Study the Effect of Natural Productsin Acne Patients

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Abstract:

Background:*Acne vulgaris* (AV) is a common skin condition among adolescents and young adults, that may affected by diet.

Objectives: This study aimed to investigate the effect of dietary intervention and some natural productsin acne vulgaris.

Methods: A casestudy was conducted involving 112participants aged 15-25 year. Cases divided into 3 groups: group I: included patients uses formula 1 (honey, bees wax, coconuts oils,turmeric extract, garlic extract and chamomile extract) group II: included patients uses formula 2(honey, bees wax, thyme oil, cinnamon oil and marjoram oil)and group III: included patientshaving healthydiet.Blood Lipids Profile was determinedas well as degree of important in patient of AV.

Results: Acne severity showed a significant reduction in post-treatment than pre-treatment state in all studied patient groups(users of formula 1, formula 2 and healthy diet). Blood Lipids Profile showed significant reduction in healthy diet groups compared to cases group.

Conclusions: These results indicated that,natural productsmight have anactionin *Acne vulgaris* management program, as well as, dietary intervention.

Introduction

Acne is a chronic inflammatory disease of the pilosebaceous glands, characterized by comedones, papules, pustules, cysts, nodules, and occasionally scars(**shen *et al.,* 2012**). The condition starts after puberty and is a common skin disorder in adolescents and young adults**.** It

affects the face, anterior chest, and upper back **(Dréno, 2017).** Pathogenesis of acne includes follicular hyper keratinization, sebaceous hyper secretion due to androgen stimulation, follicular colonization by *Propionibacterium acnes* and immune and inflammatory responses **(Shen et al., 2012)**. Western diet, particularly dairy products may be associated with acne. Acne is absent in populations consuming low glycemic load diet and not consuming refined sugars, grains, milk and dairy products **(Romańska-Gocka et al., 2016)**.

The treatment of many diseases by using medicinal plants is an age old practice. The world health organization (WHO) stated that more than 80% of developing countries in the world use medicinal plants for their health care **(Genady, 2015)**.

Subjects and methods

Materials: All raw materials were purchased from local market of Shiben El-Kom, Menoufia, Egypt.

Kits: All kits including were purchased from Bio Diagnostics, Cairo, Egypt.

Extract preparation: Dried herbals were grounded using a mechanical grinder to yield fine powder. Ten grams of the powder was mixed with 100 ml of methanol 70% in conical flask and kept in shaking incubator at 100 rpm for 24 h then it was filtered. Extract filtrates were concentrated on a rotary evaporator at 45ºC for methanol elimination, and the extracts were kept in sterile bottles under refrigerated conditions until use. **(Joyce et al., 2006)**.

Method of formulation: Formula 1 preparation, bees wax and honey were melted in a glass container and heated in a water bath till completely dissolved. In another glasscontainer, weighted extracts ofturmeric, garlic and Chamomile. Both the containers were removedand both the mixtures were combined together slowly andstirred until it becomes creamy. Finally coconut oilwas added. Formula 2 was prepared by same methods.

Formula ingredients:

Formula 1		Formula 2	
Ingredients	**Quantities**	**Ingredients**	**Quantities**
Honey	44 g	Honey	54 g
Beeswax	40 g	Beeswax	40 g
Coconut oil	10 ml	Thyme oil	2ml
Turmeric extract	2 g	Cinnamon oil	2ml
Garlic extract	2 g	Marjoram oil	2ml
Chamomile extract	2 g		

Subjects

A total of 112 untreated acne patients age range 15- 25 years, who had inflammatory and non-inflammatory acne lesions and had not taken any medication for acne, were included in the study. Informed consent was obtained from each participant. Patients were attending the Dermatology Clinic in Menofia University Hospital, Egypt during the period April 2016to October 2016. Clinical data were collected. The collected data included patient age, sex, body mass index, and family history. Body mass index (BMI) was calculated based on height and weight as previously described**Al-Azzam *et al*., (2014)**. Patients were randomly divided into three groups: group I treated with formula 1and group II treated with formula 2twice a day. Group III applied diet program containing a healthy diet low (refined carbohydrate, snacks, fast foods and carbonate drink) and high (vegetables, fruits and water).At baseline and after treating, counting acne lesions and macro-photography had evaluated.After overnight fasting blood samples were withdrawn from each participant and used to lipid profile and glucose analysis.

Lipid profile: Quantitative estimation of total cholesterol (TC), high density lipoprotein -cholesterol (HDL) and Triglycerides (TG) using colorimeteric enzymatic method, using standard enzymatic colorimetric kits (Spinreact diagnostics kit,
Spain) and low density lipoprotein -cholesterol (LDL) was elaborated by Modified Friedewald equation **(Ghasemi*et al.,* 2018)** .

Glucose:was determined according to **(Schumann *et al*., 2002)** using ELITech Clinical Systems spectrophotometer at 340 nm.

