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Regenerative Dermatology Association
International Society for Pro-Regenerative, Longevity and Advanced Dermatology

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ISPLAD SI RIGENERA

Da oltre ventisette anni ISPLAD rappresenta un punto di riferimento nella ricerca, nello studio e nello sviluppo di approcci innovativi in dermatologia. Nata come società di Dermatologia Plastica Rigenerativa, ha contribuito a diffondere una visione avanzata della disciplina, fondata sull'integrazione tra conoscenze biologiche, pratica clinica e innovazione terapeutica.
Oggi, in un contesto scientifico profondamente evoluto, ISPLAD avverte la necessità di un rinnovamento che sia al tempo stesso culturale, terminologico e

Per questo motivo, la Società ha deciso di abbandonare il termine "plastica", ritenendo che esso non rappresenti più in modo adeguato l'identità e gli obiettivi della dermatologia contemporanea. Nel tempo, tale definizione ha assunto connotazioni prevalentemente estetiche, che rischiano di allontanarsi dalla centralità della fisiologia cutanea e dai reali bisogni del paziente.
ISPLAD sceglie oggi di identificarsi pienamente nella Dermatologia Rigenerativa, intesa come disciplina che pone al centro la capacità della pelle di rinnovarsi, ripararsi e mantenere nel tempo la propria integrità biologica.
La rigenerazione rappresenta la direzione naturale della dermatologia moderna. Non si tratta di un singolo trattamento o di una tecnica specifica, ma di un paradigma scientifico che orienta ogni intervento verso il sostegno dei processi cellulari e molecolari della pelle, favorendo risultati autentici, progressivi e duraturi.
In questo nuovo scenario, il ruolo del dermatologo si amplia. Non è più sufficiente limitarsi alla diagnosi e alla cura della patologia: è fondamentale accompagnare il paziente anche nella fase successiva alla guarigione, guidandolo nel recupero di una pelle sana, equilibrata e rigenerata.
La Dermatologia Rigenerativa colma così il divario tra guarigione clinica e qualità reale della pelle, introducendo un modello di medicina che integra cura, prevenzione e longevità cutanea.
ISPLAD prende inoltre una posizione chiara rispetto al termine "estetico". La finalità della dermatologia non può essere ridotta alla modifica dell'aspetto, ma deve rimanere ancorata alla salute. Una pelle rigenerata è, per definizione, una pelle sana, e una pelle sana esprime naturalmente la propria bellezza e giovinezza in ogni età
Alla luce di questa evoluzione, ISPLAD assume oggi la nuova denominazione:

International Society for Pro-Regenerative,
Longevity and Advanced Dermatology

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Una definizione che esprime con chiarezza i tre pilastri fondamentali della nostra visione:

- la rigenerazione come base biologica
- la longevità come obiettivo clinico
- la dermatologia avanzata come strumento scientifico

Con questo rinnovamento, ISPLAD rinnova il proprio impegno a promuovere una dermatologia fondata su evidenze scientifiche, rispetto della fisiologia cutanea e responsabilità nei confronti del paziente.
Invitiamo la comunità dermatologica a condividere questo percorso, contribuendo allo sviluppo di una disciplina sempre più orientata alla salute, alla naturalezza e alla sostenibilità biologica della pelle.
Rigenerare la pelle significa restituirle funzione, struttura e identità. Questa è la direzione che scegliamo. Questa è la dermatologia che vogliamo costruire.
In questo contesto, ISPLAD apre la propria comunità a tutti i dermatologi che si riconoscono nei principi della Dermatologia Rigenerativa, con l'obiettivo di costruire una rete qualificata e autorevole di professionisti.
Questa rete rappresenterà un elemento strategico per lo sviluppo di nuovi protocolli terapeutici, per la realizzazione di corsi di aggiornamento e per la promozione di progetti di ricerca scientifica, anche in collaborazione con le altre società dermatologiche già esistenti, in un'ottica di integrazione e crescita condivisa.
I nominativi dei medici aderenti alla rete ISPLAD saranno pubblicati sul sito ufficiale dell'Associazione e divulgati attraverso i principali canali di comunicazione, inclusi media, piattaforme digitali e social network, al fine di offrire ai pazienti un punto di riferimento qualificato e riconoscibile.
Rigenerare la pelle significa restituirle funzione, struttura e identità.
Questa è la direzione che scegliamo. Questa è la dermatologia del futuro che vogliamo costruire.

Antonino Di Pietro
Presidente Fondatore ISPLAD

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Studio In Doppio Cieco Su Un Integratore Per Il Trattamento dell'Alopecia Psicogena

Elisa Venditti

Elisa Venditti[1]

ABSTRACT

30 pazienti, affetti da Alopecia Psicogena sono stati individuati e valutati per segni di tale patologia.
A seguito di iniziale valutazione, con anche test genetico Tricotest, i pazienti sono stati suddivisi in 3 gruppi: un gruppo trattato con semplice placebo, uno con solo integratore Restax Gaba ed uno con terapia farmacologica topica associata all'integratore. I pazienti sono stati valutati a distanza di 3, 6, 9, 12 e 15 mesi, valutando la presenza o assenza di infiammazione, seborrea, l'entità della calvizie secondo la scala Norwood hamilton ed infine la qualità del sonno.
Sebbene il campione in analisi sia piccolo, i risultati mostrano un risultato nettamente migliore del placebo per ciascuno dei due gruppi trattati con integratore Restax Gaba in ogni parametro, avvalorandolo come un ottimo supporto terapeutico per Alopecia Psicogena, anche in associazione alla terapia farmacologica topica.

KEYWORDS
Psychogenic Alopecia, Skin Lift, Scalp, Trichotest, Norwood Hamilton, Anxiety, Sleep

INTRODUZIONE

Questo articolo propone lo studio di una tipologia di alopecia, l'alopecia psicogena, patologia molto sottovalutata sia dai pazienti che dai medici.
Un crescente numero di studi scientifici indicano che condizioni di stress psico-fisico possono alterare sia la crescita dei peli nell'animale di laboratorio sia quella dei capelli nell'uomo. Storicamente è stata sempre considerata l'influenza dello stress nell'ambito delle diverse patologie del cuoio capelluto, come l'alopecia areata (AA), il telogen effluvio (TE) e l'alopecia androgenetica (AG), ma non è mai stata considerata come una vera e propria patologia indipendente.
Negli ultimi anni, invece, numerosi studi clinici ci suggeriscono l'emergenza di un quadro diagnostico stress-correlato con caratteristiche uniche, che può essere definito come una vera e propria patologia a sé stante: l'Alopecia Psicogena (AP).
Questa patologia negli ultimi anni sembra essere sempre più frequente, ma, nonostante ciò, i medici tendono a non considerarla come una vera e propria patologia. Anzi, viene presa in considerazione solo quando, per esclusione, il medico non riesce a individuare una patologia "classica" dopo numerose indagini cliniche. Per cui la diagnosi di solito è tardiva rispetto ad altre patologie più note, come per esempio la AA e la AG.

1
Dott.ssa Elisa Venditti
Medico Chirurgo Estetico
Torino

Non avendo una vera e propria definizione nell'ambito medico, la diagnosi spesso non viene accettata dai pazienti che al contrario si sentono sottovalutati, giudicati e non seguiti. Questo comporta una perdita di compliance da parte del paziente e il fallimento dell'alleanza terapeutica tra paziente e medico. Per cui inquadrare con criteri oggettivi questa particolare alopecia porterà risultati migliori, una diagnosi precoce e ad una maggiore compliance dei pazienti.

Patogenesi

Ormai è noto come in tricologia il ruolo del GABA svolga un ruolo molto importante per l'inibizione della crescita dei capelli.

Diversi studi hanno sottolineato come lo stress gioca un ruolo fondamentale nella caduta dei capelli, sebbene i meccanismi coinvolti siano in gran parte sconosciuti.

È stato comunque dimostrato che l'acido γ-aminobutirrico (GABA) è associato allo stress e che il suo aumento sembra causa dell'inibizione della crescita dei capelli.

In diversi studi l'analisi del sequenziamento dell'RNA ha rivelato che il ciclo cellulare, la replicazione del DNA, il metabolismo delle purine e le vie del metabolismo della pirimidina sono significativamente sottoregolati nelle cellule della papilla dermica (DP) dopo il trattamento con GABA. Inoltre, il ginkgolide A, un antagonista del GABAA estratto dalle foglie del Ginkgo biloba, ha promosso il ciclo cellulare delle cellule DP.

Lo stress psicofisico sembra attivare inoltre il rilascio di alcuni mediatori quali NGF e sostanza P, i cui effetti a livello dell'unità pilosebacea includono infiammazione neurogenica perifollicolare, apoptosi dei cheratinociti ed induzione del catagen.

L'insieme di questi fenomeni biologici contribuirebbe a determinare le caratteristiche cliniche osservabili nella alopecia psicogena e definirne le caratteristiche specifiche.

In letteratura sono stati individuati dei fenomeni tipici riscontrabili nell'alopecia psicogena:

-iperseborrea e dermatite seborroica;

-tricodinia riferita più spesso al vertice;

-infiammazione perifollicolare;

-diradamento diffuso a tutto il cuoio capelluto con risparmio dell'attaccatura;

-talvolta iperidrosi;

-anamnesi positiva per condizioni di stress acuto o cronico, disturbi del tono dell'umore, disturbi dell'ansia, disturbi di personalità, tratti psicotici.

A partire da questa classificazione dei segni abbiamo cercato di valutare la loro presenza e il loro cambiamento seguendo terapie diverse.

Lo studio:

In questo studio abbiamo incluso 30 pazienti, di sesso maschile tra i 21-80 anni, (media 48,33 anni), il cui BMI è compreso tra i 18,00 e i 37,57
(Tabella 1.).

Tab. 1

PAZIENTE	ETA'	SESSO	ALTEZZA	PESO	BMI
GI.GA	30	M	180	76	23,46
TR.DA.	21	M	178	75	23,67
MI.AN.MA.	41	M	180	84	25,93
PE.RI.GA	67	M	160	57	22,27
BO.ST	41	M	167	75	26,89
BA.SI	27	M	167	53	19,00
GR.SI	53	M	170	60	20,76
BE.OR	68	M	160	71	27,73
CE.AL	75	M	163	51	19,20
ME.SI	65	M	145	79	37,57
NU.NA	55	M	165	49	18,00
DI.AN	23	M	180	60	18,52
GE.BR	32	M	187	80	22,88
GH.NI.	26	M	175	72	23,51
TO.MA	62	M	150	62	27,56
AL.LA	46	M	180	100	30,86
LA.MA.	37	M	180	73	22,53
BR.RO	55	M	178	89	28,09
SE.AN	51	M	180	70	21,60
SE.FR.	30	M	170	61	21,11
RO.DO	54	M	160	58	22,66
BI.AN.	80	M	155	56	23,31
BO.MI.	53	M	174	60	19,82
MA.IN	69	M	150	53	23,56
DI.MA	70	M	160	67	26,17
LE.AN	48	M	174	60	19,82
IA.CA	41	M	155	56	23,31
CO.PA	56	M	171	69	23,60
GI.PI	52	M	160	62	24,22
VE.EL	37	M	166	67	24,31

Abbiamo scelto la popolazione maschile, essendo la popolazione più numerosa che viene colpita da questa patologia, come indicano gli studi scientifici.

