HEADLINES

SAF scarring alopecia.org
SCARRING ALOPECIA FOUNDATION

The Official Newsletter of the Scarring Alopecia Foundation

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What is the Evidence for an Association Between Sunscreen and Frontal Fibrosing Alopecia?

By Sophie Bernstein, MD Candidate, Class of 2025, University of Missouri Kansas City, Reviewed by Paradi Mirmirani, MD

As a result of the increased incidence of frontal fibrosing alopecia (FFA), multiple studies have been conducted to determine whether there are environmental triggers of FFA. One possible environmental trigger is facial sunscreen. The article "Sunscreen and Frontal Fibrosing Alopecia: A Review" written by Gabrielle Robinson, MD, Amy McMichael, MD, Steve Q. Wang, MD, and Henry W. Lim, MD in the Journal of the American Academy of Dermatology analyzed numerous publications on this topic (1).

One of the hypotheses is that an ingredient in the sunscreen, titanium dioxide nanoparticles (TiO2 NPs), permeates the hair follicle causing an inflammatory reaction triggering FFA. A total of four different questionnaire studies have been performed. According to a survey of women with and without FFA by Aldoori and colleagues, in comparison to women without FFA, women with FFA used significantly more sunscreen (2). Furthermore, a survey by Cranwell and colleagues supported this association between FFA and sunscreen use in women (3). Additionally, a similar questionnaire was given to male patients by Debroy and colleagues which also found an association between FFA and sunscreen use in men (4). Finally, the fourth questionnaire by Moreno-Arrones and colleagues also supports this association among both men and women (5). Ultimately, all four of the studies found similar results; both male and female FFA patients had significantly higher rates of sunscreen use.

There have been some case reports suggesting a link between sunscreen and FFA. One case report was written about a 54-year-old

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Newsletter Highlights

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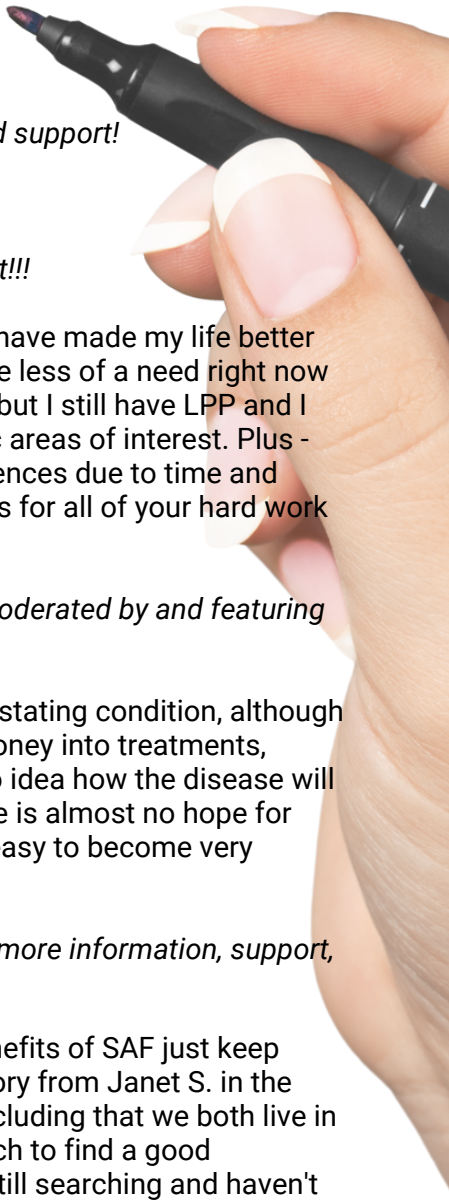

2022 Mane Event Survey Comments

Thank you for providing valuable information and support!

You all are doing an amazing job!

This organization is fantastic! Webinars are great!!!

Really appreciate your programming. You guys have made my life better in so many ways. The community is great. I have less of a need right now as I've gotten control and used to my condition but I still have LPP and I still want to tune in to hear all about my specific areas of interest. Plus - the webinars are easier than the full day conferences due to time and expense. I like the a la carte of webinars. Thanks for all of your hard work and effort!

I got the most out of the webinars with panels moderated by and featuring MDs specializing in CA.

