

ANTI-INFLAMMATORY EFFECT OF PROPOLIS OINTMENTS*

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The general interest in apitherapy and the utilization of bee products as part of the folk medicine have also been manifest in and become a practice of the official medicine. In the last few years there has been an upsurge of interest in topical application of preparations with propolis in the treatment of various skin diseases. Undesired after-effects (sensitiveness, allergenic responses) have been however reported of late, these effects being in general due to non observance of the directions for use recommended following tests of the preparations concerned. Because the mechanism of action of the different constituents of propolis – used in preparations for both external and internal use – has not yet been fully elucidated, we think it necessary to carefully investigate and make observations of every after-effects suspected to occur; laboratory experiments and on patients must be made to this end.

From personal communications and reports in popularization literature (and less from scientific literature) it results that the preparations with propolis have a favourable effect in the treatment of various skin diseases. Such preparations could *inter alia* prevent excessive sun burning or at least diminish the consequences of prolonged exposure to sun.

The assertions have called forth our interest because relatively few drugs and preparations with “filtering” effect are available at present.

We experimented ointments with propolis on patients exposed to artificial sun light, in order to determine the effect of the ointments on their brunt skin, and to investigate the mechanism of the action of the propolis included in the protective ointments**.

Method

We made the experiments on 75 patients (more men than women) of the skin disease department. The patients had different type skin (dry, fat, normal); their age average was 34.6 years. Treatment was applied with the agreement of the patients. In order to assess the efficiency of the treatment we compared two zones of skin equal in size: on one we applied the ointment with propolis, and on the other – the control ointment. We selected skin zones in the area stretching from the omoplates down to the lumbar zone, with no pathological affections or with affections tolerating artificial sun light. On the left side we applied the control ointment (with 3% boric acid), and on the right side – ointments with various amounts of propolis (1-3%), always in very thin layers. 15 minutes after application of the ointments, both the left and right skin zones concerned (divided into 10 equal operational fields) were exposed to artificial sun light. As source of light we used a Hanau Impulse 3002 quartz lamp with standard light radiation without filter, also equipped with an infra-red radiation lamp – in order to obtain as similar a radiation as possible to the natural sun light. The time of exposure varied: 4, 6, 8, 10, and 12 seconds. The patients were then examined and the effect of radiation was recorded 2, 24, and 48 hours after exposure. In 25 patients, 1% propolis ointment was applied, in another 25-2% propolis ointment, and in the last group of 25 patients – 3% propolis ointment. The control ointments used were comparable to those with propolis. The exposure to radiation usually caused erythema. We recorded several stages of inflammation:

- (-) no erythema; the radiated zone had a normal aspect;
- (+-) hardly perceptible erythema;
- (+) visible erythema;
- (++) heavy erythema and more or less visible oedema.

For statistical processing we have established the following figures equivalent to our marks:

- = 0; +- = 0.5; + = 1, and ++ = 2.

Results and discussion

In the 75 patients exposed to radiation, 750 skin operational fields have been defined – 375 on the left side (control ointment) and 375 on the right side on which ointments with different propolis content were applied.

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Two hours after radiation we found that erythema – more or less visible – existed in all patients, on both sides of the skin zone concerned. Visible erythema was recorded to exist in 223 of the 375 operational fields of the skin on which propolis ointments had been applied, and in 308 of the 375 on the skin zone on which the control ointment had been applied.

In figures, the difference was even more obvious. Under the same conditions of radiation, much more visible erythema was recorded in the control skin zone than in that on which propolis ointments had been applied. A ratio of 395 : 573.5 was obtained showing the favourable effect of propolis ointments (the lower value 395 indicating a better protection of the skin).

After 24 hours, the differences were even more obvious. The erythema would become more and more marked, after which it suddenly regressed. The lightly inflamed zones would turn lighter in colour and disappear in 24 hours. Only the heavier inflammation would persist. In all cases, regression was faster in the skin zone treated with propolis ointments. Of the 223 square areas of skin with visible erythema, only in 87 (17 patients) the erythema still persisted after 2 hours; in the control skin zone, erythema persisted in 248 square areas (23 patients). The ratio was 82.5 : 255 which shows that the propolis ointments have one more effect: of speeding up healing of the erythema.

After 48 hours, slight differences between the two skin zones have been recorded. The visible erythema had disappeared in most patients, both on the left and right sides of the skin zone concerned; only a few lesion traces would rarely occur. In 11 square areas of skin (2 patients), on which propolis ointments had been applied previously to radiation, the skin had a red brownish colour, while in the control skin zone, 68 square areas in 8 patients had the same colour – with the difference as compared to the zone treated with propolis ointments being not greater than at the previous examination.

The results obtained by us show that the ointments with propolis act as a light filter. They have however not prevented erythema but it was less serious and regressed fast – in 24 hours lesions would disappear. This indicates that the ointments with propolis also have an anti-inflammatory effect.

Surprising as it may be, we found that the anti-inflammatory effect of the ointments do not depend on their propolis content: their effect was found to be practically the same whether containing 1% or 3% propolis. Therefore, because the 1% propolis ointment is efficient, there is no reason for using ointments with a higher propolis content.

Conclusion

The results of our experiments on patients show that propolis has an anti-inflammatory effect in skin diseases, notably an obvious anti-erythema effect. This action cannot be attributed to the light-filtering properties of propolis; it is precisely the outcome of the anti-inflammatory action of its constituents. This strongly calls for a more thorough study of its anti-inflammatory action and of the pharmacodynamics of the active principles on the skin, the more so as, following the results obtained, we believe that topical application of such ointments could be used not only for protecting the skin from sunlight but also for curative purposes.