Questo gruppo di 30 pazienti è stato diviso in 3 sottogruppi ognuno dei quali ha eseguito una terapia diversa.

Il primo gruppo ha eseguito una terapia topica con una soluzione galenica, identica per ogni persona come composizione (lozione a base di melatonina 0,2%, latanoprost 10mg su 100ml di prodotto, idrocortisone butirrato 0,08%) e come posologia; oltre la terapia topica abbiamo aggiunto la terapia orale con l'integratore in compresse Restax GABA.

Il secondo gruppo ha eseguito la sola terapia orale.

Il terzo gruppo ha eseguito la cura per os con placebo.

Sapendo che il numero di soggetti è esiguo, si propone questo studio come inizio di molti altri studi per poter aiutare i pazienti a definire in modo corretto l'alopecia psicogena.

I nostri criteri di esclusione dallo studio sono stati i seguenti:
-pazienti positivi ad anamnesi con terapie antidepressive negli ultimi 5 anni;
-pazienti positivi per terapie locali/sistemiche per il cuoio capelluto negli ultimi 2 anni;
-pazienti con altre patologie del cuoio capelluto come TE, AA e AG;
-pazienti con anamnesi positiva per problemi ormonali/prostata negli ultimi 5aa;
-pazienti con anamnesi positiva a terapie ormonali.

I criteri di inclusione sono stati:
-pazienti di sesso genetico maschile;
-anamnesi positiva per stress cronico oltre i 6 mesi;
-perdita di capelli superiore ai 6 mesi;
-pazienti che hanno aderito per almeno 18 mesi allo studio con controlli eseguiti sistematicamente a t3 t9 t15.
-pazienti che non utilizzano cosmetici per capelli o tinte da almeno 6 mesi.

In tutti i tempi t0, t3, t9 e t15 sono state eseguite le medesime misurazioni, con il medesimo macchinario (Callegari trichocamera) e dallo stesso operatore, in modo da evitare bias soggettivi.
Durante i controlli venivano richieste le seguenti istruzioni:
-i pazienti non si lavano i capelli per 72h;
-veniva eseguita un'analisi approfondita del cuoio capelluto in cui si valutava la percentuale di sebo sul cuoio capelluto, il pH a livello del cuoio capelluto, la media di densità dei capelli, la media di diametro dei capelli, la presenza di infiammazione perifollicolare;
-luce polarizzata per valutare la presenza di acido lattico e/o squalene a livello del capello;
-test genetico per valutare un eventuale malassorbimento e/o insensibilità a determinati farmaci;
-è stato eseguito un esame del sangue ai pazienti in t0 per valutare eventuali carenze che potrebbero influire sulla perdita dei capelli.
Abbiamo deciso di valutare questi parametri, in base alla diagnosi di alopecia psicogena che abbiamo trovato in letteratura, in cui si evince che i principali sintomi di questa patologia sono:
-iperseborrea e dermatite seborroica;
-tricodinia riferita più spesso al vertice;
-infiammazione perifollicolare;
-diradamento diffuso a tutto il cuoio capelluto con risparmio dell'attaccatura;
-talvolta iperidrosi;
-anamnesi positiva per condizioni di stress acuto o cronico, disturbi del tono dell'umore, disturbi dell'ansia, disturbi di personalità, tratti psicotici.

Analisi del sebo:
Per la misurazione del sebo, si è preso come punto di riferimento il punto in cui si intersecano le due rette passanti per l'asse mediale del viso e la retta che congiunge i due lobi delle orecchie, in modo da avere una misurazione precisa, sempre nello stesso punto, con la medesima strumentazione.
Si appoggia una cartina sul cuoio capelluto per 5 secondi e si analizza mediante la tecnologia "Callegari". La scala di riferimento è tra 0 e 100%.
La normalità è una concentrazione di sebo che va dal 35% al 56% (Tabella 2).

Tab. 2

PAZIENTE	SEBO A T0 in %	SEBO A T3 in %	SEBO A T9 in %	SEBO A T15 in %
GI.GA	**64%**	56%	40%	42%
TR.DA.	**69%**	**66%**	53%	43%
MI.AN.MA	**72%**	**78%**	**63%**	52%
PE.RI.GA	**57%**	55%	42%	35%
BO.ST	**78%**	**68%**	**57%**	**62%**
BA.SI.	**64%**	**60%**	45%	54%
GR.SI	**0%**	**23%**	**28%**	**32%**
BE.OR	46%	**0%**	46%	36%
CE.AL	**61%**	**66%**	40%	44%
ME.SI	**0%**	**33%**	**34%**	37%
NU.NA	**80%**	**76%**	**67%**	55%
DI.AN	**21%**	**58%**	44%	37%
GE. BR.	53%	35%	42%	45%
GH.NI.	**26%**	53%	**32%**	**33%**
TO.MA	**61%**	56%	44%	55%
AL. LA	**58%**	37%	**78%**	**32%**
LA.MA	**63%**	**57%**	51%	43%
BR.RO	**5%**	45%	41%	35%
SE.AN	**69%**	45%	56%	56%
SE.FR.	**60%**	**69%**	**63%**	37%
RO.DO	56%	**58%**	**26%**	44%
BI.AN.	45%	53%	**21%**	38%
BO.MI	45%	**66%**	38%	49%
MA.IN	51%	45%	50%	54%
DI.MA	**57%**	52%	46%	50%
LE.AN	**78%**	**66%**	**68%**	43%
IA.CA	**98%**	**72%**	**67%**	51%
CO.PA	**0%**	**23%**	**32%**	35%
GI.PI	**0%**	**33%**	**78%**	39%
VE.EL	**37%**	56%	40%	38%

Analisi del pH:
Per la misurazione del sebo, si è preso come punto di riferimento il punto in cui si intersecano le due rette passanti per l'asse mediale del viso e la retta che congiunge i due lobi delle orecchie, in modo da avere una misurazione precisa, sempre nello stesso punto, con la medesima strumentazione. Si appoggia una sonda sul cuoio capelluto e la macchina rileva il valore.

Ogni volta che è stato eseguito questo passaggio, la sonda veniva precedentemente calibrata.
Il pH ha come valori di normalità, valori che vanno dai 4,2 ai 5,6 (tabella 3).

Tab. 3

PAZIENTE	pH A T0	pH A T3	pH A T9	pH A T15
GI.GA	**4,1**	**4,0**	**4**	4,3
TR.DA	**3,8**	**3,8**	4,2	4,3
MI.AN.MA	**3,9**	4,3	5,1	4,7
PE.RI.GA	**10**	4,3	5,1	4,2
BO.ST	**3,8**	4,7	4,1	4,3
BA.SI	4,2	4,2	**3,8**	4,3
GR.SI	4,5	5,1	**3,9**	**3,8**
BE.OR	**4**	5,1	4,9	4,3
CE.AL	5,3	4,1	**4,0**	4,3
ME.SI	4,3	**3,8**	4,3	4,3
NU.NA	4,3	**3,9**	4,3	**4,0**
DI.AN	**6,1**	4,9	4,3	**3,8**
GE. BR.	4.5	**4,0**	4,3	4,3
GH.NI	**10**	**3,8**	4,3	**4,1**
TO.MA	**4,0**	4,3	4,3	**3,8**
AL.LA	**3,8**	4,3	4,3	**3,9**
LA.MA	4,3	4,7	4,3	4,9
BR.RO	4,3	4,2	4,7	**4,0**
SE.AN.	4,7	4,3	4,2	**3,8**
SE.FR.	4,2	**4,0**	5,1	4,3
RO.DO.	4,3	**3,8**	5,1	4,3
BI.AN	**6,1**	4,3	4,3	4,3
BO.MI	**3,9**	4,3	4,3	4,7
MA.IN	**3,8**	4,7	4,3	4,2
DI.MA	4,4	4,2	**3,8**	4,3
LE.AN	4,5	4,3	4,2	4,3
IA.CA	**6,9**	**4.0**	4,3	4,3
CO.PA	**3,9**	**3,8**	**4,0**	4,3
GI.PI.	4,5	4,3	**3,8**	4,3
VE.EL	4,3	4,3	4,3	4,3

Infiammazione perifollicolare:
Si è valutata l'infiammazione perifollicolare in 5 principali settori:
-vertex;
-retroauricolare destro e sinistro;
-occipitale a livello della linea mediana;
-a livello dell'attaccatura dei capelli.
Abbiamo deciso che l'infiammazione era positiva, se anche uno di questi punti di riferimento era positivo (Tabella 4).

Densità media di capelli.

Questa misura è stata eseguita calcolando la media di densità in 5 punti diversi del cuoio capelluto attraverso una trichocamera:
-vertex;
-retroauricolare destro e sinistro;
-occipitale a livello della linea mediana;
-a livello dell'attaccatura dei capelli.

La densità media considerata come valore di normalità è tra i 100 µm e i 140 µm capelli per cm2.
I valori tra 140 µm e 240 µm sono considerati ottimali (Tabella 5) (Grafico 1).

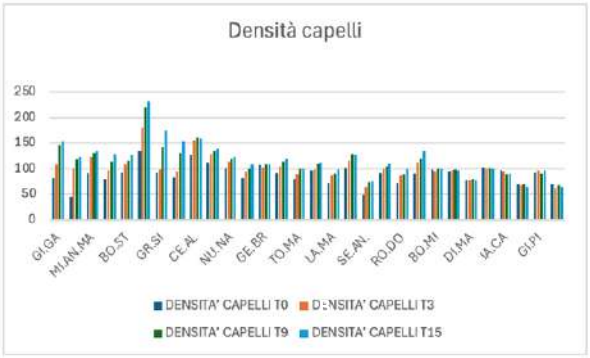
Tab. 4

PAZIENTE	Infiammazione a T0	Infiammazione a T3	Infiammazione a T9	Infiammazione a T15
GI.GA	X	X	-	-
TR.DA.	X	X	X	-
MI.AN.MA	X	-	-	-
PE.RI.GA	X	X	X	X
BO.ST	X	X	-	-
BA.SI.	X	-	-	-
GR.SI	-	-	-	-
BE.OR	-	-	-	-
CE.AL	-	-	-	-
ME.SI	X	-	-	-
NU.NA	X	X	-	X
DI.AN	X	X	X	-
GE. BR	-	-	-	-
GH.NI.	-	-	-	-
TO.MA	X	-	-	-
AL.LA	X	X	X	X
LA.MA	X	X	X	-
BR.RO	X	-	-	X
SE.AN	X	X	X	X
SE.FR.	X	X	X	X
RO.DO	-	-	-	-
BI.AN.	-	-	-	-
BO.MI	X	X	X	X
MA.IN	-	-	-	-
DI.MA	X	-	X	X
LE.AN	-	-	-	-
IA.CA	-	-	-	-
CO.PA	-	-	-	-
GI.PI	X	X	X	X
VE.EL	-	-	-	-