I appreciate having this resource. This is a devastating condition, although not life-threatening. It is hard to put so much money into treatments, education, cosmetic fixes, etc. when one has no idea how the disease will progress and if treatments are helping and there is almost no hope for regrowth. As you can tell by my comment, it is easy to become very frustrated. Thank you.

Thank you for being there. We are desperate for more information, support, and help.

Thank you so much for this newsletter. The benefits of SAF just keep getting better and better! I really enjoyed the story from Janet S. in the newsletter. I have much in common with her including that we both live in the same geographic area. I related to her search to find a good dermatologist to help her. Unfortunately, I am still searching and haven't found anyone yet. Can SAF help with that?

Yes we can! Click **HERE** to learn more about the Scarring Alopecia Foundation's (SAF) Physician Referral Listing.

Evidence, con't from pg. 1

woman with FFA who experienced sustained hair regrowth after she stopped using sunscreen (6).

The growth continued even after the patient stopped other treatments. Another case report was written about a 42-year-old woman with FFA, the patient frequently applied sunscreen to areas of her forehead which eventually developed alopecia (7). In a separate study, hair from patients

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SUPPORT GROUPS

Connect. Support. Thrive.

SAF offers monthly virtual support group meetings for all types of scarring hair loss. This ensures that all patients have the opportunity to join meetings without geographic or specific type of scarring hair loss restrictions. SAF's ability to pivot and move to a virtual platform during the pandemic has been met with great success. Our members are eager to connect and share with each other and SAF continues to provide a safe place to do it.

The monthly meetings are held on the first Tuesday of each month at 7:30 pm EST for all types of scarring hair loss. There are also virtual CCCA meetings for US patients and one for UK CCCA patients. Most recently, a CCCA group in South Africa is starting to form. More to come.

CLICK HERE TO LEARN MORE AND SIGN UP!

Evidence, con't from pg. 2

that use sunscreen products was examined for titanium. All of the patients, FFA and control, that used sunscreen products had titanium in their hair.

Although the sunscreen ingredients were identified in the patient's hair, it is still unclear how this would trigger FFA. For example, women with FFA were patch tested with a TiO2 NP preparation. A patch test is used to determine whether a substance causes an allergic reaction when placed on the patient's skin. In this study, all of the women had negative patch test results. Therefore, the women were not allergic to TiO2.

Although this article presents multiple questionnaires describing an association between sunscreen and FFA, there is insufficient evidence to establish causality. For example, titanium was present in both the patients with FFA and control hair.

Additionally, the patients did not have an allergic reaction to titanium. Therefore, it is unclear how sunscreen would cause a reaction triggering FFA. Until physicians are able to gather more evidence and determine sunscreen's relationship to FFA, the patient should continue to use sunscreen and other sun-protective measures. However, since patients may read the studies describing a potential link between sunscreen and FFA, it s important that physicians discuss the current evidence with their patients and help patients select sunscreen and facial care products that they feel comfortable with. This may include non-chemical and non-nanoparticle sunscreens.

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NSAAM
NATIONAL SCARRING ALOPECIA AWARENESS MONTH
Let's Get Visible

A Recap of September 2022 National Scarring Alopecia Awareness Month (NSAAM) Campaign

I am excited to report that SAF's second annual National Scarring Alopecia Awareness Month (NSAAM) held this past September was a success! We were able to reach hundreds of hair salons and stylists around the country to teach the signs and symptoms of scarring hair loss. Stylists are often on the front lines of making a difference in their clients' lives because they may notice changes in their clients' hair and scalp even before the client themselves. Many women visit their hairstylists regularly, so salons are a valuable resource for early detection and education. The campaign was lay-friendly with easy-to-understand graphics and information. Stylists were not to become experts in the diagnosis of scarring alopecia, but to become aware of recognizable signs and symptoms and be able to alert their client if they notice a change. Being made aware may prompt the client to make an appointment with a dermatologist and get it checked out or diagnosed as soon as possible.

NSAAM 2022 was promoted through a widespread awareness campaign that primarily featured a 15-minute online educational module for hairstylists and salons. The module is comprised of a pre-questionnaire about hairstylists' current knowledge of the signs and symptoms, which is followed by a layman's easy-to-understand video moderated by Dr. Maryanne Senna, Director at the Lahey Hair Loss Center of Excellence and Vice President of SAF. At the completion of watching the video the user then retakes the same quiz to see if they answer the same way as prior to watching the educational video. Each salon who completed the module is set to receive a Seal of Recognition from SAF and will also be listed on SAF's list of 'certified' salons.

