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THE EFFECTS ON FLAXSEED (*LINUM USITATISSIMUM)* ON THE SEVERITY LEVEL OF ACNE VULGARIS.

Devi Saviera Firnanda[1], Asih Budiastuti[2], Aryoko Widodo[3], Dhega Anindita Wibowo[2]
[1]Medical Student, Faculty of Medicine, Diponegoro University
[2.]Department of Dermatology, Faculty of Medicine, Diponegoro University
[3]Department of Medical Biology and Biochemistry, Faculty of Medicine, Diponegoro University

ABSTRACT

Introduction. Acne vulgaris is the formation of blackheads, papules, pustules, nodules, or cysts which were the result of the blockage and inflammation of the pilosebaceous unit. In general, there are several factors associated with the occurrence of Acne vulgaris, namely the abnormal activity of the bacterium Propionibacteria acnes, increased sebum production, hyperkeratinization of the pilosebaceous duct, and also the inflammatory process. **Objectives.** The primary objective of this research is to know the effect of flaxseed (Linum usitatissimum) on the severity level of Acne vulgaris. **Methods.** The design of this research is experimental research with a one-group pre-test post-test design. This research will be conducted from October to November 2019. And will be implemented in the city of Semarang. The population in this research is female college students (preferably Diponegoro University students) aged 18-23 years old who suffered from various severity degrees of Acne vulgaris which fulfills the inclusion and exclusion criteria. Subjects are determined using purposive sampling methods. **Results.** The research sample was mostly females aged 18-23 years of 2016 at Diponegoro University who suffered from various degrees of Acne vulgaris. After a paired T-test, $p < 0.05$ was obtained. Because the results obtained are $p < 0.05$, it can be concluded that there is a significant difference between the degree of Acne vulgaris during the pre-test and post-test. **Conclusion.** there is an effect of Linum usitatissimum seeds on the severity of Acne vulgaris.

Keywords: Acne vulgaris, rami seeds, flaxseed, ALA, EPA

INTRODUCTION

Human skin is differentiated into five types: normal, combination, oily, dry, and sensitive. Normal skin is characterized by the absence of oily and dry skin, so it appears more fresh and nice and has an almost invisible pore. Out of the five skin types, oily skin has the most common skin problems and usually caused by bacteria. Acne appears due to four factors namely the abnormal activity of the bacterium (Propionibacterium acnes), increased sebum production, hyperkeratinization of the pilosebaceous duct, and also the inflammatory process.

Overactive oil glands are associated with skin and pores. Excessive oil production from glandular oil makes the pores become clogged because there is a buildup of oil, which spreads the presence of active bacteria in the clogged pores. Bacterial activity causes infection, so the skin becomes inflamed. Inflammation of acne-prone skin is used to fight foreign substances in the form of bacteria or other compounds. Based on the causes of skin problems, acne is a skin problem that easily appears so that treatment needs to be done to treat acne. There are many forms of acne, some of them are called whiteheads, blackheads, papules, pustules, nodules, and cyst. Each one of those acne formations could cause inflammation on the skin.

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Masks are one of the facial skincare that has some benefits such as provide moisture, improve skin texture, rejuvenate, tighten, nourish, and soften the skin, cleans pores, brighten skin tone, relax facial muscles, also cure acne and acne scars. The perceived effects of treatment using face masks that contain anti-bacterial substances are revitalizing, healing, refreshing, and can produce temporary or long-term benefits.

Seeds from the *Linum usitatissimum* plant (Flaxseed) are a source of nutrients that contain several compounds high in omega-3 fatty acids such as alpha-linolenic acid (51.9 - 55.2%), linoleic acid (14.2-17%), and lignans. According to several studies, alpha-linolenic acid and linoleic acid can be synthesized in the body into anti-inflammatory substances which can play a role in regulating cell function especially helping to reduce the effects of the inflammatory process. While lignans are a phytoestrogen compound, which is an estrogen-like substance and also acts as an antioxidant. Antioxidants are substances that can provide endogenous protection and exogenous oxidative stress by capturing free radicals that can inhibit the oxidation of other molecules. Plant extracts with antioxidants provide molecules that can restore skin homeostasis thereby preventing erythema and premature aging of the skin.