Tab. 5

PAZIENTE	DENSITA' CAPELLI T0 (µm)	DENSITA' CAPELLI T3 (µm)	DENSITA' CAPELLI T9 (µm)	DENSITA' CAPELLI T15 (µm)
GI.GA	**82**	110	146	153
TR.DA	**46**	100	118	123
MI.AN.MA	**91**	123	132	134
PE.RI.GA	**79**	**96**	114	129
BO.ST	**94**	109	115	127
BA.SI	135	180	220	232
GR.SI	**93**	**98**	143	175
BE.OR	**84**	**95**	132	153
CE.AL	127	156	161	160
ME.SI	112	129	134	139
NU.NA	101	114	121	123
DI.AN	**83**	**95**	100	109
GE.BR	108	103	109	110
GH.NI	**91**	104	114	121
TO.MA	**79**	**89**	**99**	100
AL.LA	**96**	**98**	111	113
LA.MA	**72**	**87**	**90**	**98**
BR.RO	101	115	129	127
SE.AN.	**49**	**65**	**74**	**76**
SE.FR	**91**	100	105	111
RO.DO	**73**	**87**	**89**	**99**
BI.AN	**90**	112	121	134
BO.MI	**98**	**95**	**99**	**99**
MA.IN	**95**	**96**	**98**	**97**
DI.MA	**77**	**77**	**79**	**78**
LE.AN	103	100	101	100
IA.CA	**96**	**95**	**89**	90
CO.PA	**70**	**68**	**69**	65
GI.PI	**94**	**96**	**90**	96
VE.EL	**69**	**63**	**68**	65

Grafico 1



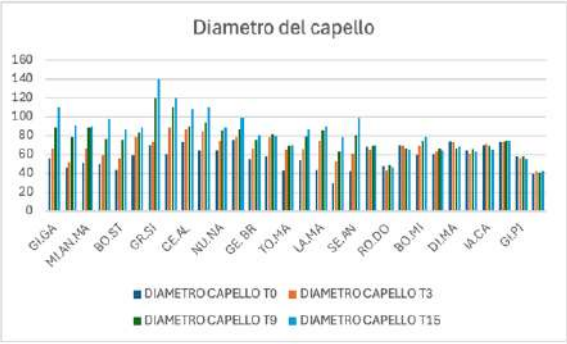
Diametro medio dei capelli.
Questa misura è stata misurata calcolando la media di densità in 5 punti diversi del cuoio capelluto attraverso una trichocamera:
-vertex;
-retroauricolare destro e sinistro;
-occipitale a livello della linea mediana;
-a livello dell'attaccatura dei capelli.

Il diametro considerato come valore di normalità è tra i 90µm e 170 µm (Tabella 6) (Grafico 2).

Tab. 6

PAZIENTE	DIAMETRO CAPELLO T0 (µm)	DIAMETRO CAPELLO T3 (µm)	DIAMETRO CAPELLO T9 (µm)	DIAMETRO CAPELLO T15 (µm)
GI.GA	56	67	89	110
TR.DA	46	52	78	91
MI.AN.MA	51	67	89	90
PE.RI.GA	50	59	77	98
BO.ST	44	56	76	87
BA.SI	59	78	83	89
GR.SI	70	73	120	140
BE.OR	61	89	110	120
CE.AL	73	87	90	108
ME.SI	64	85	94	110
NU.NA	64	75	86	89
DI.AN	76	78	87	99
GE. BR	55	67	76	81
GH.NI	58	78	82	80
TO.MA	43	65	69	70
AL.LA	54	66	79	87
LA.MA	44	75	86	90
BR.RO	30	53	63	78
SE.AN	42	62	81	99
SE.FR.	68	65	69	70
RO.DO	48	43	49	47
BI.AN.	70	69	67	65
BO.MI	60	69	75	78
MA.IN	61	63	67	64
DI.MA	74	73	67	68
LE.AN	64	62	66	63
IA.CA	70	72	69	65
CO.PA	73	73	75	75
GI.PI	58	56	58	55
VE.EL	40	42	41	42

Grafico 2



Esami del sangue.
Sono stati eseguiti esami del sangue, in modo da valutare eventuali carenze che possono dare adito ad alopecia.
Ad ogni paziente con carenze vitaminiche sono stati dati gli integratori specifici per ogni caso per 90gg.

Dopo i 90 gg è stato eseguito un controllo per verificare che i valori fossero nel range corretto e solo in quel momento sono stati eseguiti gli esami sul capello, in modo da escludere ogni eventuale miglioramento dovuto solo all'assunzione dell'integratore specifico (Tabella 7).

Tab. 7

PAZIENTE	HGB	FERRITINA	TRANSFERRINA	ACIDO FOLICO	VIT D	VIT C	VES	VIT B12	DHT
GA.GI	**11,1**	**8,76**	**59**	10	25,8	-	7	297	76
TR.DA	14,9	188	**26**	**2**	**13,10**	-	8	403	315
MI.AN.MA	15,8	194	290	6,1	**24,9**	-	9	281,3	157
PE.RI.GA.	14,3	75	224	11,6	87,36		13	275	41
BO.ST.	**11,4**	**9,37**	**87**	7,2	**14,9**	-	13	442	98
BA.SI	13,9	22,34		**3,2**	**22,19**	**<2,4**	8	275,95	137
GR.SI	-	**29**	-	**30,9**	35,8	11,8	-	328	-
BE.OR	14,1	124	219	12	**21,03**	-	25	434	19
CE.AL	14,1	50	324	10,9	43,46		13	445	**1195**
ME.SI	14,4	228,6	-	11,9	43	7,20	**20**	728	37
NU.NA.	12.9	42	-	4,8	25,61	-	2	134	30
DI.AN	15,3	95	-	3,7	**19,87**	-	2	223	-
GE.BR									
GH.NI	15,4	-	-	-	**19,9**	-	-	-	1,51 (LC-MS/MS)
GI.GA	15,2	111	287	**3,9**	**17**	-	5	**<100**	296
TO.MA	13,3	120,36	273	9,1	-	-	**20**	349,24	12
AL.LA	14,6	-	**195**	-	-	-	3	-	-
LA.MA.	15,3	**40**	**393**	5,6	**23,10**	-	8	508	283
BR.RO	14,1	-	-	7,8	30,98	<2,4	9	450	221
SE.AN.	-	**13**	278	**2,7**	-	-	-	201	-
SE.FR	13,7	32,60	70	**4,1**	39,80	**<2,4**	11	488	23
RO.DO.	14,1	42	232	6,3	**29,68**	-	5	154	-
BI.AN	-	24	-	7,4	**13,71**	**<2,4**	23	277	-
BO.MI	13,5	79,5	192	8,5	45,45	-	8	493	80
MA.IN							10		
DI.MA	-	149	-	8,7	33,10	5,8	10	468	137
LE.AN	12,3	5	356	8,3	**14,2**	-	8	295	59
IA.CA	14,5	-	-	7,54	25	-	-	408	-
CO.PA	14,4	54,39	268	**4,60**	**24,9**	-	-	311	241
GI.PI	13,6	31,90	246	6,03	27	-	13	474	17
VE.EL	12,3	45	254	10,4	37,8	**<2,4**	10	510	87

Esame luce polarizzata.
La microscopia in luce polarizzata è una tecnica semplice e agevole per la ricerca tricologica.
Sono davvero numerose le informazioni che possiamo capire attraverso questa metodica.
L'analisi del capello viene eseguita mediante l'utilizzo del microscopio a luce polarizzata.
I capelli vengono prelevati nel punto in cui si intersecano le due rette passanti per l'asse mediale del viso e la retta che congiunge i due lobi delle orecchie e inseriti nel vetrino con colla specifica, in modo da stabilizzare il capello e poterlo anche valutare in un secondo momento.
La nostra concentrazione è stata sulla presenza di acido lattico e/o squalene, indici di stress.
Non sono state valutate le incidenze, essendo ancora in oggetto di studio e non riconosciute pienamente a livello scientifico.
Si intendono incidenze una serie di situazioni che possono provocare effluvio, modificare la crescita del capello, sono situazioni parafisiologiche che incidono sull'evoluzione naturale dell'alopecia (Tabella 8).

Tab. 8

PAZIENTE	ACIDO LATTICO	SQUALENE
GA.GI	X	-
TR.DA	X	-
MI.AN.MA	X	-
PE.RI.GA	X	-
BO.ST	X	-
BA.SI	X	-
GR.SI	X	-
BE.OR	-	-
CE.AL	-	-
ME.SI	X	-
NU.NA	X	-
DI.AN	x	-
GE. BR	-	-
GH.NI	-	-
TO.MA	X	-
AL.LA	X	-
LA.MA	X	-
BR.RO	X	-
SE.AN	X	-
SE.FR.	X	-
RO.DO	-	-
BI.AN	X	-
BO.MI	X	-
MA.IN		
DI.MA	X	-
LE.AN	X	-
IA.CA	-	X
CO.PA	-	X
GI.PI	X	-
VE.EL	-	-

Esempi di esami a luce polarizzata in cui è stata rilevata la presenza di acido lattico.