NSAAM 2022 also casted a wide net of awareness through social media platforms and industry publications. SAF's press release was picked up by several major hairstylist industry platforms and targeted social media boosts resulted in thousands of impressions and people reached.

NSAAM 2022 was a huge effort managed by two part-time staff at SAF. Thank you to **Toppik**, who sponsored NSAAM 2022 and all those who volunteered and helped with this campaign. We are

Continued on page 6

Update Your Contact Info in SAF's Database

We are on a mission at SAF to validate our database to ensure we have the most up-to-date information for you. As the only organization in the world that is driving and promoting research, education, and support for scarring alopecia, it is vital for SAF to represent as many patients as possible. We are focused on building the patient community so we're ready when new treatments, patient input, and clinical trial participants are needed. Please know that SAF's contact database information is NOT shared with any person, physician, or company.

Click Here to Update Your Contact Info

EXECUTIVE DIRECTOR MESSAGE

DEAR MEMBERS & FRIENDS OF SAF,

My apologies for missing our summer and fall edition of “Headlines" newsletter. There is always so much going on at SAF and time just rushed by very quickly. We also were busy with three major projects at the end of 2022: strategic planning, launching the CAPAIR survey, and our end-of-year campaign. But alas! Here is our winter 2023 edition and it is nonetheless sincere and filled with valuable information.

I hope you all are following us on social media! We have been reaching out and casting a wide net with our messaging over the last six months and have seen a major increase in followers and engagement. Our engagement has increased by 87% on Facebook and 203% on Instagram. We are poised to reach new audiences and more people across the globe in the coming months.

With the help of our new social media and editorial committees, we have been posting new medical articles on our website and featuring more medical content in our posts. Chandra Kasakevich and Courtney Harris, two patients, and board members, are spear-heading efforts within hair loss Facebook groups to spread credible and timely content from SAF. I have also been invited to speak in March at the American Academy of Dermatology annual meeting in New Orleans about what SAF can do for patients. This is the first time for SAF to be included on the agenda at this important medical meeting.

Unfortunately, at the end of the summer we had to say goodbye to Debra Lajeunesse, our administrative assistant who was helping us with many of our projects. Debra was with the organization for about one year and she will be missed. We also said goodbye to Colleen Leader, SAF's program and marketing assistant in November. Many of you had the pleasure of talking and zooming with Colleen at our monthly support group meetings or when calling the office. One of Colleen's biggest initiatives was National Scarring Alopecia Awareness Month (NSAAM) and the former Medical Student Program.

The Board of Directors has made the strategic decision to hold off on hosting an in-person conference in 2023 so I can focus my attention on SAF's research and corporate partnerships program. However, I am proud to share with you that the online support group meetings continue to be success and are growing stronger! New patients, longtime members and everyone in between are joining via zoom on a regular basis. The meetings have grown in attendance, so we split into breakout rooms with smaller groups. This promotes more personal conversations and lets everyone have an opportunity to share and ask questions. See page 3 for more information. Don't be shy and sign up. You won't be sorry.

Best regards,

Jean R. Pickford

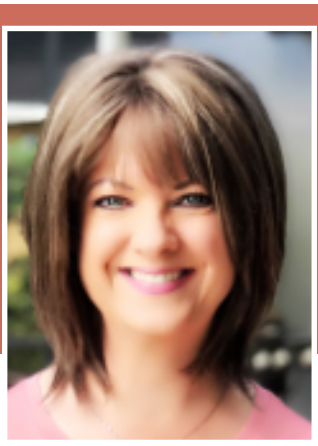
NSAAM, con't from pg. 4

deeply grateful to **Kris Wharton**, president of SAF, who volunteered her personal photo to use as the hallmark graphic of NSAAM 2022. It is not easy to be exposed publicly with hair loss, but Kris is on a mission to help others and proudly supports education for early detection.

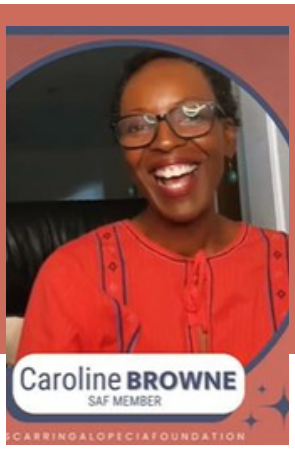
A special thank you to **Caroline Browne**, who recorded beautiful and eloquent videos about the importance of NSAAM, and our members who promoted the campaign to their own personal salon. SAF reached over five hundred salons in our email communications, and we have a scrolling list of the salons who participated in NSAAM on our website.