Statistical analysis of the data was performed using the statistical package for the social science (SPSS) program. Results were expressed as mean ± standard deviation.Data were analyzed using Chi squared test,*t*-test and ANOVA. The differences were considered significantif the obtained *p* value was less than or equal to0.05 (**Snedecor and Cochran,1980**).

Results and discussion

Table (1): Characteristics of acne patients

Variable	Age Mean ± SD	BMI(kg/m2) Mean ± SD	Family history Absent: Present (n (%))
Patients	20.3±2.7	22.6 ± 2.5	63(55.8):50(44.2%)

n = number of subjects, SD = standard deviations.

Most of the participants were young adults with a mean age of 20.3 years and a mean BMI of 22.6 kg/m2.as well as,(44.2%)of these acne patientshad family history as shown in table (1).

Table (2): Comparison of lipid profile between groups

Analyses	Group I Mean ± SD	Group II Mean ± SD	Group III Mean ± SD
TC	182.4±3.9	182.0± 4.6	159.3±2.8*#
TG	95.3±15.2	93.9± 16.4	89.8±5.8
HDL-C	99.2±10.9	99.3± 10.7	101.0±5.2
LDL-C	65.1±8.8	64.9±8.7	40.4±3.2*#
VLDL	19.1± 3.0	18.8± 3.3	18.0±1.2
Glucose	98.7±15.6	97.4± 16.0	76.9±2.9*#

TC: total cholesterol, TG: triglycerides, HDL-C: high density lipoprotein cholesterol, LDL-C: low density lipoprotein cholesterol,VLDL: very low density lipoprotein cholesterol. Significant differences are indicated by $p \leq$ 0.05.*significant between group I and II, # significant between group II and III.

Comparison of lipid profile between groups is presented in table (2). Total cholesterol and LDLshowed statistically significant decrease in group III compared with other groups.These results were agreement with **Manzoor *et al*., (2016)**who showed statistically significant difference in the level of Total cholesterol, VLDL, triglyceride and HDL ratio between acne patients and controls. There is a statistically significant rise in levels of LDL, VLDL, Triglyceride and TC/HDL and decrease in levels of HDL with the severity of acne. Also, **Jiang *et al*., (2015)** and**Romańska-Gocka *et al*., (2018)**reported that adult women with acne had statistically significantly increased levels of TC, TG and LDL-C compared to healthy controls ($p < 0.05$). The level of HDL-C did not differ between the two groups.

HDL decreased in group I and II compared with group III. Triglyceride and VLDL level decrease ingroup III than other groups. **Da Cunha*et al*.,(2015)**reported that patients with grades II and III acne are more likely to have total cholesterol and low-density lipoprotein

altered.Glucose level showed significant reduction in group III compared with other groups.**Tayel *et al.*,(2013)**reported that after low glycemic load dietary intervention fasting serum sugar decreased significantly ($P<0.05$).

Table (3): Comparison of acne severity between pre and postuses formula1, formula 2 and applied healthydiet

Parameter	group I		group IIPre		group III	
	Pre	Post	Post		Pre	Post
Acne severity						
Mild (%)	6.5%	87.0%	0%	95.7%	10.0%	45.0%
Moderate	63.0%	13.0%	69.6%	4.3%	45.0%	30.0%
Severe	30.5%	0%	30.4%	0%	45.0%	25.0%
P- value	.000		.000		.045	

Acne casesdetected in(6.5%) hadmild degree of severity,(63.0%) moderates degree and (30.5%) sever degree at baseline before formula 1used as shown in table (3). While after use formula 1, (87.0%) of cases were transferred to be mild and(13.0%) became moderate. Also, at baseline before formula 2 used (69.6%) had moderates degree and (30.4%) sever degree. While after use formula 2, (95.7%) of cases were transferred to be mild and (4.3%) became moderate. There is a statistically significant decreasing in acne severity in post-treatment formulas than pre-treatment state. These results were in agreement with **Yang *et al.*, (2009) andPornpattananangkul *et al.*, (2013)** who suggested that (liposomal lauric acids) LipoLA hold a high therapeutic potential for the treatment of acne infection and other *P. acnes* related diseases.Also, **Rasheed *et al* .,(2011)**reported that poly herbal anti-acne face wash gels containing the extracts of plants *Rawvolfia serpentina, Curcuma longa,* and *Azadiracta indica* considered as an effective herbal formulation for acne treatment. **Eady *et al.*,(2013)** Xylose and sucrose are nonfermentable by *P. acnes* and have been used to reduce water activity and hence bacterial colonisation of wounds. A new follicularly targeted topical treatment for acne based on this approach should be well tolerated and highly effective.