Foto 2: PE.RI.GA

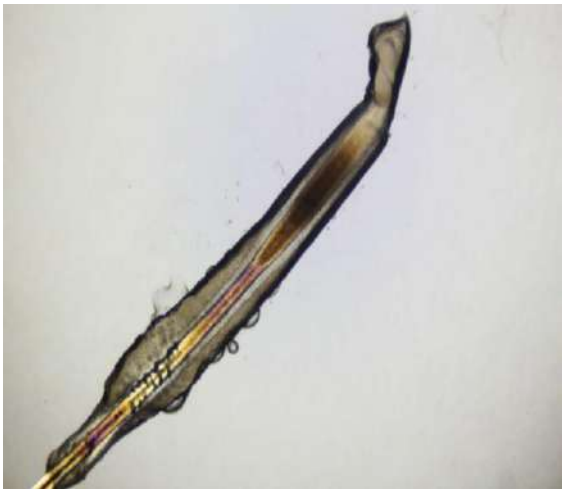


Foto 3: BO.ST

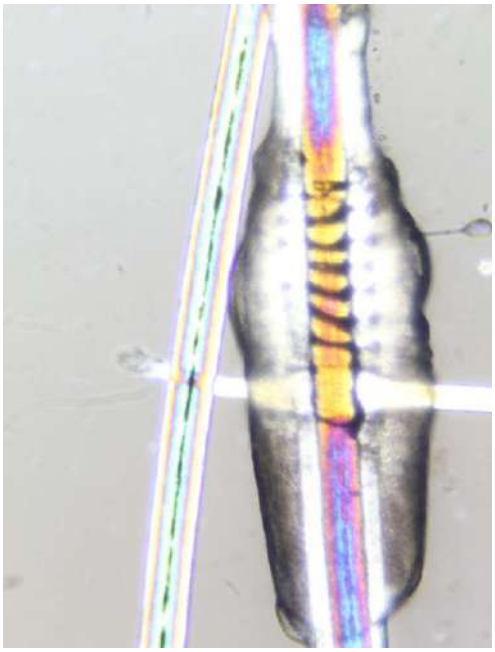


Foto1: GA.GI

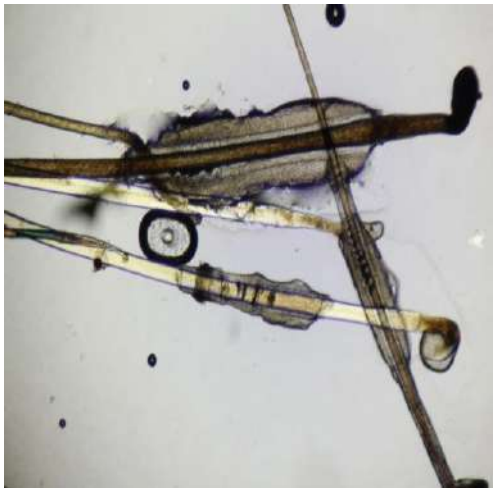


Foto 4: ME.SI

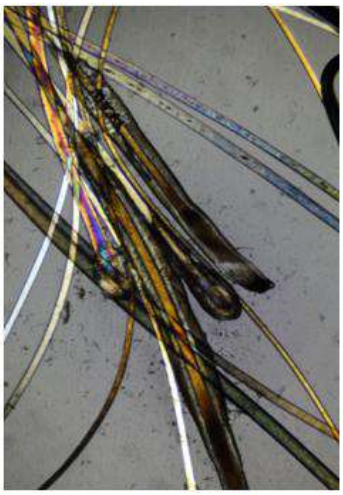


Foto 5: DI.AN

Foto 6: DI.AN

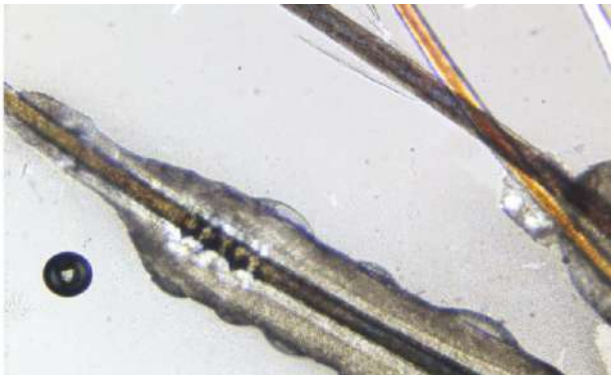


Foto 7: TO.MA

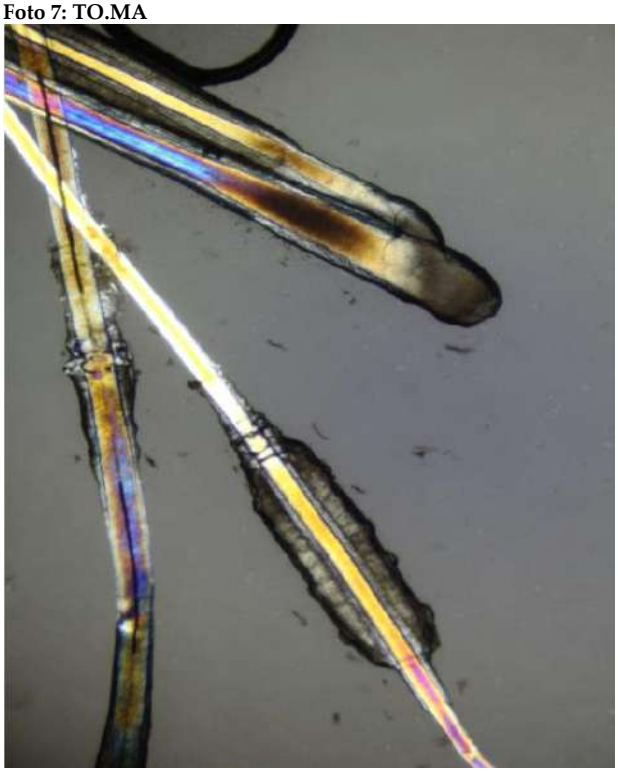


Foto 8: AL.LA

Foto 9: BI.AN

Foto 10: DI.MA

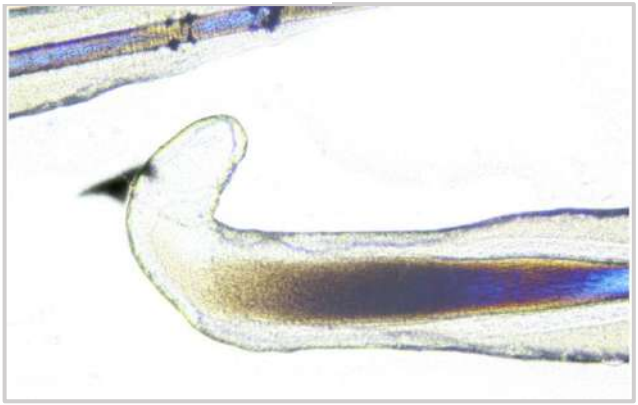
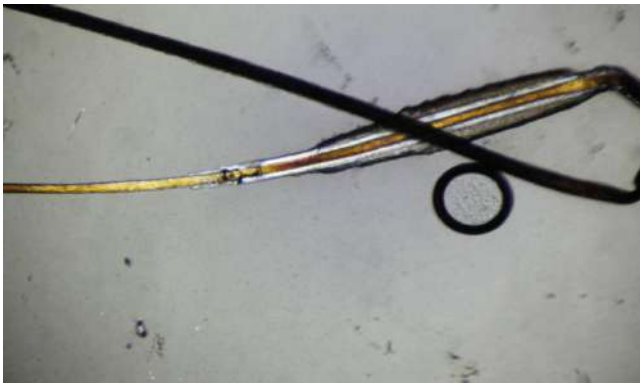


Foto 12: LE.AN



Test genetico:
Abbiamo voluto eseguire un test genetico, scegliendo TrichoTest™, questo strumento aiuta il medico a personalizzare il trattamento farmacologico dell'alopecia. L'algoritmo analizza 48 mutazioni genetiche associate all'alopecia e valuta eventuali resistenze o sensibilità a diversi farmaci.
Nel nostro caso abbiamo analizzato:
-minoxidil
-latanoprost
-melatonina
-17 alfa estradiolo
-finasteride
Abbiamo valutato questi specifici farmaci per valutare se la terapia topica poteva alterare i risultati sulla base delle resistenze ai farmaci.
Il valore 100%, indica la sensibilità massima ad un determinato farmaco, sotto il 20% è considerato resistenza a quel determinato farmaco (Tabella 9).

Tab. 9

PAZIENTE	MINOXIDIL	LATANOPROST	17-ALFA ESTRADIOLO	MELATONINA	FINASTERIDE
GA.GI	100%	22%	0%	25%	0%
TR.DA	92%	78%	75%	53%	99%
MI.AN.MA	86%	78%	37%	25%	99%
PE.RI.GA	73%	78%	100%	83%	86%
BO.ST	43%	22%	85%	28%	0%
BA.SI.	91%	44%	75%	75%	100%
GR.SI	92%	78%	83%	28%	0%
BE.OR	59%	89%	97%	0%	0%
CE.AL.	47%	56%	100%	50%	0%
ME.SI	0%	44%	97%	55%	0%
NU.NA	40%	56%	85%	25%	0%
DI.AN	80%	56%	0%	0%	0%
GE.BR	87%	44%	33%	83%	100%
GH.NI	48%	78%	0%	28%	99%
GI.GA	100%	22%	0%	25%	0%
TO.MA	83%	0%	97%	0%	0%
AL.LA	73%	78%	33%	50%	86%
LA.MA	47%	33%	0%	28%	86%
BR.RO	54%	78%	100%	25%	0%
SE.AN.	79%	22%	37%	55%	0%
SE.FR.	93%	56%	0%	0%	0%
RO.DO	44%	44%	72%	64%	28%
BI.AN	99%	22%	100%	55%	100%
BO.MI	47%	0%	0%	83%	73%
MA.IN	43%	89%	0%	0%	0%
DI.MA	54%	67%	85%	50%	0%
LE.AN	94%	100%	85%	83%	75%
IA.CA	54%	67%	75%	83%	58%
CO.PA	36%	22%	37%	55%	99%
GI.PI	79%	67%	85%	55%	0%

Terapia:
Ai pazienti del gruppo in cui è stata eseguita sia la terapia locale che sistemica, sono stati dati i seguenti farmaci.
Lozione a base di:
-melatonina 0,2%
-latanoprost 10mg su 100ml di prodotto
-idrocortisone butirrato 0,08%

Questi farmaci sono stati scelti per i seguenti motivi:
la melatonina è un ormone secreto prevalentemente da una ghiandola presente nel cervello detta ghiandola pineale o epifisi.
Viene prodotta in modo circadiano e ha come scopo la regolarizzazione dell'orologio biologico del giorno e della notte.
Molto importante nel fenomeno del jet-lag.
Gli effetti della melatonina possono essere mediati sia da recettori specifici o avvenire in modo aspecifico grazie all'attività antiradicalica della melatonina e dei suoi metaboliti. la melatonina viene prodotta principalmente dall'epifisi ma anche il follicolo pilifero sembra essere capace di produrla e diversi studi hanno evidenziato il suo effetto positivo sul ciclo pilare. Tra gli effetti mediati da specifici recettori spicca l'azione antiproliferativa che la melatonina esercita sulle cellule epiteliali umane sia normali che tumorali. Questo effetto antidrogeno della melatonina è dovuto alla sua capacità di dislocare i recettori per gli androgeni dalla loro sede nucleare a quella citoplasmatica. In questo modo la cellula non risponde allo stimolo proliferativo androgenico. Visto che anche nei cheratinociti umani sono stati individuati dei recettori specifici per la melatonina è ragionevole pensare che l'effetto terapeutico nelle calvizie possa dipendere da un meccanismo molto simile a quello dimostrato nelle cellule prostatiche. Nonostante il meccanismo d'azione della melatonina non sia stato ancora perfettamente chiarito, alcuni studi clinici hanno messo in evidenza un suo effetto positivo sulla terapia dell'alopecia androgenetica mediante applicazione topica. La concentrazione d'uso abituale in tricologia è tra 0,003-0,2%.
Latanoprost: latanoprost è un analogo della prostaglandina F2alfa, Primo rappresentante di farmaci contro il glaucoma, utilizzati per ridurre la pressione intraoculare elevata in pazienti con glaucoma ad angolo aperto e di ipertensione oculare. L'unico effetto collaterale conosciuto è l'aumento della pigmentazione dell'iride, infoltimento e imbrunimento delle ciglia.
Proprio quest'ultimo effetto ha indotto alcuni ricercatori a valutare l'effetto del latanoprost sulla Alopecia delle ciglia.

