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Sesame and Pumpkin Seed Oil are New Effective Topical Therapies for Alopecia Areata

Khalifa E. Sharquie[1,2,*], Adil A. Noaimi[1,2], Muna S. Abass[3]

[1]Department of Dermatology, College of Medicine, University of Baghdad
[2]Iraqi and Arab Board for Dermatology and Venereology, Center of Dermatology and Venereology, Medical City, Baghdad, Iraq
[3]Center of Dermatology and Venereology, Medical City, Baghdad, Iraq

Abstract ***Background:*** There are numerous topical and systemic therapies for alopecia areata. Pumpkin seed oil and sesame oil are edible food stuff, but they have many active therapeutic agents that could be useful in treatment of inflammatory diseases like alopecia areata. ***Objectives:*** To find new topical treatment for alopecia areata using plants extracts like pumpkin seed oil and sesame oil. ***Patients and methods:*** This interventional, single blinded comparative, therapeutic study conducted in Center of Dermatology, Medical City-Baghdad, Iraq during the period between September 2017 and September 2018. Forty patients, with patchy alopecia areata were enrolled with a total number of lesions were 122 patches. History and examination were done for each patient regarding all socio-demographics points related to the disease. The patients were divided into 2 groups according to type of treatment: **Group using topical pumpkin seed oil:** twenty patients with 58 patches were included in this group and topical pumpkin seed oil was applied twice daily to the patches, treatment continued for three months. **Group B using topical sesame oil:** twenty patients with 64 patches were enrolled in this group and topical sesame oil was applied to the patches twice a day for three months duration. All patients were seen every month to assess the response to treatment and to record the side effects. ***Results:*** **Group A with topical pumpkin seed oil:** at the end of third month of treatment 27(46.6%) of treated patches showed complete hair regrowth, 14(24.13%) patches with partial terminal hair regrowth, while 17(29.31%) patches not showed any hair regrowth. **Group B with topical sesame oil:** twenty five (39.1%) of treated patches demonstrated complete hair regrowth at the end of third month of treatment while 30 (46.87%) patches with partial course hair regrowth, 7(10.9%) patches with partial fine hair, and only 2(3.1%) patches did not show any hair regrowth. Both groups were showed statistically significant response at the end of three months with **P <0.00006** for group A, while for group B was **p <0.000003**. But when the two groups compared with each other at the end of three months, there was no statistically significantly difference **P=0.24**. ***Conclusion:*** Pumpkin seed oil and sesame oil are statistically significant effective new topical treatment for alopecia areata with no statistically significant difference between the two groups and they are safe drugs without any side effects as they are both edible agents.

Keywords Alopecia areata, Pumpkin seed oil, Sesame oil

1. Introduction

Alopecia areata (AA) is a common autoimmune disease characterized by non-scarring hair loss that affects all ages, both sexes, and all skin types. [1]

The lifetime prevalence of AA is approximately 2% regardless of sex or ethnicity. [2] Alopecia areata affects both sexes equally, and is found in approximately 0.1% to 0.2% of the general population. [3] AA typically affects patients <40 years of age with about 50% seeking treatment before 20 years of age. [4] Approximately 20% of patients have a positive family history, with reported monozygotic twin concordance rates ranging from 42% to 55%. [5]

The cause of AA remains incompletely understood, though it is believed to result at least in part from a loss of immune privilege in the hair follicle, autoimmune-mediated hair follicle destruction, and the up regulation of inflammatory pathways. Patients with AA frequently experience marked impairment in psychological well-being, self-esteem, and may be more likely to suffer from psychiatric comorbidities. [1]

Alopecia areata most commonly presents as a sudden onset of focal well-circumscribed patches of hair loss without signs of significant inflammation or scarring. [6]

Generally, patients are asymptomatic, though tingling, itching, and dysesthesia are sometimes reported prior to hair loss. In severely affected individuals, AA may progress to include all scalp hairs so called alopecia totalis, or all scalp and body hairs (alopecia universalis). [7]

* Corresponding author:
ksharquie@ymail.com (Khalifa E. Sharquie)
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Alopecia areata is unpredictable, as spontaneous remission rates range from 8% to 68%, depending on disease severity. Many therapies are available for the treatment of alopecia areata, including topical, systemic, and injectable modalities. [1]

Pumpkin seed oil are good source of vitamins, minerals and antioxidants [8] and these seeds oil acts as a topical anti-inflammatory agent, and it is effective against acute and chronic skin inflammatory processes. This may be attributed to promising proportions of omega-6 and omega-9 UFAs present in it. SO, Pumpkin seeds oil may be an important alternative therapy for the treatment of inflammatory skin diseases, such as psoriasis, contact dermatitis and atopic dermatitis. [9]

Sesame oil is an edible vegetable oil derived from sesame seeds and it is composed of the following fatty acids: linoleic acid (41% of total), oleic acid (39%), politic acid (8%), stearic acid (5%) and others in small amounts. The oil from the nutrient-rich seed is popular in alternative medicine. [10]

So the aim of the present work was to find new topical treatment for alopecia areata using plants extracts like pumpkin seed oil and sesame oil.