Also,commonly utilized biologically based complementary and alternative therapies for acne and rosacea. Therapies discussed include vitamin C, nicotinamide, zinc, tea tree oil, green tea, resveratrol, curcumin, feverfew, licorice, chamomile, *polypodium leucotomos*, and nutrition-based approaches**(Kallis *et al.*, 2018).**The various types

of honey demonstrated significant but variable antioxidant, antibacterial, and antifungal activities **Masalha *et al.,*(2018)**. **Julianti *et al.,* (2017)** showed that the combination of cinnamon bark extract and honey against *P. acnes* and *S. epidermidis* showed additive activity with a fractional inhibitory concentration index (FICI) value of 0.625. Therefore, the combination of cinnamon bark extract and honey has potential activity against acne-causing bacteria. Also,**Taleb*et al.,*(2018)** and **Wijesundara and Rupasinghe, (2018)** reported that oregano and thyme formulation showed superior healing and antimicrobial effects compared to the reference antibiotic. Collectively, these data suggested that oregano oil Nano emulsion is a potential natural and effective alternative for treating acne and overcoming the emerging antibiotic resistance.

Statistically significant decrease was observed between pre and post dietary intervention in acne grading score. These results are in agreement with**(Kwon*et al.*, 2012)**, reported that Subjects within the low glycemic load (LGL)group demonstrated significant clinical improvement in the number of both non-inflammatory and inflammatory acne lesions. Also**, (Tayel *et al.*,2013)** found significant decreasing in the means score of acne before and after LGL diet intervention (25.43 ± 3.61 and 16.35 ± 2.50, respectively; $P= 0.026$).

photo (1) shows examples of cases with acne (cases A,C,E) and the same cases after uses formula 1 (B), formula 2 (D) and diet program that became mild (F).

A   **B**

C   D

E   F
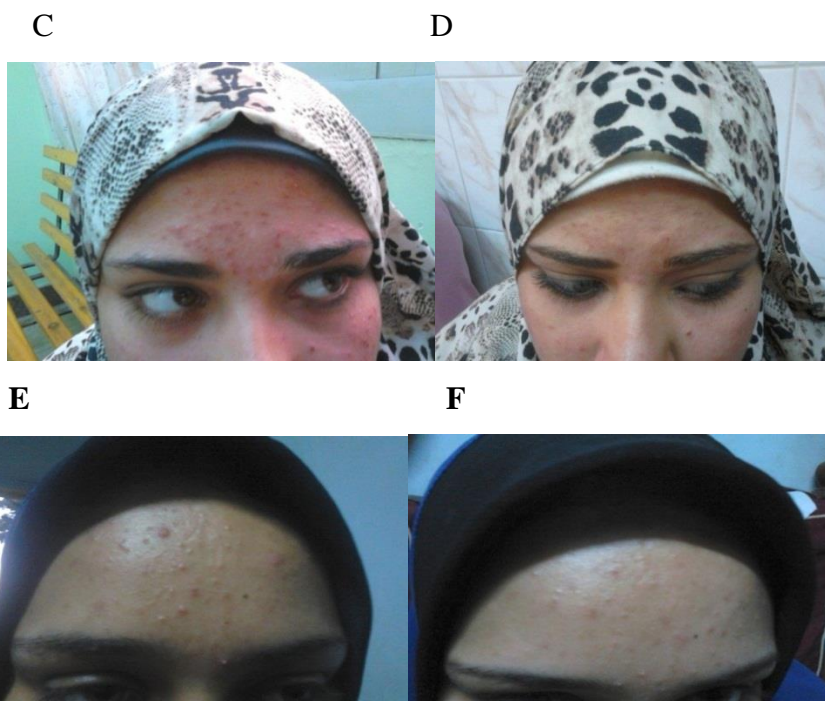
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دراسة تأثير بعض المنتجات الطبيعية على مرضى حب الشباب

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الملخص العربى

حب الشباب هو مرض جلدي شائع بين المراهقين ، والذى قد يتأثر بالنظام الغذائي. وتهدفت هذه الدراسة إلى دراسة تأثير التدخلات الغذائية وبعض المنتجات الطبيعية على حب الشباب.

تم إجراء دراسة تضم ١١٢مريض تتراوح أعمارهم بين ١٥ ـ ٢٥ عامًا. وتم تقسيم الحالات الثلاث مجموعات: المجموعة الأولى: تضم المرضى الذين يستخدمونالتركيبه١والتى تتكون من عسل النحل وشمع العسل وزيت جوز الهند ومستخلص الكركم والثوم والبابونج ، المجموعة الثانية: تضم المرضى الذين يستخدمون التركيبه٢ والتى تتكون من عسل النحل وشمع عسل النحل وزيت الزعتر والقرفه والبردقوشوالمجموعة الثالثة: شملت المرضى الذين قاموباتباع نظام غذائي صحي. وقد تم تقدير نسبة الدهون في الدم للمرضى وكذلك قياس نسبة التحسن فى درجة حب الشباب.

أظهرت النتائج تحسنا معنويا فى درجة حب الشباب بعد استخدام التركيبه ١ ، ٢ وكذلك النظام الغذائي الصحي. كما كان للنظام الغذائى الصحى تاثير معنوى على نسبة الدهون في الدم .

تشير هذه النتائج إلى ان المنتجات الطبيعية فى المجموعات الاولى والثانية والثالثة قدأظهرت تحسنا فى علاج حب الشباب.