Another huge shout out to **Itisha Jefferson**, a third-year medical student at Loyola University Stritch School of Medicine and chair of SAF's Medical Student Program, who successfully secured a proclamation from the governor of Illinois recognizing September 2022 as National Scarring Alopecia Awareness Month. We are grateful to Itisha for securing this proclamation, as it is the first one of its kind for the Scarring Alopecia Foundation, and certainly will not be the last.

A lot of work went on behind the scenes to prepare for this awareness campaign, and although we may not have reached the lofty goals that we set, it lays the groundwork for next year and the future. And just because September is over, the education and awareness does not stop. SAF encourages salons and stylists to participate all year long in learning more about the signs and symptoms. You have the power to change your clients' lives and help them keep their hair!



Kris Wharton



Caroline Browne

Illinois Proclamation

Itisha Jefferson

NEWS & NOTES

Jean Pickford, Executive Director participated in the **American Academy of Dermatology Association's Legislative Conference in Washington DC** this past October. She was accompanied with many of her esteemed colleagues who also manage skin disease organizations as well as our patient advocates and board members. Legislative asks focused on two primary areas: removing barriers to treatment and care and supporting physician practices. Way to go Jean and team!

Summary of "The Use of Natural Ingredients in the Treatment of Alopecias with an Emphasis on Central Centrifugal Cicatricial Alopecia"

By Mairead Moloney, MD Candidate, Class of 2024, New York Institute of Technology College of Osteopathic Medicine, Reviewed by Apostolos Pappas, MD

In recent years there has been a shift towards the use of natural ingredient hair products - but what does the evidence show? An article by Dr. Nneamaka Ezekwe, Dr. Madelyn King, and Dr. Jasmine C. Hollinger, reviewed the medical literature to see what natural ingredients in hair products have evidence to support their use in regard to alopecia.

The purpose of their review was to investigate natural treatment modalities for Central Centrifugal Cicatricial Alopecia (CCCA), a type of scarring alopecia that results in permanent hair loss. The exact cause of CCCA is unknown, however it is believed to be multifactorial and suggested etiologies include hair-styling techniques that result in follicular damage, autosomal dominant inheritance, and the qualities of Black hair, such as being finer and more delicate due to its structure. Despite the lack of current literature on CCCA, the small amount of literature that does address CCCA, suggests that it commonly affects African American women.

CCCA is difficult to manage, and when the hair follicle is destroyed, hair regrowth is unlikely, thus early intervention is key. The goal of treatment is to halt progression of hair loss and promote hair regrowth in affected areas. Current treatment options are largely based on clinician experience and include local, topical, and intralesional corticosteroids. In more severe cases oral tetracyclines can be used and in refractory cases sometimes hydroxychloroquine and immunosuppressants are used.

Many patients with CCCA are buying over-the-counter natural hair products and this is partly due to the growth of the natural hair movement, where African American women are keeping their hair natural and unprocessed. The other component of this is that CCCA has no definitive cure or treatment, and patients are seeking out their own treatment modalities.

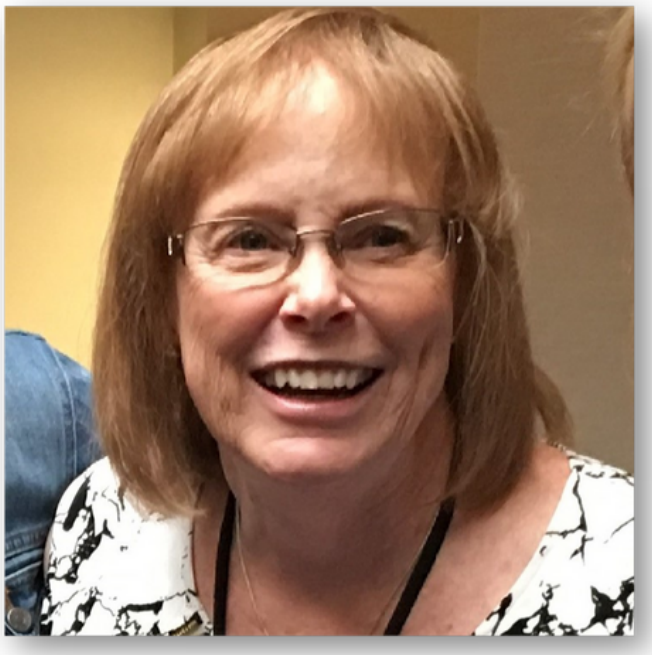
Unfortunately, the literature search by Ezekwe et.al showed no clinical trials on the use of natural ingredients for the treatment of CCCA, which is a scarring alopecia. However, the use of natural ingredients has shown to be promising in the treatment of non-scarring alopecia's, such as androgenetic alopecia, alopecia areata and psoriatic alopecia.