I buoni risultati ottenuti hanno aperto la strada alla valutazione del latanoprost nella terapia della alopecia androgenetica.
Sebbene ci siano degli studi, anche se limitati, ci fornisce importanti informazioni sugli effetti positivi che latanoprost possiede sulla crescita dei capelli e potrebbe supportare l'uso di analoghi delle prostaglandine come una nuova classe di molecole in grado di contrastare la caduta dei capelli causata dalla alopecia.
Il latanoprost si presenta come un liquido oleoso incolore o tendente al giallo scarsamente solubile in acqua ma solubile in solventi come l'etanolo.
Per uso tricologico, visto le caratteristiche chimiche, può essere facilmente solubilizzato in soluzione idroalcolica.
Il latanoprost viene prescritto a percentuali variabili dallo 0,0025%, fino allo 0,05%. Unico punto debole di questo composto è il fatto che debba essere conservato tra i -18C° a + 2-8C°. L'uso tricologico del latanoprost è off-label, va quindi applicato nella prescrizione e dispensazione come previsto dall'articolo 5 della legge 94/98.

Idrocortisone butirrato:
L'idrocortisone rappresenta una molecola importante nel controllo del ciclo del capello. Insieme ad alcuni suoi derivati viene prescritto all'interno di preparazioni per scopi tricologici.
Dal punto di vista dell'assorbimento cutaneo una maggiore lipofilia e l'assenza di salificazione è un vantaggio. Di conseguenza, tra le molecole di corticosteroidi utilizzate, l'idrocortisone butirrato risulta il miglior candidato per uso topico.
Una volta penetrato nella cute, incontrando il pH acido della pelle e le esterasi tissutali, si ha una idrolisi dell'estere che rende disponibile l'idrocortisone, la vera molecola effettrice, che essendo meno lipofilo tende non assorbirsi ulteriormente a livello sistemico e a svolgere la sua azione a livello cutaneo.
Le molecole più lipofile sono maggiormente indicate per uso cutaneo o per via intramuscolare mentre quelle più idrofile sono indicate per uso endovenoso a rapida azione.
L'idrocortisone butirrato è praticamente insolubile in acqua ma è solubile in etanolo.
Le concentrazioni di uso abituali sono tra lo 0,05% e lo 0,1%.

La terapia per os, invece, comprendeva Restax Gaba che è un prodotto specifico e mirato per alleviare fisiologicamente ed in modo naturale l'Alopecia Psicogena Maschile.
Il prodotto è composto da:
-Lactium®:
Idrolisato delle proteine del latte contenente α-casozepina, ottenuto mediante digestione da parte della tripsina dalla αS1-caseina.
Lactium® ha dimostrato un'elevata affinità e selettività per i recettori GABA-A a livello del SNC, stimolando di conseguenza l'attività dell'acido gamma-amino butirrico (GABA), neurotrasmettitore con effetti ipnotici, ansiolitici e sedativi. Diversi studi clinici randomizzati in doppio cieco hanno dimostrato l'efficacia e la sicurezza di Lactium ® alla dose di 150 mg/die nel trattamento di disturbi stress-correlati e di disturbi del sonno, in assenza di tossicità e di effetti collaterali indesiderati.
-Fitosteroli (β-sitosterolo):
Steroli di origine vegetale con note proprietà ipocolesterolemizzanti. In particolare, il β-sitosterolo ha dimostrato di avere effetto antiandrogeno sia a livello prostatico che del follicolo pilifero, probabilmente per una riduzione della biodisponibilità del colesterolo nel microambiente locale, con una riduzione della biosintesi del testosterone e dell'attività della 5α reduttasi.
Il β-sitosterolo si è dimostrato efficace nel migliorare la densità del capillizio in pazienti affetti da alopecia androgenetica e sembrerebbe in grado di inibire l'espressione di geni coinvolti nei processi infiammatori a livello dei cheratinociti.
-Astaxantina: carotenoide di origine vegetale estratto dall'alga verde Haematococcus pluvialis e noto per l'elevato potere antiossidante e antinfiammatorio.
-PAC: Proantocianidine, classe di polifenoli presenti in numerose varietà di specie botaniche tra cui la corteccia di pino, con proprietà antiossidanti, ipoglicemizzanti e ipolipemizzanti.
La posologia è stata 1 compressa al giorno per 15 mesi, lontano almeno 2 ore prima e dopo i pasti.

Conclusioni:

Dai dati raccolti si osservano risultati diversi a seconda dei gruppi.

Il gruppo con terapia orale e terapia topica:
-dall'analisi del sebo, si evince una graduale normalizzazione del sebo, già visibile a T9, indipendentemente dal BMI di partenza dei pazienti. Questo gruppo, in T0, era composto da individui che avevano il sebo alterato pari al 90%. Di cui 2 con un valore inferiore al limite rispetto alla norma e 7 con un valore superiore al limite rispetto alla norma.
In T15 l'80% risulta avere un sebo nella norma, di cui 1 al di sopra del limite di normalità e 1 sotto di questo limite. Nonostante questi due pazienti siano con un sebo oltre i range di normalità, se si confronta con il T0, i loro valori, in T15, sono più vicini al limite di normalità, rispetto alla partenza.
Analizzando i valori del pH, si deduce che si è normalizzato nel tempo, rendendo lampante la correlazione tra sebo e pH, descritto in numerosi studi, in cui si spiega questa correlazione con il processo di ossigenazione del cuoio capelluto.
Il cuoio capelluto con maggiore quantità di sebo non riesce ad avere un corretto scambio ossigeno-anidride carbonica, in favore di quest'ultima, che, aumentando la propria concentrazione, avrà come effetto un'acidificazione della zona, per cui un valore di pH inferiore.
In questo caso abbiamo il 60% dei pazienti in T0 con pH alterato di cui 5 pazienti con un valore al di sotto del limite di normalità e 1 al di sopra del limite.
Un altro parametro correlato con il pH è l'infiammazione perifollicolare, che ha un andamento sovrapponibile a quello del sebo e del pH in questo gruppo.
In questo caso siamo partiti il 70% dei pazienti presentava infiammazione perifollicolare, fino alla quasi totale normalizzazione (1 paziente solo presentava infiammazione perifollicolare in T15).
Inoltre, da notare, in tutti coloro che in T0 non avevano alcun segno di infiammazione, durante la terapia orale e sistemica, non hanno mai presentato segni di infiammazione perifollicolare.
La diminuzione dell'infiammazione perifollicolare può essere dovuta alla presenza di idrocortisone butirrato all'interno della lozione locale.
Anche i risultati del diametro medio e densità media di capelli per cm2, abbiamo avuto ottimi risultati.
Per quanto riguarda il diametro medio siamo passati da un range che era compreso tra i 44μm e i 70 μm, con il 100% dei pazienti al di sotto al limite della normalità.
In T15, i pazienti presentavano valori pressochè raddoppiati. Infatti, i valori raccolti erano compresi tra 87 μm e 140 μm di cui solo 20% al di sotto del limite di normalità.
Nonostante che i due pazienti fossero ancora in un range non ideale in T15, se confrontati con T0, presentavano un diametro medio dei capelli migliorato da 44 μm a 87 μm in un caso e, da 59 μm a 89 μm.
La densità media dei capelli ha un andamento simile ai valori del diametro medio.
La densità media dei capelli ha un andamento simile ai valori del diametro medio.
I pazienti che presentavano una densità inferiore rispetto alla media sono il 70% del gruppo, con valori che vanno da 46 μm fino a 93 μm.
Durante la terapia si osserva un progressivo aumento della densità, fino a T15, in cui il 100% dei pazienti presenta una densità nei range di normalità.
Anche i due pazienti che in T0 avevano valori accettabili, in T15 risultano avere comunque un aumento della densità media (Foto 13-14).

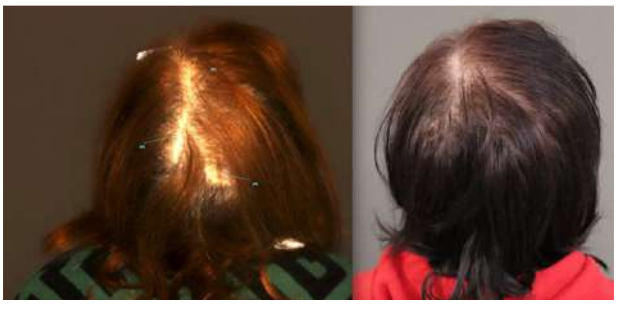
Foto 13: Le frecce indicano i punti in cui è stata eseguita la misurazione del diametro e della densità dei capelli.

Foto 14: Le frecce indicano i punti in cui è stata eseguita la misurazione del diametro e della densità dei capelli.

Analizzando invece il secondo gruppo in cui si è eseguita solo la terapia orale con Restax GABA, i risultati sono incoraggianti, ma inferiori rispetto al precedente gruppo.
Per quanto riguarda la produzione di sebo, anche in questo caso abbiamo un miglioramento da T0 a T15, in media, con un andamento indipendente rispetto al BMI dei pazienti. In questo gruppo il 90% dei pazienti presentava un'alterazione del sebo, di cui 6 con un range oltre la soglia di normalità e 3 con un range al di sotto di tale soglia.
In T15, l'60% dei pazienti aveva un sebo nel range della normalità, mentre il restante 40% aveva un valore al di sotto della media.
Invece un risultato inaspettato è stato l'andamento del valore del pH. Questo valore risulta peggiorato passando dal 60% al 70% di pazienti con un pH alterato. Risultati più promettenti si sono registrati con il calcolo della densità media e il diametro medio dei capelli. Per quanto riguarda la densità media, il gruppo in T0 era composto dal 70% di pazienti con una densità inferiore alla media, raggiungendo solo il 30% in T15. L'aumento della densità media è stato di 21,7 cm2, con una normalizzazione dell'80% dei pazienti. Similmente il diametro medio dei capelli è passato dal 100% di pazienti con un diametro medio inferiore al limite di normalità, al 70% di pazienti che presentava un valore ancora inferiore alla media in T15. Mediamente l'aumento è stato di 30 μm. (Foto 15-16)

Foto 15: Le frecce indicano i punti in cui è stata eseguita la misurazione del diametro e della densità dei capelli.

Foto 16: Le frecce indicano i punti in cui è stata eseguita la misurazione del diametro e della densità dei capelli.



L'ultimo gruppo, il gruppo trattato con placebo, non ha avuto dei risultati statisticamente significativi in nessun valore analizzato.
A ciascun paziente è stato infine sottoposto un questionario valutativo ad inizio, 3 mesi e 6 mesi di trattamento, il questionario valutava secondo la scala di Pittsburg i sintomi dell'insonnia di cui le domande sono riportate per completezza in Tabella 11, la soddisfazione del paziente da un valore da 0 a 5 con 0 indicante una profonda insoddisfazione e 5 indicante una perfetta soddisfazione ed infine la situazione del paziente sulla scala Norwood-Hamilton con indicazione numerica del grado di calvizie.
In Tabella 10 sono riportati i valori in questione per ciascun gruppo di pazienti, dai dati si evince come, sebbene il gruppo in esame fosse piccolo, ci sia un miglioramento della qualità del sonno, misurata con il questionario standard della scala di Pittsburg, che sia maggiore del placebo (gruppo 3) in pazienti trattati con lozione galenica e Restax Gaba (Gruppo 1) e nei pazienti trattati con solo integratore (Gruppo 2) indicando una potenziale ed importante correlazione positiva.

