Assessment of the public’s knowledge of targeted supplements in anti-acne therapy

Ocena poziomu wiedzy społeczeństwa na temat stosowania celowanej suplementacji w terapii przeciwtrądzikowej

ABSTRACT

Acne is one of the most common dermatological diseases worldwide. The study aimed to assess the public’s awareness of the effect of dietary supplements on accelerating and improving acne treatment. The questionnaire survey showed that the respondents' general knowledge of the topic was quite high, however, it is necessary to further expand it in order to enhance the efficacy of anti-acne treatments.

Keywords: acne, acne vulgaris, supplementation, supplements, diet, survey

STRESZCZENIE

Trądzik to jedna z najczęściej występujących chorób dermatologicznych na świecie. Celem pracy była ocena świadomości społeczeństwa na temat wpływu suplementów diety na przyspieszenie oraz poprawę terapii przeciwtrądzikowej. Na podstawie przeprowadzonego badania ankietowego stwierdzono, że ogólna wiedza respondentów na przedmiotowy temat była dość dobra, jednak w dalszym ciągu wymagane jest jej poszerzanie celem poprawy skuteczności terapii przeciwtrądzikowych.

Słowa kluczowe: trądzik, trądzik pospolity, suplementacja, suplementy, dieta, badanie ankietowe

INTRODUCTION

Acne vulgaris is an inflammatory disease with a complex aetiopathogenesis. It is one of the most common dermatological diseases worldwide. In acne therapy, a holistic approach to the patient taking into account his/her physical and psychological state is extremely important. In this dermatosis, several types of lesions are distinguished such as microcalcifications, open comedones, closed comedones, pimples, pustules, cysts and fistulas [1]. The areas predisposed to acne lesions are the face (forehead, nasal area and chin), chest (sternum area), neck and upper back [2]. Factors aggravating the course of the disease include chronic stress (the body produces excessive amounts of cortisol, causing an inflammation in the body and the release of pro-inflammatory cytokines), a diet highly processed and rich in products with a high glycaemic index (consumption of such products induces inflammation in the body while exacerbating the course of acne), sleep and circadian rhythm disorders [3-5].
DIETARY SUPPLEMENTS
Dietary supplements are food products that are used to supplement the daily diet. They are a concentrated source of minerals, vitamins or other substances with a nutritional effect. The selection of a particular preparation is tailored individually to the needs of the organism concerned, often on the basis of the results of previous blood tests, in order to identify and supplement any deficiencies. Consuming dietary supplements exclusively from verified sources is crucial. It is important to acknowledge the potential danger of a dietary supplement interacting with medication that has been previously consumed. It is advisable to take dietary supplements intermittently, and after any deficiencies have been addressed, it is recommended to discontinue supplementation or take a hiatus [6, 7].