A total of eight clinical studies were reviewed and the following natural ingredients showed efficacy for the above-mentioned non-scarring alopecia's:

Con't. on page 10

"Many patients with CCCA are buying over-the-counter natural hair products and this is partly due to the growth of the natural hair movement..."

MEET OUR MEMBERS



MARILYN EY, FFA PATIENT

Diagnosed in 2007, with FFA (Frontal Fibrosing Alopecia), I couldn't pronounce Cicatricial. Normally a self- confident outgoing woman, I shrank from being seen in public. I felt like a freak. I just knew everyone was looking at my hair loss. When friends invited me to a get together, I was afraid to go. Then I remembered the advice of a friend, "If you have a fear, face it." Otherwise, I'd drag that fear with me the rest of my life. So, I joined my friends and realized no one stared at my hair. At one point all ten ladies stopped talking. I took that as a sign and blurted, "I have a rare hair disease and could go bald." Then I changed the subject. Those ladies never deserted me. During my FFA ups and downs they cheered and teared with me. Yet they would never understand the emotions raging inside me. A month later CARF (now SAF) Founder, Vera Price, became my doctor. She explained I could lose a significant amount of hair, but I'd never go bald. Oh, what a relief! Dr. Price invited me to the inaugural San Francisco support group meeting on October 22, 2007. Me at a support group? Huh? Would everyone be sitting around crying in their beer? The idea of attending a support group wasn't me. Not wanting to offend Dr. Price, I decided I'd go that one time. I'm so glad I did! A video was shown, attendees introduced themselves, I learned how to pronounce Cicatricial (sick ah Trish ul) and more importantly, *I was no longer alone*.

Over the years I've attended numerous support meetings, conferences and spoken with dermatologists and hundreds of scarring alopecia patients. To me, education is power. Throughout my alopecia journey I learned tips and tricks I want to share and help others.

Please join us at one of the monthly virtual support group meetings. You'll not only learn, but you'll make friendships with people who understand what you're going through. As a previous in-person support group leader, which have been put on hold for pandemic reasons, I now participate in the monthly general virtual support group meetings. As a Patient Outreach Volunteer, I enjoy communicating with other scarring alopecia patients. I hope to meet you on this journey.

~ Marilyn Ey

Give Hope!

If you would like to share your story with other scarring alopecia patients, please send your name, your written story (max 1200 words), and, if you are comfortable, a recent photo. Your story provides HOPE for others just like you who may be newly diagnosed or struggling in their journey.

MicroRNA Expression and Function in Lichen Planopilaris

A Final Grant Report 2022
Dr. Kehinde Ross - SAF Grant Recipient of $10K in 2014

Lay Summary

Complex diseases are underpinned by defective control of genes and cell behaviour. These genes include microRNAs (miRNA), which fine-tune the biomolecular trajectories of cells by modulating biological pathways. However, the roles of miRNAs in scarring alopecia disorders such as lichen planopilaris (LPP) and frontal fibrosing alopecia (FFA) have received limited attention.

Remarkable advances in genomic technologies have enabled us to uncover changes across hundreds of genes at a time. Using one such technique, we set out to find whether miRNA levels were altered in scalp skin samples from patients with LPP and FFA in order to establish their potential as targets for next generation RNA-directed therapeutics.

What did we find?

- The levels of 15 miRNAs appeared to be altered in LPP lesions compared to uninvolved scalp skin.
- Of these 15 miRNAs, the expression of 9 miRNAs appeared to be elevated while the levels of 6 were downregulated.
- Changes in the levels of miRNA in LPP lesions appeared minimal compared to FFA where almost 50 miRNAs were altered.
- Two of the miRNAs upregulated in LPP may inflammatory axes in LPP.

