

A STUDY OF THE THERAPEUTIC EFFECTS OF PROPOLIS *)

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1. Tests on the fungistatic effects of propolis

From 1957 to 1959, we have successfully treated such skin diseases as corns, callosities etc. with propolis produced in our country**. At the same time it was found that fungus infection of the feet was also cured. In order to prove whether or not the latter was due to the antimycotic action of propolis, in 1957 we tested the fungistatic effect of propolis on different fungi. The tested fungi were: 11 species of superficial fungi — *Achorion schonleini*, *Epidermophyton floccosum*, *Microsporum ferrugineum*, *M. gypseum*, *M. lanosum*, *Trichophyton cerebriforme*, *T. concentricum*, *T. gypseum*, *T. rubrum*, *T. tonsurans*, and *T. violaceum*; 9 species of deep fungi — *Aspergillus fumigatus*, *A. niger*, *Candida albicans*, *Cryptococcus neoformans*, *Geotrichum candidum*, *Hormodendrum compactum*, *H. pedrosoi*, *Phialophora verrucosa*, and *Sporotrichum schenckii*.

By using the paper disc method it was proved that the paper soaked in 1—10% alcohol or ether extracts of propolis, and then dried, had fungistatic action on all 11 species of superficial fungi tested, but it was less effective on *Trichophyton concentricum*. In the 9 species of deep fungi the action was either weaker or not obvious. No difference was recorded between the effect of alcohol and that of ether extracts of propolis. The author considers that flavones and cinnamic acid derivatives are the fungistatic constituents of propolis.

2. Use of propolis in treatment of psoriasis by oral administration

From November 1974 to December 1976, the author tested propolis in the treatment of 160 cases of psoriasis vulgaris. The tablet prepared by us contained 0.3 g of propolis each; 2 to 3 tablets were given 3 times daily. The treatment lasted for 2 to 3 months. No other treatment was given simultaneously. Usually, the effect of propolis was noticed after 2 to 4 weeks of treatment, and apparent curative effect was recorded in most patients 2 months later. Of the 160 cases of psoriasis, 37 were apparently cured, 17 considerably improved, 58 improved, and in 48 no effect was recorded. The therapeutic effect of propolis on psoriasis appears to be related with the duration of the disease, being more effective in pa-

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tients having been ill for a shorter period of time. Of 34 cases of 1 year duration, 21 (64.71%) were apparently cured, while of the 23 cases of more than 20 years duration only 1 (4.35%) was apparently cured ($P < 0.01$). Of 73 cases of less than 5-year duration 33 (45.21%) were apparently cured, and of 87 cases of over 5-year duration only 4 (4.59%) were apparently cured ($P < 0.01$). Of the 37 apparently cured cases, which were closely observed for 1—2 years after treatment, 5 relapsed in 3 months, 5 in 4—6 months, 7 in 7—9 months, 4 in 10—12 months, and 1 after one year. Fifteen cases did not relapse, even after 1 year. As there is no specific treatment for psoriasis up to the present time, the results of the present study showed that propolis administered orally has certain effects on psoriasis. Moreover, when so administered, the troublesome skin application and the toxic side effects of other chemical agents are avoided. During this study, in a few cases only some mild side effects such as dryness of the mouth and nostrils, dizziness, discomfort in the epigastric region, and somnolence have been recorded. However, such side effects did not interfere with the treatment.

3. Clinical observations on treatment of hyperlipidemia with propolis

During the treatment of psoriasis with propolis, the author noticed that there was a reduction of level of lipids in the blood. Observations were then made on patients with hypertension, arteriosclerosis and coronary heart diseases complicating with high serum lipid content. Cases with serum cholesterol over 230 mg%, or with serum triglyceride over 120 mg% were studied. A total of 45 patients were studied: 19 men and 26 women; the youngest was 24 years old, the oldest 76, with an average age of 54. All patients took the tablets containing 0.3 g of propolis each, 3 tablets three times daily after meals. Each course of treatment lasted for 1 month, and a second course might be given. During the treatment, the fat-containing diet was not strictly prohibited, and no other drugs were given simultaneously, except in cases with severe hypertension when apitoxin ultrasonic dialysis was applied. The lipids were determined in fasting state one and two months after the treatment. The results are given in the table in page 25.

In the cases with high blood lipids, both cholesterol and triglyceride levels were considerably reduced after treatment with propolis for 1 or 2 months.

According to the types of blood lipids, the therapeutic effects were as follows:

(1) Of the 4 cases belonging to type IIa, the cholesterol level could not be reduced in 1 case, but was reduced in 3 cases. Of the latter 3, the

EFFECT OF PROPOLIS ADMINISTERED ORALLY ON BLOOD LIPIDS

Blood lipids	No. cases	Before treatment xmg%±S.E.	Treated for 1 month			Treated for 2 months		
			xmg%±S.E.	Average reduction (mg%)	P	xmg%±S.E.	Average reduction (mg%)	P
Cholesterol	23	265± 7.81	235±8.24	29.61	<0.01	228± 7.60	41.30	<0.01
Triglyceride	44	246±18.52	192±4.29	53.88	<0.01	170±11.09	76.67	<0.01

value was reduced to normal in 2 cases only. It was found that propolis had no effect on triglyceride in cases of type IIa. (2) Of the 30 cases of type IIb, triglyceride was reduced in 27, and reached normal level in 11 of these 27 cases, while no reduction was recorded in 3 cases. For the 12 cases of type IIb with high cholesterol, it was ineffective in 1 case and effective in 11 cases of which in 6 the cholesterol level was reduced to normal. (3) In the only case of type III, the therapeutic effect was satisfactory as indicated by the lowering of cholesterol and triglyceride from 410 mg% to 302 mg% and from 510 mg% to 440 mg% respectively. (4) In all 10 cases of type IV, propolis was effective in reducing the triglyceride level: from 310—575 mg% to 120—390 mg% after treatment. Of 6 cases of type IV with high cholesterol, it was ineffective in 1 case and effective in 5 cases, and in 4 of them the cholesterol level was reduced to normal.

The 6 cases whose blood lipids were reduced to normal were reexamined 20—45 days after the treatment. It was found that the lipids remained at the normal level; this indicates that the effect of propolis is maintained for a short period of time after the treatment is over.

Most of the 45 patients treated with propolis experienced relief of symptoms. The electrocardiogram of part of the patients showed certain improvement. The patients tolerated propolis quite well. A few of them only experienced dryness in the mouth and epigastric discomfort, but such mild side effects did not interfere with the treatment. Although it is known that propolis contains various flavones, further investigations are necessary for determining the active constituents and the mechanisms by which the lipid content is reduced, as well as its effects in the treatment of arteriosclerosis and coronary heart diseases.