Tab. 10

Valore medio Gruppo 1	Scala Norwood	Scala di Pittsburg	Soddisfazione Paziente
T0	4,2	10,6	2,1
T3	3,3	7,5	3,3
T6	2,7	8,1	4
Valore Medio Gruppo 2	Scala Norwood	Scala di Pittsburg	Soddisfazione Paziente
T0	3	13,3	2
T3	2,7	11,3	2,6
T6	2,2	10	2,8
Valore Medio Gruppo 3	Scala Norwood	Scala di Pittsburg	Soddisfazione Paziente
T0	3,1	11,3	2,3
T3	3,1	9,6	2,3
T6	3,1	9,9	2,3

Visti i risultati dello studio, nonostante il numero dei pazienti sia esiguo, è un inizio per studiare l'andamento di questa patologia ancora così poco conosciuta e poter creare dei protocolli terapeutici, unendo la terapia locale con la sistemica.

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COMPLESSO FOSPIDINA

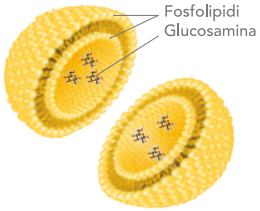
Tecnologia biomimetica liposomiale

221 volontari hanno testato con ottimi risultati tutti i prodotti dermocosmetici della linea a base di Fospidina attraverso 33 test in gruppi da 20 a 60 volontari a seconda del prodotto

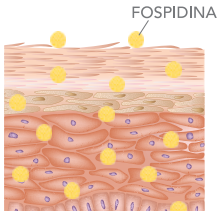
La linea SKINIUS THE DOCTOR IS IN è nata per rispondere ai problemi cutanei legati all'ageing, anche in caso di pelle sensibile. Tutti i prodotti sono ideali anche per il consiglio del dermatologo in termini di **efficacia**, **tollerabilità** e **dermoaffinità**. Oltre ai test di base per la sicurezza previsti dal Regolamento Cosmetico Europeo, abbiamo testato a fondo le performance più mirate delle nostre formulazioni con solide **prove strumentali** e **cliniche**, sotto controllo dermatologico. Tali esami sono stati condotti su gruppi di volontari con **pelle sensibile**. Gli ottimi risultati rendono fiduciosi della tollerabilità per un ampio numero di tipologie cutanee.

L'innovazione scientifica della linea SKINIUS THE DOCTOR IS IN è il complesso Fospidina, a base di fosfolipidi e glucosamina, messo a punto dopo oltre 30 anni di ricerche in biologia cellulare e in dermatologia. Agisce sia come attivo anti-aging che come veicolante per massimizzare le prestazioni della glucosamina, precursore dell'acido ialuronico.

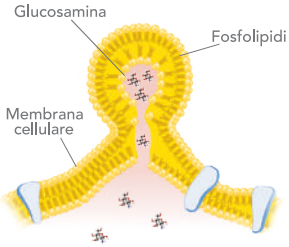
COME AGISCE



I fosfolipidi si dispongono in doppio strato a costituire una sfera cava (liposoma) all'interno della quale si posizionano le molecole di glucosamina.



Il liposoma penetra negli strati più profondi trasportando la glucosamina, che favorirà la produzione di nuovo acido ialuronico e la fisiologica rigenerazione cellulare.



Il liposoma, che è costituito da fosfolipidi come le membrane cellulari, si integra facilmente con la membrana cellulare creando un canale attraverso cui passa la glucosamina.

Fonte: B. Mandalari e D. Tedeschi, Journal of Plastic Dermatology joined with Update in Plastic Surgery, vol 12, 2, 2016 Fosfolipidi, glucosamina, fitoestrogeni e rigenerazione cutanea

RUGHE

-12,3% Profondità media

-16% Rughe superficiali

ELASTICITÀ CUTANEA

+6,8% 30-49 anni

+8,1% 50-70 anni

IDRATAZIONE CUTANEA

-93% Evaporazione dell'acqua (TEWL)

+7% Idratazione profonda

+8,9% Idratazione superficiale

Fonte: A. Di Pietro e I. Luppino, Journal of Plastic Dermatology, vol 10, 1, 2014
Studio sull'effetto di un gel a base di Fospidina (complesso di fosfolipidi, glucosamina, fitoestrogeni) nel miglioramento di elasticità cutanea, idratazione superficiale e profonda, rughe superficiali. Studio specifico su 160 volontari – 130 donne e 30 uomini

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VOL. 22
n. 1
2026

Enzimatic Exfoliation: A new approach

Ferdinando Bianchi

Ferdinando Bianchi[1], Mariagrazia Boniardi[2], Massimo Perrone[2], Andrea Di Pietro[2], Antonino Di Pietro[3]

ABSTRACT

The primary objective of this clinical trial is to assess whether a cosmetic product has, besides a moisturizing effect, an effect in improving the appearance of the skin.
The activity of the product was evaluated analyzing the increase of skin moisturization, the reduction of TEWL, the improvement of skin brightness, the improvement of the complexion uniformity and reducing of the visibility of pores and blackheads.
It was performed a clinical study, and the tested product was assigned to 20 volunteers. They were asked to use the product on their face. Specific end-point variables were analyzed before the use of the product and after 30 minutes of application.
The results obtained by the test demonstrated the primary objectives of the study: the moisturization effect of the product and the effect in improving the skin appearance. It was observed an improvement of skin moisturization, skin brightness, uniformity of the complexion and the reduction of the visibility of pores, after product use.

KEYWORDS

Enzymatic esfoliation , Proteolitic enzymes, Mucor miehei extract, Not chemical exfoliation, pH dependent enzymatic activity, Corneum stratum turnover

INTRODUCTION TO ESFOLIATION TECHNIQUES

Skin exfoliation: mechanisms, methods and focus on the enzymatic action of aspartic proteases

The exfoliation process is a milestone in modern dermo cosmetics: it promotes cell renewal, improves radiance, and makes the skin more receptive to topical active ingredients. The physiological turnover of the epidermis is completed in about 28 days, but over time and due to photoaging, pollution, and oxidative stress, sometimes desquamation slows with an unusual corneal cells accumulation, leaving the skin duller and thicker.

In this article, we focus on the main types of exfoliations usually found in dermo cosmetics, with particular attention on the innovative enzymatic exfoliation using aspartic protease.

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CHEMICAL EXFOLIATION

Chemical exfoliation uses keratolytic or keratoplastic substances, such as alpha-hydroxy acids (AHAs), beta-hydroxy acids (BHAs), and polyhydroxy acids (PHAs), which in cosmetic concentrations reduce corneocyte cohesion. Effectiveness depends on pH, concentration, and contact time: AHAs stimulate surface renewal; BHAs have lipid affinity also acting within pores; PHAs offer a gentler action, suitable for sensitive skin.
These strategies are effective, but they sometimes present the risk of irritation or photosensitization, which is the reason why they often require caution and contemporary use of sunscreen.

MECHANICAL EXFOLIATION

Mechanical exfoliation, on the other hand, is based on solid particles that physically remove the corneum stratum. It was long considered less suitable for fragile or reactive skin but, within the formulation evolution, they have found more controlled scrubs, in which the particles are calibrated for size and smoothness and dispersed in bases rich in soothing active ingredients.
An example of a modern balanced synergy is the combination of pumice powder and jojoba microspheres that have replaced the old solid microplastics, with environmental benefits as well.

ENZYMATIC EXFOLIATION

Enzymatic exfoliation represents the most physiological and selective strategy. It represents a form of chemical exfoliation based on the proteolytic enzymes activity that hydrolyzes the peptide bonds of proteins linking corneal cells, promoting their controlled detachment. This mechanism reproduces what naturally occurs corneum stratum, thanks to endogenous proteases.
Among available ingredients, aspartic proteases seems to be the most effective being involved in most of natural proteolytic activity and acting in a pH-dependent way: this means that in the most superficial layer, where the pH is slightly acidic, they promote desquamation while in the deeper layers, in a more neutral pH environment, they reduce their activity, preserving epidermal cohesion.

Research has found that a natural protease from the fungus Mucor miehei can replicate the effects of endogenous aspartic proteases to help restore controlled turnover. This enzyme maintains high proteolytic activity on the surface of the stratum corneum, where the pH is lower, and spontaneously reduces it in deeper layers, avoiding damage to the vital structure of the epidermis.
A stable market formulation containing this natural protease has been used for the aim of this study (*)

EXPERIMENTAL CONDITIONS

Primary objective

The aim of this study is to assess whether the cosmetic product has a moisturizing effect and an effect in improving the appearance of the skin.

Primary endpoints:
- Skin moisturization (quantitative endpoint)
- TEWL (quantitative endpoint)
- Skin brightness (qualitative endpoint)
- Uniformity of the complexion (qualitative endpoint)
- Visibility of pores (qualitative endpoint)
- Visibility of blackheads (qualitative endpoint)

Secondary objectives

Not present.

STUDY CHARACTERISTICS

Study design

The effect of the product was evaluated by comparing the results obtained after the use with the baseline data.

Sample size

Based on common testing experience, by considering the type of product, the objectives of the trial and considering any possible drop-out, the sample size is composed of 20 subjects.

Eligibility criteria

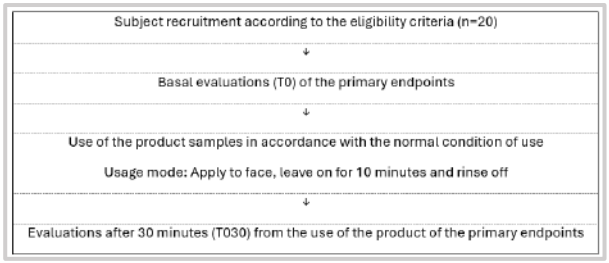
The subjects participating in the study were screened under medical supervision and enrolled according to the following inclusion criteria:
• combination skin with blackheads and uneven complexion.
• both male and female sex.
• age between 18 and 60 years.
• good general health status/absence of psychological and/or cognitive disorders.
• absence of dermatological and allergological pathologies (cosmetologically or to other specific excipients) or other pathologies (such as irritative reactions of unknown origin).
• absence of ongoing pharmacological treatments which may affect the outcome of the test.
• non-participation in other clinical trials in the previous 30 days.
• informed consent obtained

Randomization
Not applicable.

Blindness

The subjects received the product without packaging or indications regarding the manufacturer's brand in order to avoid the distortions caused by the conditioning effect of the awareness of the product.