Altogether, our findings indicate that miRNA dysregulation may contribute to biological changes associated with LPP. However, further work is needed using larger patient cohorts to verify these observations. In addition, detailed molecular characterisation of the miRNA-targeted pathways associated with LPP is required, especially to support the development of miRNA therapeutics. Such work will help ensure that RNA-based technologies that have recently entered the clinic for a variety of rare diseases can be pivoted to tackle scarring alopecia.

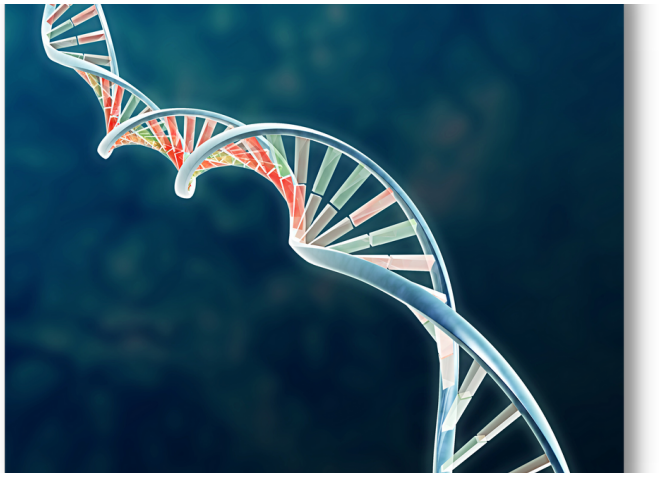
We would like to thank SAF for generously supporting this study.

Background

MicroRNAs (miRNAs) are now well-established as crucial regulators of diverse physiological and pathological processes. However, despite the early discovery of specific miRNAs in hair follicles, little is known about their roles in the scarring cicatricial alopecias. Several miRNAs are known to modulate inflammatory processes in the skin and other organs, but the putative roles of miRNA in lichen planopilaris (LPP) and frontal fibrosing alopecia (FFA) have not been established.

Methods

Lesional and non-lesional scalp skin samples were provided by Dr Matthew Harries (Salford Royal NHS Foundation Trust, northwest regional ethics committee approval (reference 14/NW/0342). Total RNA was extracted and subjected to RNA sequencing Samples were Therefore we profiled the expression of miRNA in LPP and FFA samples using RNA sequencing at the Centre for genomics Research, University of Liverpool.



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Natural, con't from pg. 7

azelaic acid, garlic, olive oil, pumpkin seed oil, rosemary oil, tea tree oil and two aromatherapy combinations.

Azelaic Acid

Azelaic acid comes from the fungus Pityrosporum ovale found in grains, such as barley and wheat. One randomized controlled study found that azelaic acid can be used for hair regrowth in patchy alopecia areata, as it showed similar results when compared with the positive control, anthralin (dithranol), which has previously been shown to improve hair growth. This is likely due to the belief that azelaic acid helps to normalize the keratinization process of hair and skin, resulting in growth.

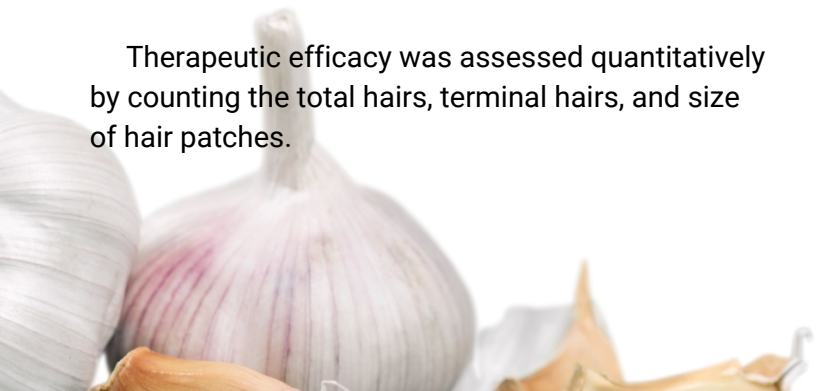
Limitations of this study include that it is the only study supporting azelaic acid's use in hair regrowth and it was not placebo-controlled.