Supplements supporting acne therapy should exhibit a primarily anti-inflammatory effect and accelerate skin regeneration.
- Vitamin D is oil-soluble vitamin, and it may be classified into three different derivatives: calciferol (D$_2$), ergocalciferol (D$_3$) and cholecalciferol (D$_{30}$). Vitamin D deficiency in the human body is when the concentration is below 20 ng/ml. Cholecalciferol effectively inhibits the production of pro-inflammatory cytokines, which promotes the reduction of acne lesions. In addition, vitamin D renews and strengthens the epidermal barrier and influences the normal proliferation of sebocytes and keratinocytes, which promotes the nullification of factors that trigger and exacerbate acne lesions [8-10].
- Vitamin A is also oil-soluble thus it is important to consider this while taking supplements. Upon consuming this vitamin, a decrease in inflammation, normalisation of the process of keratinization in the outer layer of the skin, and a notable decrease in excessive production of sebum may be observed. In cases of severe vitamin A deficiency, an increase in inflammatory lesions is observed, as well as excessive dryness and roughness of the skin [11].
- Omega-3 acids have an inhibitory effect on oxidative stress processes in the human body, which is one of the factors exacerbating the course of acne. In addition, they exhibit anti-inflammatory effects and regulate the amount of sebum secretion [12].
- Curcumin has strong antioxidant properties by reducing lipid peroxidation. In addition, it manifests a strong anti-inflammatory effect by inhibiting the secretion of pro-inflammatory cytokines. Moreover, curcumin has antimicrobial properties [13, 14].
- Zinc is a chemical element belonging to the group of microelements. It is necessary for the proper functioning of the skin and the entire human body. Zinc’s biological properties include antibacterial, anti-inflammatory, sebum-regulating, accelerating the regenerative processes of the skin. In addition, zinc influences the sealing of the hydro-lipid mantle of the epidermis. According to studies, acne patients were often deficient in zinc, and after introducing targeted supplementation of this element, a significant improvement in the appearance of the skin and an overall improvement in their clinical condition was observed [15, 16].
- Evening primrose oil is extracted from the Oenothera biennis L. seeds which are the main raw material of the plant. They are a source of essential fatty acids, including linoleic acid (approximately 76%) and gamma-linolenic acid (approximately 9%). In addition, evening primrose oil contains phytosterols, magnesium, zinc, selenium and calcium. The phytosterols are responsible for accelerating the regenerative and keratolytic processes; they also have anti-inflammatory, antibacterial and antifungal properties. Zinc favourably influences the composition of sebum, facilitating its transportation to the skin's surface. It expedites the healing process of wounds and aids in restoring the skin's inherent pH level, which is crucial for maintaining an effective hydrolipid barrier. In addition, oral supplementation with evening primrose oil reduces the risk of allergic reactions manifested on the skin. It is recommended for skin with acne, psoriasis or atopic dermatitis. Evening primrose oil also may accumulate in the deeper layers of the skin, thus relieving inflammation and any irritation [17, 18].
- Alpha-lipoic acid (ALA) is an organic chemical compound produced endogenously by the human body. It exhibits potent antioxidant properties. ALA inhibits inflammation, reduces lipid peroxidation and regulates sebum secretion. The use of ALA supplementation protects the body from the negative effects of oxidative stress [19, 20].

AIM OF THE STUDY
The aim of this study was to assess the public’s awareness of the effects of selected dietary supplements on accelerating and improving the effects of anti-acne therapy.

MATERIAL AND METHOD
The author’s online Google form survey was utilised as the material for the study. Participation in the survey was voluntary and anonymous. The questionnaire consisted of 24 questions on the topics of acne and dietary supplements. The survey included both single-choice questions as well as questions where respondents could provide more than one answer. The survey was conducted in a group of men and women aged between 18 and 75 years. 130 questionnaires were collected.

RESULTS
130 people took part in the survey, including 81 women (62.3% of respondents) and 49 men (37.7%). The largest age group was people aged 35-55 (50% of respondents), followed by aged
18–35 (45.4%), and those aged 55-75 accounted for 4.6% of respondents.

Respondents were asked to indicate whether they had ever suffered from acne. 46% of respondents had experienced or still suffer from the dermatosis, also 46% of respondents had not experienced acne in their life, while 8% of respondents did not know how to answer this question (Fig. 1).

The type of lesions that respondents with acne noticed in themselves during the course of dermatosis was analysed. 33.8% of respondents indicated that they had experienced papules or pustules; 32.3% of respondents indicated that the course of acne was accompanied by inflammatory changes; nodules/cysts appeared in 1.5%; while all of the above-mentioned skin lesions were recognised by 52.3% of respondents. 12.3% of respondents were unable to answer the question (Fig. 2).

Respondents were asked about the effectiveness of supplementation as a support for acne therapy. 54.9% of respondents believed that dietary supplements could support the therapy/acne lesion treatment; 11.3% of respondents indicated that dietary supplements could not support the therapy/acne lesion treatment. 33.8% of respondents were unable to answer the question (Fig. 3).

Respondents were asked about the effectiveness of vitamin D use during acne therapy. 4.6% of respondents answered that the reduction of acne lesions was significant after vitamin D supplementation; 68.2% of respondents indicated a slight reduction of acne lesions; 13.6% of respondents answered that they did not notice a reduction in inflammatory lesions after vitamin D supplementation; and 13.6% of respondents could not answer the question (Fig. 4).