Trial scheme



Criteria for the subject withdrawal

The following rules were imposed on a possible subject withdrawal which may occur during the trial:
• breach of one of the inclusion/exclusions criteria.
• development of adverse effects.
• non- compliance
• non-compliance

Endpoints

• Quantitative endpoints
- Skin moisturization (instrumental analysis)

Measured by CORNEOMETER CM 825
(A.U. arbitrary units)
The instrument measures the skin capacitance (quantification of the ability of the skin to collect electrical charge) by applying a high frequency electrical field.
The measurement is based on the principle that skin capacitance depends on the changes in dielectric constant, which are proportional to the water content in skin. With increasing hydration in the stratum corneum, its dielectric constant growth and therefore its capacitance; to clarify, the more the skin is hydrated, the more the stratum corneum becomes a good electric conductor.
Hence the instrument can indirectly detect skin hydration level, using arbitrary units.
- TEWL trans epidermal water loss (instrumental analysis)

Measured by TEWAMETER TM 300 (g/m^2 h)
The instrument measures trans epidermal water loss, or the quantity of water lost from the dermis and epidermis through the stratum corneum, in the form of water vapour. The result is expressed in grams per unit area per hour. The method gives indication about the integrity of the stratum corneum and thus on the efficacy of the barrier function of the skin.
A barrier which is intact is related to low TEWL values, high TEWL values show on the other hand a higher water loss hence a low protective function of the skin
• Qualitative endpoints
- Skin brightness (clinical evaluation)
- Uniformity of the complexion (clinical evaluation)

The variables are evaluated by the professionals responsible for the trial according to the following ordinal scale: Insufficient – Sufficient – Moderate – Good – Excellent.
- Visibility of pores (clinical evaluation)
- Visibility of blackheads (clinical evaluation)
The variables are evaluated by the professionals responsible for the trial according to the following ordinal scale: Very marked – Marked – Moderate – Slight – Absent.

Data analysis and statistical analysis

• Quantitative endpoints

The data on the quantitative endpoints were described using the normal position and dispersion measurements: mean and standard deviation/median and interquartile range.
A Shapiro-Wilk test was used to verify the normality of the distribution of the differences between the paired measurements. Furthermore, it was checked the independence of the observations.
When assumptions were fulfilled, a paired samples Student t-test was used for comparing the data obtained at the two observation times.
When assumptions were violated, a non-parametric approach was applied. The symmetry of the distribution of the differences between the paired evaluations was verified and the most appropriate paired samples non-parametric test (Wilcoxon signed rank test/Sign test) was used.
A significant level of <0.05 was considered.
Analyses were performed using RStudio 2023.03.1+446 Build 446 © 2009-2023 RStudio, PBC.

• Qualitative endpoints

The data on the qualitative endpoint were described using the normal position and dispersion measurements: mean and standard deviation-median and interquartile range. Furthermore, the absolute frequencies of the number of feedback given at each observation period were summarized.
For each end-point variable it was checked that the distribution of the differences between the paired evaluations were symmetric.
The most appropriate paired samples non-parametric one-tailed or two-tailed test was then used (Wilcoxon signed rank test/ Sign test) for comparing the data obtained between the two treatments.
A significant level of <0.05 was considered.
Analyses were performed using RStudio 2023.03.1+446 Build 446 © 2009-2023 RStudio, PBC.

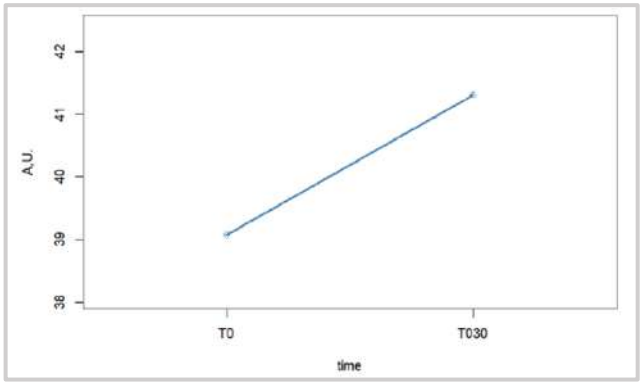
RESULTS

During the trial, no subject developed undesirable effects or breached the established inclusion/exclusion criteria. Furthermore, there were no cases of drop-out. Therefore, the analysis refers to a sample of 20 subjects.

Skin moisturization

Descriptive analysis

Survey times	Mean	±	Standard deviation	Median	IQR		
T0	39,080	±	2,171	38,750	37,925	-	40,450
T030	41,305	±	2,369	40,900	39,875	-	42,725



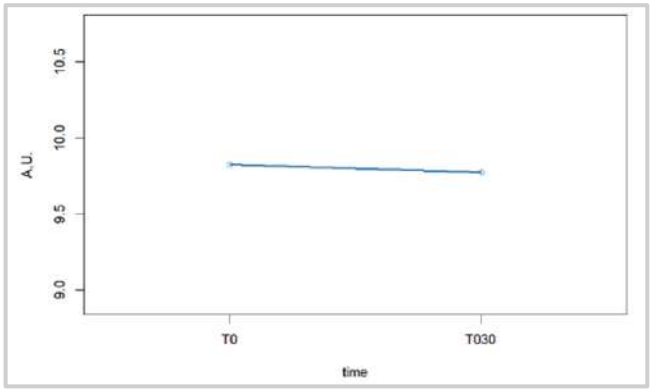
Compared to the baseline value (T0), it can be seen an increase of 6% of skin moisturization after 30 minutes from the use of the product, with a statistical significance of data.

TEWL

Descriptive analysis

Survey times	Mean	±	Standard deviation	Median	IQR		
T0	9,825	±	1,947	10,000	8,545	-	10,800
T030	9,777	±	1,838	9,985	8,323	-	10,525

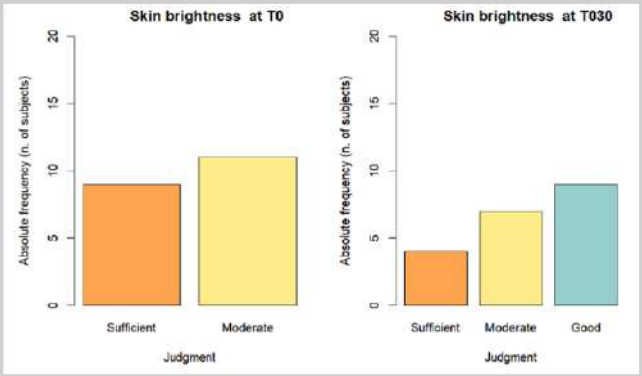
Descrizione della variabile TEWL ai due tempi di osservazione
Description of the variable TEWL at the two time points



Compared to the baseline value (T0) no decrease is observed of TEWL after 30 minutes from the use of the product.

Skin brightness

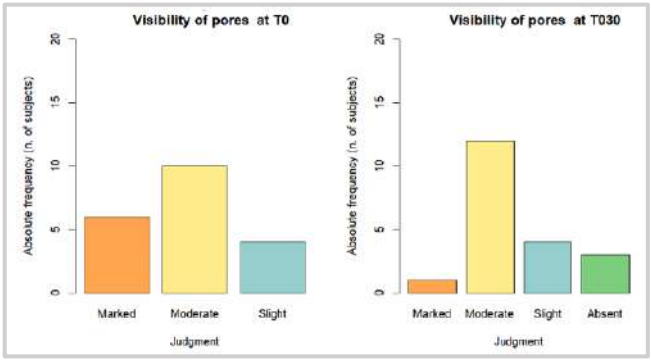
Absolute frequency (n. subjects)		
Giudizio/ judgement	T0	T030
Insufficiente/Insufficient	0	0
Sufficiente/Sufficient	9	4
Moderato/Moderate	11	7
Buono/Good	0	9
Ottimo/Very good	0	0



Analyzing the frequencies of the judgments on the variable Skin brightness, they tend to have a distribution shifting to more positive categories after 30 minutes from product use. Specifically, the variable Skin brightness shows an improvement in the 70% of volunteers, with statistical significance.

Visibility of pores

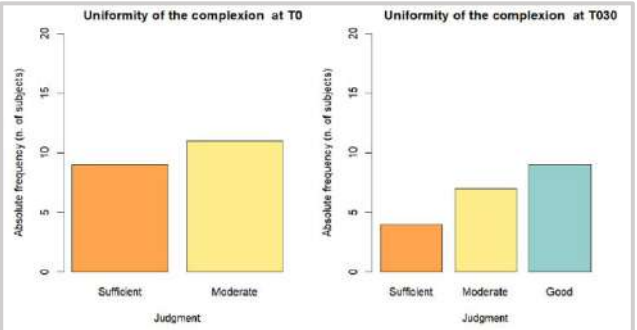
Absolute frequency (n. subjects)		
Giudizio/ judgement	T0	T030
Molto evidente/Very marked	0	0
Evidente/Marked	6	1
Moderato/Moderate	10	12
Lieve/Slight	4	4
Assente/Absent	0	3



Analyzing the frequencies of the judgments on the variable Visibility of pores, they tend to have a distribution shifting to more positive categories after 30 minutes from product use. Specifically, the variable Visibility of pores shows an improvement in the 55% of volunteers, with statistical significance.

Uniformity of the complexion

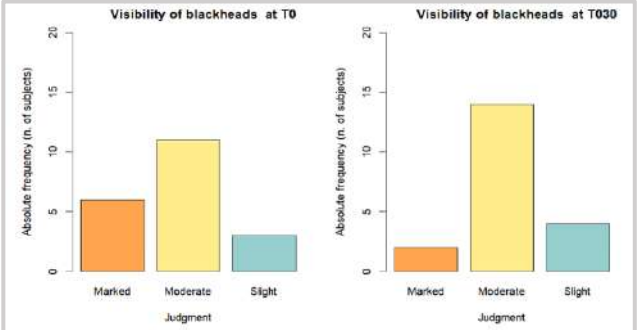
Absolute frequency (n. subjects)		
Giudizio/ judgement	T0	T030
Insufficiente/Insufficient	0	0
Sufficiente/Sufficient	9	4
Moderato/Moderate	11	7
Buono/Good	0	9
Ottimo/Very good	0	0



Analyzing the frequencies of the judgments on the variable Uniformity of the complexion, it can be seen that they tend to have a distribution shifting to more positive categories after 30 minutes from product use.
Specifically, the variable Uniformity of the complexion shows an improvement in the 70% of volunteers, with statistical significance.

Visibility of blackheads

Absolute frequency (n. subjects)		
Giudizio/ judgement	T0	T030
Molto evidente/Very marked	0	0
Evidente/Marked	6	2
Moderato/Moderate	11	14
Lieve/Slight	3	4
Assente/Absent	0	0



Analyzing the frequencies of the judgments on the variable Visibility of blackheads, it can be seen that they tend to have a distribution shifting to more positive categories after 30 minutes from product use.
Specifically, the variable Visibility of blackheads shows an improvement in the 25% of volunteers.

CONCLUSIONS

The results obtained by the test demonstrate the primary objective of the study: the moisturizing effect and an effect in improving the appearance of the skin of the product tested (*).
It was observed also an improvement of skin moisturization, skin brightness, uniformity of the complexion and the reduction of the visibility of pores, after product use.
All these results, therefore, show the possibility of carrying out significant skin exfoliation by means of an enzymatic approach. Due to its specific pH-depending activity, it represents an effective protocol for the external layer of the skin (corneum stratum) without damaging the inner ones.
Thanks to the particular skin affinity and gentleness of the treatment it would be suggested as primary approach for sensitive skin even for daily use.