Garlic

Garlic (Allium sativum) has been used medicinally for centuries. While the exact mechanism of garlic on increased hair growth is unknown, one study found a 55% increase in capillary skin perfusion, which could lead to increased blood perfusion to the scalp and result in increased hair growth.

A double-blind randomized controlled study found that 3 months of 5% garlic gel in combination with topical betamethasone valerate improved the therapeutic efficacy starting at the 2nd month of application in those with alopecia areata. This was compared with the control group, which consisted of topical betamethasone valerate alone.

Therapeutic efficacy was assessed quantitatively by counting the total hairs, terminal hairs, and size of hair patches.



Olive Oil

Olive oil is a liquid fat that comes from crushing olives. One case report showed olive oil in combination with other topicals improved hair

loss in psoriatic alopecia. First olive oil was applied before shampooing with tar shampoo daily and dexamethasone 0.25% lotion was applied twice a day. This resulted in a decrease in the number of scales and hair shedding. After 3 months of therapy, 75% of hair regrowth was observed, with no recurrences at 1-year follow up.

Limitations include that this was not a controlled trial.

Pumpkin Seed Oil

Pumpkin seed oil has been shown to act as a 5-alpha-reductase inhibitor, which means it prevents the conversion of testosterone to the more potent dihydrotestosterone (DHT). DHT makes the hair follicles smaller resulting in thinner and thinner hairs with each hair growth cycle and it decreases the growth phase of hair as well.

Con't on page 11

Natural, con't from pg. 10

A double-blind randomized placebo-controlled study compared pumpkin seed oil and a placebo on hair growth in patients with mild-to-moderate androgenic alopecia. Patients were given 400mg of pumpkin seed oil or a placebo for 24 weeks. Photographs were taken to be graded by a blind investigator and after 24 weeks, scalp hair count was significantly greater in the pumpkin seed oil group.

Rosemary Oil

Rosemary oil comes from Rosmarinus officinalis L. plant and one single-blind randomized controlled study showed that rosemary oil was as effective as minoxidil 2% ointment in treatment of androgenic alopecia. It is believed to be due to rosemary's ability to enhance microcapillary perfusion leading to reduced hair loss and increased hair growth. Additionally, the study found that the rosemary treatment group was more adherent than the minoxidil 2% group.

Thyme, Rosemary, Lavender and Cedarwood Oil [Combination Aromatherapy]

A 7-month double-blind randomized placebo-controlled study evaluated the efficacy of thyme, rosemary, lavender and cedarwood oil combined with carrier oils, such as jojoba and grapeseed oil, in alopecia areata. This group was compared against a control group that used carrier oils only. They found that 44% of the essential oil combination group showed improvement in hair regrowth, versus 15% showing improvement in the control group. Although the essential oil combination group was significantly more effective in hair regrowth than the control, it is important to remember that the majority of patients in both groups actually showed no hair growth.

Tea Tree Oil

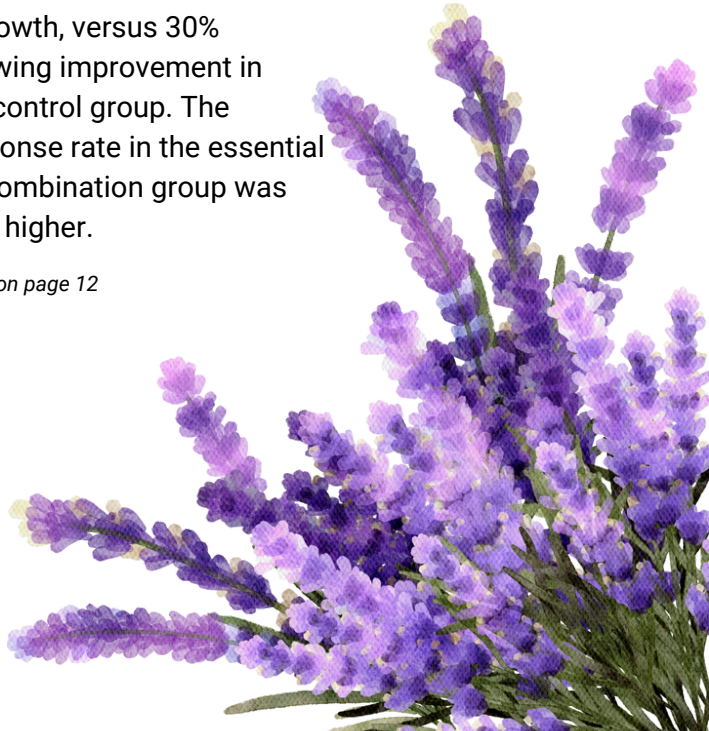
Tea tree oil comes from the plant Melaleuca alternifolia. One of its components, terpinen-4-ol has antimicrobial and anti-inflammatory effects, which have been beneficial in other dermatologic conditions.