An analysis of supplementation with omega-3 fatty acids during anti-acne therapy was also carried out among the study participants. 81.8% of the respondents indicated that the specialist had pointed out supplementation with omega-3 acids; among 4.6% of the respondents, the specialist had not suggested supplementation with omega-3 acids; while 13.6% of the respondents did not know how to answer the question (Fig. 5).
The effect of curcumin on the therapeutic effects of acne treatment in respondents was also examined. 52.4% of respondents answered that they noticed a slight reduction in acne lesions after curcumin supplementation; 19% of respondents did not notice a reduction in acne lesions; while 28.6% of respondents could not answer the question. There were no responses indicating a significant reduction in acne lesions (Fig. 6).

Respondents were asked to indicate the effect of evening primrose oil supplementation on the appearance of their skin. 11.1% of respondents answered that after the introduction of evening primrose oil supplementation they noticed a reduction in acne lesions, in addition their skin became smoother and tighter; 61.1% of respondents noticed a slight reduction in acne lesions; 5.6% of respondents did not notice a reduction in acne lesions; while 22.2% of respondents did not know which answer to give (Fig. 7).

Respondents were asked to answer a question about the introduction of zinc during acne therapy. 4.6% of the respondents answered that the professional recommended the introduction of zinc supplementation and a specific dose and dosage was given; 81.8% of the respondents answered that zinc supplementation was recommended, without giving a specific dosage; while in 13.6% of the respondents the professional did not recommend zinc supplementation. All respondents were able to answer the question posed, with no “I do not know” answers recorded (Fig. 8).

DISCUSSION
The study assessed the level of public knowledge about the impact of dietary supplements on acne therapy. The study also evaluated the proportion of individuals with acne and examined the impact of dietary supplements on the treatment of acne lesions, as reported by the participants in the study group. Almost half of the respondents (46.2%) declared having acne lesions during their lifetime. This dermatosis affects a great many people in both adolescence and adulthood.

Based on the data obtained, it can be concluded that people struggling with acne were accompanied by several types of lesions, which significantly reduced their self-confidence and psychological comfort. It also resulted in a reduced quality of life for those suffering from this dermatosis.
Supplementation of omega-3 acids is a very important part of anti-acne therapy. Based on a study, it was found that professionals recommend taking omega-3 acids when conducting acne therapies. They exert a mitigating impact on the occurrence of inflammatory lesions in individuals with acne. This was additionally validated in a 2014 investigation conducted by Jung et al. A group of 45 individuals suffering from acne participated in a study where they consumed two capsules daily for a duration of 10 weeks. Each capsule contained 500 mg of docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA). As a result, there was a noticeable decrease in the number of acne lesions [21].

Vitamin D is additionally utilised to enhance therapeutic efficacy. Its primary manifestation is the display of anti-inflammatory properties. A study by Yildizgören et al. confirmed that vitamin D deficiency can exacerbate the course of acne. Therefore, it is worthwhile to carry out a diagnosis and select an appropriate dose in order to supplement possible deficiencies that may cause inflammatory changes during therapy in a patient with acne [22].

ALA exhibits antioxidant activity, which supports acne treatment by inhibiting the formation of free radicals that exacerbate acne lesions. This observation was confirmed in a study conducted on human sebocytes in 2019 by Lee et al. in which ALA was proven to have anti-inflammatory effects and to reduce sebum production [20].

CONCLUSIONS
Based on the survey, it can be concluded that the public's knowledge of the introduction of targeted supplementation during anti-acne therapy is quite high. The trend among patients presenting themselves to a specialist and undergoing anti-acne therapy is increasing, which accelerates the achievement of satisfactory treatment and increases the chances of complete dermatosis remission. Appropriately selected dietary supplements can improve and accelerate the therapeutic effects and thus also improve the quality of life of acne patients.

SUMMARY
The results of the survey indicate that acne is a common dermatosis among the population, regardless of age and gender. In order to improve therapeutic effects, a holistic approach to the patient is necessary, as well as the supplementation of nutrient deficiencies through the use of appropriately selected dietary supplements. Such therapy should be preceded by detailed blood tests. Regular and reliable cooperation between the patient and the therapist makes it possible to put acne into a state of remission, thanks to which the patient has a chance to regain psychological comfort and self-confidence.

REFERENCES / LITERATURA
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