2. Patients and Methods

This study was interventional, single blinded, comparative, therapeutic study that was conducted in the Center of Dermatology and Venereology, Medical City, Baghdad-Iraq during the period of time between September 2017 and September 2018. Forty patients with patchy AA were enrolled in this study, 27(67.5%) patients were males and 13(32.5%) patients were females.

Inclusion criteria: all patients with patchy alopecia areata of the scalp and beard areas for three or less than three months duration were only included.

Exclusion criteria: Any patient with other types of alopecia areata like alopecia totalis, universalis or ophiasis were excluded from the study. Also patients that had history of receiving any kind of therapy for AA including herbal substances for at least two months before therapy in present work were excluded from this study. Pregnant women and patients with Downs's syndrome and connective tissue diseases were also not included in the present work.

History: Full history regarding age of the patient, duration of the disease, previous therapies for alopecia areata or other diseases, and any personal and /or family history of alopecia areata, atopy and other cutaneous and systemic autoimmune diseases like vitiligo, lichen planus, connective tissue diseases, diabetes mellitus, thyroid and inflammatory bowel diseases were carried out.

Physical examination: Physical examination was done for each patient for number, site, and size of the patches and presence of exclamation's mark hair. Also nails were examined for any associated changes. All patients were checked up for BCG scar.

Method of application and duration of treatment was fully explained to all patients or their taking care relative(s), assessment for the response to treatment and development of any possible local complications was done each monthly visit or more frequent visits in case of any unexpected event. Verbal consent was taken from each patient after explanation the nature of the disease, regarding the cause, course, prognosis, complications, comorbidities and nature of therapies. This study was approved by scientific committee of Iraqi Board of Dermatology and Venereology. Patients were divided into two groups, according to type of therapy:

Group A; using pure pumpkin seed oil (100%): Twice daily topical application for three months.

Group B; using pure sesame oil (100%): Twice daily topical application for three months.

The following grading was used to measure the clinical response in both groups:

G0: No hair regrowth

G1a: Partial villous including fine, short and lightly pigmented hair regrowth.

G1b: Partial terminal hair including course, darkly pigmented hair regrowth.

G2: Complete terminal hair regrowth.

3. Results

At the end of three months of twice daily topical application of therapy, there was hair regrowth in **41(70.7%)** of the patches treated with pumpkin seed oil, **14(24.13%)** of these patches showed partial course hair regrowth, while complete regrowth of course hair observed in **27(46.6%)** patches **P=0.00006**. While in group B using sesame oil: **62(96.9%)** of the patches showed hair regrowth, of them **7(10.9%)** patches with partial fine hair, **30(46.87%)** patches with partial coarse hair and **25(39.1%)** patches with complete coarse hair regrowth **P=0.000003** (Table 2). When the two groups were compared with each other there was no statistically significant difference **P=0.24**. When the cases with no response to therapy in both groups compared together there was statistically significance in favor of sesame oil **P=0.00065**. Hence patients treated with sesame oil had less no response. (Table 1)

Adverse effects: Itching at the area of application of therapy was observed only in patients with sesame oil, as it appeared at early course of treatment in **8(40%)** patients but vanished later on. This itching did not interfere with the course of therapy and not need to cessation of the therapy. While itching in patients with pumpkin seed oil was not observed in any case. Scaling was seen in **4(20%)** patients in each group that was observed during first 2 weeks and then subsided gradually (Table 2).

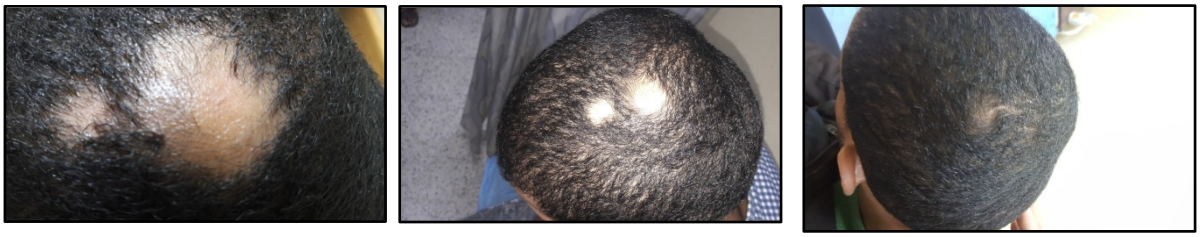
Table 1. The response to therapy in patients in Group A, B in each visit

Visit	Response	Group A (n = 58)			Group B (n = 64)			P Value
		No.	%		No.	%		
Second visit	No response	28	48.3		23	35.9		0.78
	Partial (Fine hair)	18	31		21	32.8		
	Partial (Course hair)	12	20.7	51.7%	20	31.3	64.06%	0.47
Third visit	No response	20	34.5		12	18.6		0.133
	Partial (Fine hair)	9	15.5		15	23.4		
	Partial (Course hair)	25	43.1		14	21.9		
	Complete	4	6.9	65.5%	23	35.9	81.5%	0.44
Fourth visit	No response	17	29.31		2	3.1		0.00065
	Partial (Fine hair)	0	0		7	10.9		
	Partial (Course hair)	14	24.13		30	46.87		
	Complete	27	46.6	70.7%	25	39.1	96.9%	0.24
		χ^2=22.2	d.f 3	P<0.00006	χ^2=28.42	d.f 3	P=<0.000003	