A 32-week double-blind randomized placebo-controlled trial assessed the effect of tea tree oil mixed with diclofenac and minoxidil versus minoxidil versus a control group in androgenic alopecia. It was found that tea tree oil mixed with diclofenac and minoxidil showed a significantly greater stability, efficacy, and safety than minoxidil alone and the control group. The combination also showed an earlier response in the treatment of androgenic alopecia compared to minoxidil alone.

Thyme, Rosemary, Lavender, Cedrus atlantica (type of cedarwood oil), and Evening Primrose Oil [Combination Aromatherapy]

A 12-week double-blind randomized placebo-controlled study evaluated the efficacy of thyme, rosemary, lavender and Cedrus atlantica (a type of cedarwood oil), and evening primrose oil combined with carrier oils, such as jojoba and grapeseed oil, in alopecia areata. This group was compared against a control group that used carrier oils only. They found that 75% of the essential oil combination group showed improvement in hair regrowth, versus 30% showing improvement in the control group. The response rate in the essential oil combination group was also higher.

Con't on page 12



Natural, con't from pg. 11

Their literature searched showed no clinical evidence to support the use of the following products for those with alopecia: Argan oil, Black castor oil, Chamomile oil, Coconut oil, Horsetail plant oil, Jojoba oil, Methanol, Peppermint oil, Sulfur oil.

In summary, more clinical studies need to be done on the efficacy of natural ingredients, specifically for CCCA.

Definitions:

- *Randomized Controlled Trial (RCT): prospective study that randomly assigns participants into the experimental or control group*
- *Single-blind: Participants are blinded to the treatment they are receiving (ie. placebo or real treatment)*
- *Double-blind: Participants and experimenters are blinded*
- *Case Report: A detailed report on a patient that includes the diagnosis, treatment, and prognosis*
- *Placebo-controlled: A trial where there is one group who receives the treatment and another group that gets the placebo*

Ezekwe, N., King, M., & Hollinger, J. C. (2020). The use of natural ingredients in the treatment of alopecias with an emphasis on central centrifugal cicatricial alopecia: a systematic review. The Journal of Clinical and Aesthetic Dermatology, 13(8), 23. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7595365/

MicroRNA, con't from pg. 9

Key Findings

We identified 15 miRNAs in the LPP samples whose expression was dysregulated in LPP lesions compared to non-lesional samples, of which 9 miRNAs were elevated while 5 were downregulated. This contrasts with FFA, where changes in miRNA expression appeared to be more extensive, with 49 dysregulated miRNAs. The elevated miRNAs in the LPP samples included miR-21-3p and miR-223-3p, both of which have been implicated in inflammatory processes.

To gain insight into potential dysregulation of messenger RNA by these miRNAs, we performed global transcriptome analysis of the same LPP samples. We identified 32 genes that appeared to be elevated in lesional versus non-lesional samples. These included genes associated with inflammatory processes and epithelial-mesenchymal transition. However, no relationships were immediately apparent between the dysregulated genes and dysregulated miRNAs, at least based on bioinformatics predictions.

Conclusion

Taken together, our findings suggest that the expression of several miRNAs and mRNAs may be dysregulated in LPP. These findings have not been published yet but are supporting an application for further funding to develop microRNA-directed therapeutics for a range of diseases, including scarring alopecias. These are exciting times for RNA-based clinical interventions, as evidenced by the mRNA vaccines for COVID-19 and the regulatory approval of several short-interfering RNA (siRNA) drugs to treat rare disorders.

VOLUNTEER FOR SAF

Volunteers are the heart of SAF. There are several ways you can make a difference:

- Share hope with others as a Support Group Leader
- Connect with newly diagnosed patients as a Patient Outreach Volunteer (POV)
- Inspire others by sharing your story in our newsletter
- Share products and services that have made a difference in your scarring alopecia journey
- Share your professional skills

Thanks to the willingness and generosity of our volunteers, we can expand our reach in the cicatricial alopecia community.