Duration of Treatment	Response to Therapy*					Total
	0	+	++	+++	++++	
Under 3 mo.....	6	9	32	56	7	80
Over 3 mo.....	3	2	16	30	19	70
Total.....	9	11	48	86	26	150
	(6%)	(7.3%)	(32%)	(57.4%)	(17.3%)	

\* 0 indicates unchanged by therapy; +, slight or questionable improvement; ++, definite, but not pronounced, improvement noted by patient and observers; +++, moderate inhibition of the disease with few or no new lesions; and +++++, pronounced inhibition of the disease with few or no new lesions.

#### CONCLUSIONS

Results in the present series of 226 patients corroborated previously published clinical reports that S-factor is a valuable adjunct in treatment of acne vulgaris. Further investigation is required to establish definitely the presence of an acne-inhibiting substance in crude liver extract. The potentialities of such studies are great, since S-factor has apparently never been isolated in pure form nor has it been chemically identified. Massive doses of this substance conceivably could be extremely effective in this disease.

§ References 17 and 18.

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