Table 2. Local side effects of therapy in both groups

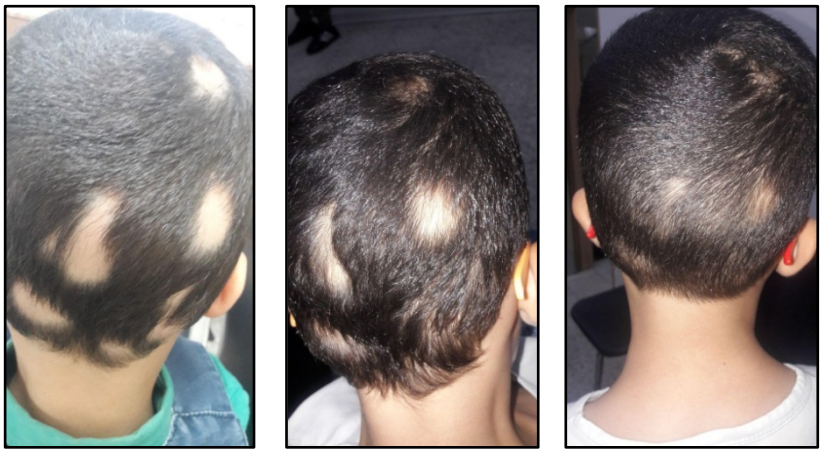
Side effects	Group A n=20		Group B n=20		
	No.	%	No.	%	
Itching	0	0%	8	40%	6.71*, 0.0095
Scaling	4	20%	4	20%	0, p=1
X^2 (Fischer) exact test=5, p=0.038					

*Mantel –Haenszel corrected .5=0.025



A **B** **C**

Eighteen years old male with 2 months history of AA treated with topical pumpkin seed oil (2times /day/3m), same patient after 2 months B, and 3 months of treatment C



A **B** **C**

Nine years old male with 3 months history of AA treated with topical sesame oil (2times /day/3m), same patient after 2 months B, and 3 months of treatment C

4. Discussion

Alopecia areata (AA) is a common autoimmune disease where there are many topical and systemic therapies like corticosteroid, minoxidil, immunotherapy and immune-suppressive medications [1].

Recently intralesional lactic acid **1%** has been used in treatment alopecia areata and showed complete hair growth in **38.1%** of treated patches at the end of three months of treatment and was comparable to triamcinolone intralesional injection which gave complete hair growth in 57.7% of treated patches but there was no statistical difference when compared with lactic acid [11].

Pumpkin seed and sesame oils are both an edible diet but fortunately contain many medicinal agents like vitamins, minerals and many fatty acids like omega-6, omega-9, linoleic acid, oleic acid, politic acid , stearic acid and others. All are medicinal agents that are helpful for treatment of alopecia areata that act as antioxidant and anti-inflammatory. [8, 9]

Searching the herbal medicine showed that Pumpkin seeds oil acts as a topical anti-inflammatory agent, and it is effective against acute and chronic skin inflammatory processes such as psoriasis, contact dermatitis and atopic dermatitis. [9] Sesame oil is also popular in alternative medicine. [10]

A significant study about pumpkin seed oil and hair loss was published in 2014. It might be the most rigorous study on a plant-based hair growth alternative thus far.

In the study, men with pattern baldness took either pumpkin seed supplements or a placebo. The results showed those who took supplements experienced 30% more hair growth than those who received the placebo. [12]

Researchers at Keimyung University had a clinical research study that was published in the *Journal of Biomedical Research* in 2010. Five-week-old mice were split into three groups, the first group received a topical application of saline, the second group received a topical application of 3% minoxidil, and the third group received a topical application of black sesame oil. The hair growth results found in the group who received a topical application of black sesame oil were comparable to the results found in the group who received the topical application of 3% minoxidil. [13]

Most recently Sharquie et al 2017 used Pumpkin seed oil as topical treatment for oral aphthosis and concluded that this oil had an effective therapeutic and prophylactic action against recurrent aphthus stomatitis. In addition it induced remission for at least three months after stopping therapy. Also no local or systemic adverse or side effects have been noticed during the course of treatment. [14]

The present work showed that both pumpkin seed and sesame oils are effective in treatment of alopecia areata and not applied previously for such indication, although pumpkin seed oil seems to be better but didn't reach statistically significant level.

5. Conclusions

Both sesame and pumpkin seed oils are new safe effective statistically significant therapies for alopecia areata with no statistically significant difference when compared with each other. Also they are lacking any important local or systemic side effects.

Limitations of the Study

As the present study is original one, accordingly should be repeated to confirm the these results and by increasing the number of patients and to be compared with standard drugs like topical steroids.

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