METHODS

The design of this research is experimental research with a one-group pre-test post-test design. This research will be conducted from October to November 2019. And will be implemented in the city of Semarang. The population in this research is female college students (preferably Diponegoro University students) aged 18-23 years old who suffered from various severity degrees of Acne vulgaris which fulfills the inclusion and exclusion criteria. .Subjects are determined using consecutive sampling methods. The face mask is made from natural ingredients by boiling 200 grams of flaxseed with 1 liter of water in a ceramic pot. Boil it at 60 ° C for 20 minutes. The temperature is measured and monitored using a digital thermometer, then cool to room temperature. Store in a storage tube. Products can be stored in the refrigerator for 3 days. The product is used once a week for one month with a duration of use of about 15-30 minutes then washed with water. The data can be analyzed descriptively and analytically using the SPSS version 21.0 computer program using paired t-tests if the data distribution is normal. If the data distribution is not normal then the Wilcoxon test is used. The results are obtained in tabular or graphical form.

RESULTS

The study was conducted in October 2019 until November 2019. The pre-test and post-test were carried out in the Diponegoro University Faculty of Medicine building. The research sample was taken by consecutive sampling where the researchers chose respondents according to the inclusion and exclusion criteria, where the respondent criteria were Diponegoro University students aged 18-23 years of 2016 who suffered various degrees of Acne vulgaris severity and met the inclusion and exclusion criteria. Obtained as many as 17 respondents who met the criteria mentioned above. After paired T-test, $p < 0.05$ was obtained. Because the results obtained are $p < 0.05$, it can be concluded that there is a significant difference between the degree of Acne vulgaris during the pre-test and post-test.

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Table 1. T- Paired Test

Acne Severity Degree	Mean ± SD	p
Pre-test	62,06 ± 21,00	<0,001*
Post-test	47,29 ± 24,22	

* Significant (p < 0,05)

DISCUSSION

Results from the average total lesions of Acne vulgaris after the pre-test and post-test were classified based on acne grading according to Lehmann's Classification severity degree of Acne vulgaris. It is divided into 3 types of severity, namely mild, moderate, and severe. Data on the degree of severity that have been obtained from this research subjects before intervention is from a total of 17 research subjects,15 research subjects (88.3%) are diagnosed with moderate Acne, and 2 research subjects (11.7%) are research subjects with degrees of severe Acne.

After the intervention, there was a change in the degree of Acne vulgaris in 2 study subjects (11.7%) before the intervention of the two respondents were research subjects with moderate severity. After the intervention, it was stated that 2 of the study subjects experienced changes from moderate acne to mild acne. Data on the severity of the study subjects after the intervention were 2 research subjects (11.7%) who were subjects with mild acne, 13 study subjects (76.6%) with moderate acne, and 2 study subjects (11.7%) with severe acne.

The total results of Acne vulgaris lesions in the study subjects at the time of the pre-test were (62.06 ± 21.00) whereas at the time of the post-test were (47.29 ± 24.22) where the results experienced a decrease in total of Acne vulgaris lesions by (14 77 ± -2,401). Statistically, it can be stated that the obtained results are significant p <0.001. Which is said to be significant if p <0.05.

The hypothesis regarding the influence of Linum usitatissimum seeds on the severity of Acne vulgaris can be proven because there is a significant decrease in the number of Acne vulgaris lesions as well as a decrease in the degree of Acne vulgaris in 2 research subjects.

Research on the effect of flaxseed (Linum usitatissimum) on the severity of Acne vulgaris has never been carried out before, but several studies have shown that flaxseeds contain high levels of omega-3 substances such as α-Linolenic acid and linoleic acid which can be processed at temperatures 60 ° C for 20 minutes so that it can change to EPA. The EPA will produce decosapentanoic acid (DPA) and DHA known as resolvin (series E and D) and protectin. Resolvin and protectin have potential anti-inflammatory activities

Conclusion

Based on the results of research that has been done in 30 days on the University of Diponegoro University students in 2016 with an age range of 18-23, it can be concluded that there is an effect of Linum usitatissimum seeds on the severity of Acne vulgaris.

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Research needs to be done with a larger number of samples with a longer period of the flaxseed face mask interventions so that the results could be more accurate.

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