(*) DELIKA SCRUB PEELING,
INCI LIST: AQUA, GLYCERYL STEARATE, COCO-CAPRYLATE, CETYL ALCOHOL, ETHYLHEXYL PALMITATE, GLYCERIN, CETEARYL ALCOHOL, CAPRYLIC/CAPRIC TRIGLYCERIDE, PUMICE, LECITHIN, GLUCOSAMINE SULFATE, PRUNUS AMYGDALUS DULCIS OIL, MYRTUS COMMUNIS LEAF EXTRACT, PUNICA GRANATUM SEED OIL, PUNICA GRANATUM FRUIT EXTRACT, RUBUS IDAEUS LEAF EXTRACT, CITRUS PARADISI FRUIT EXTRACT, LINUM USITATISSIMUM SEED OIL, JOJOBA ESTERS, HELIANTHUS ANNUUS SEED OIL, TOCOPHERYL ACETATE, TOCOPHEROL, BETA-SITOSTEROL, PHYTIC ACID, MUCOR MIEHEI EXTRACT, XANTHAN GUM, CITRIC ACID, ETHYLHEXYLGLYCERIN, SODIUM CITRATE, SODIUM LAUROYL GLUTAMATE, SODIUM BENZOATE, POTASSIUM SORBATE, STEARIC ACID, SQUALANE, SODIUM DEHYDROACETATE, SQUALENE, PARFUM, ALCOHOL, PHENOXYETHANOL

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Efficacy of a Multi-Component Ceramide-Based Emollient Cream in Adults with Xerosis, Pruritus, and Atopic Dermatitis: A Real-World Observational Study

Corinna Rigoni

Corinna Rigoni, Cristiana Belloli, Daniela Beretta, Michela Castello, Sandra Farina, Chiara Galloni, Chiara Lovati, Silvia Vaienti, M.Cristina Visconti, Alessandra M. Cantù

ABSTRACT

Background
Xerosis cutis and atopic dermatitis are characterized by impaired epidermal barrier function, requiring long-term management with emollients. Multi-component formulations targeting multiple pathophysiological mechanisms may offer enhanced therapeutic benefits.

Objectives
To evaluate the real-world efficacy and safety of a ceramide-based emollient cream containing five ceramides, panthenol, vitamins E and F, hyaluronic acid, and shea butter in adults with xerosis, pruritus, and atopic dermatitis.

Methods
This prospective, open-label, observational study enrolled 59 adult patients (mean age 54.3 years, 84.7% female) with xerotic skin conditions across multiple Italian dermatology centers. Patients applied the study cream twice daily for 15 days, combined with a restorative cleansing oil. Clinical parameters (xerosis, desquamation, skin tension, cracks/fissures, excoriations, erythema, pruritus) were evaluated using a standardized 5-point severity scale (0-4) at baseline and day 15. Global efficacy, quality of life, product acceptability, and safety were also assessed.

Results
All clinical parameters showed significant improvements. Pruritus demonstrated the most marked reduction (88.6% decrease, from 1.918 to 0.286), with 100% of the 49 affected patients experiencing improvement. Other parameters showed substantial reductions: excoriations (-85.4%; n = 24 patients), erythema (-82.1%; n = 28), skin tension (-81.1%; n = 45), cracks/fissures (-80.0%; n = 5), desquamation (-77.9%; n = 51), and xerosis (-65.3%; n = 54). Global efficacy was rated by the investigators as excellent or good for 96.6% of patients (55.9% excellent, 40.7% good). Quality of life assessment revealed 88.1% of patients were completely satisfied, with no deterioration reported. Product acceptability scores were high across all sensory attributes (8.1-8.7/10), with 94.9% rating overall cosmetic acceptability positively. No adverse events occurred throughout the study period.

Conclusions
This ceramide-based multi-component emollient cream demonstrated excellent efficacy and safety in managing xerosis, pruritus, and associated symptoms in adults with atopic dermatitis. The remarkable response rate, particularly for pruritus relief, combined with high patient satisfaction and absence of adverse events, supports its role in the supportive management of xerotic skin conditions.

KEYWORDS
Atopic dermatitis; ceramides; emollients; epidermal barrier function; panthenol; pruritus; quality of life; skin barrier restoration; transepidermal water loss; xerosis cu

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INTRODUCTION

Xerosis cutis, marked by dry, rough, and scaly skin, is a key clinical feature of several dermatological disorders, particularly atopic dermatitis (AD).

Affecting up to 20% of children and 2–10% of adults, AD is a chronic inflammatory condition characterized by epidermal barrier dysfunction, immune dysregulation, and significant patient burden (Wollenberg 2025; Somjorn 2024).

Hallmark features of xerosis in AD include elevated transepidermal water loss (TEWL), reduced stratum corneum hydration, and diminished intercellular lipids—especially ceramides—compromising the skin's barrier integrity (Huang 2025; Sakai 2025).

Emollients are central to xerosis management, restoring the skin barrier through synergistic biophysical actions. Traditional formulations combine humectants that bind water in the stratum corneum with occlusives that form a lipid film to reduce TEWL (Wollenberg 2025).

Modern emollients go further, actively replenishing barrier components to restore skin physiology.

Clinical studies show regular use improves hydration, reduces disease severity, prolongs remission, and may reduce corticosteroid need in AD (Stettler 2017; Wollenberg 2025).

This observational study assessed the real-world efficacy and safety of a multi-component emollient cream (Vitamindermina Restoring Moisturising Cream,) formulated to address the multifactorial pathophysiology of xerotic skin.

The formulation combines biomimetic ceramides to restore lamellar barrier architecture and reduce TEWL (Huang 2025; Yong 2025; Sakai 2025), panthenol to enhance molecular mobility and epidermal repair (Proksch 2017; Stettler 2017), antioxidants and essential fatty acids to counter inflammation (De Simoni 2024; Somjorn 2024; Blunder 2017), and hyaluronic acid with emollients to sustain hydration and barrier function (Wollenberg 2025). These ingredients act through complementary mechanisms to restore barrier integrity and relieve symptoms in adults with xerosis, pruritus, and AD.

Methods

Study design

This multicenter observational study aimed to evaluate the efficacy and safety of a multi-component emollient cream in treating xerotic skin conditions and related symptoms.

It followed a prospective, open-label, single-arm design, integrating clinical observations with patient evaluations through a multidisciplinary approach.

Study Population

Fifty-nine adult patients, aged 18 to 86 years, were enrolled. All had xerotic skin conditions related to various agents (iatrogenic, physical, etc), pruritus, AD, requiring intervention.

Exclusion criteria were pregnancy or lactation, use of systemic or topical pharmacological treatments, known allergies to formulation components (INCI), and other incompatible medical conditions.

Treatment Protocol

Patients applied the emollient cream twice daily (morning and evening) for 15 days.

Treatment was preceded by cleansing with a cleansing restorative oil (the same for all the patients) to optimize skin preparation and enhance efficacy.

Clinical Assessments

Dermatologists evaluated cutaneous parameters at baseline (T0) and after 15 days of treatment (T1). Parameters included xerosis (54 patients), desquamation (51), skin tension (45), cracks/fissures (5), excoriations (24), erythema (28), and pruritus (49).

Each was rated using a 5-point severity scale (0 = absent, 4 = severe), enabling quantitative assessment and calculation of mean percentage changes from baseline to post-treatment.

A global efficacy assessment was also conducted at day 15 using a 4-point categorical scale (Excellent, Good, Fair, Poor), integrating all clinical improvements into an overall evaluation.

Quality of Life Assessment

Patient-reported outcomes were collected using a 6-point Likert scale to assess changes in quality of life. Additional questionnaires evaluated treatment practicality (compliance) and product acceptability (sensory attributes).

The latter was assessed through the visual analog scale (VAS, 1-10; 1: very unsatisfied and 10: very satisfied).

Safety and Tolerability Evaluation

Safety was monitored through multiple methods to ensure a thorough evaluation of tolerability.

Adverse events were tracked throughout the study via continuous clinical observation and a reporting system for documenting reactions during or after application. Patients also maintained diaries to report unexpected skin reactions, ensuring comprehensive data capture.

Regulatory Compliance and Ethical Considerations

The study complied with Italian and EU cosmetic regulations, including Regulation (EC) No. 1223/2009, Legislative Decree 204/2015, and Regulation (EU) No. 655/2013 for claim substantiation. Product formulation, testing, and claims adhered to standards according to European laws.

Statistical Analysis

Data from all patients completing the protocol were analyzed. For each clinical parameter, mean baseline (T0) and post-treatment (T1 -15 days-) scores, percentage variation, and proportion of improved patients were calculated.

Descriptive statistics summarized demographics and outcomes. Primary endpoint: reduction in severity scores; secondary endpoints: clinical improvement rates, QoL changes, and global efficacy ratings.

Results

Study Population

A total of 59 patients were enrolled and completed the 15-day treatment protocol (Table 1).

The baseline clinical presentation demonstrated a heterogeneous distribution of signs and symptoms across the study population, with xerosis being the most prevalent symptom (54 patients, 91.5%), followed by desquamation (51 patients, 86.4%) and pruritus (49 patients, 83.1%),

Clinical Efficacy

After 15 days of twice-daily treatment with the emollient cream combined with the cleansing oil, all evaluated clinical parameters showed improvements (Table 2).

Remarkably, explorative analysis showed that pruritus was greatly improved, with a mean severity score reduction of 88.6%. Notably, 100% of patients with pruritus (49/49) reported clinical improvement, representing the highest response rate among all evaluated parameters. Xerosis, the most prevalent baseline symptom (n = 54), demonstrated a 65.3% reduction in mean severity, with 96.3% of patients (52/54) experiencing clinical improvement.

Table 1.
Demographic and Baseline Clinical Characteristics of Study Population (N=59)

CHARACTERISTIC	VALUE
Age, mean ± SD (range)	54.3 ± 17.1 (18-86)
Sex, n (%)	
Female	50 (84.7)
Male	7 (11.9)
Unspecified	2 (3.4)
Clinical Parameters at Baseline, n (%)	
Xerosis	54 (91.5)
Desquamation	51 (86.4)
Pruritus	49 (83.1)
Skin Tension	45 (76.3)
Erythema	28 (47.5)
Excoriations	24 (40.7)
Cracks/Fissures	5 (8.5)

SD, standard deviation

Table 2.
Clinical Efficacy Outcomes: Changes in Severity Scores from Baseline to Day 15

CLINICAL PARAMETER	N	BASELINE SCORE	DAY 15 SCORE	% REDUCTION	PATIENTS IMPROVED (%)
Xerosis	54	2.75±0.92	0.94±0.66	65.3	96.3
Desquamation	51	1.98±1.03	0.49±0.65	77.9	96.1
Skin Tension	45	1.95±1.05	0.42±0.58	81.1	97.8
Cracks/Fissures	5	1.00±0,28	0.20±0.13	80.0	80.0
Excoriations	24	1.33±0.73	0.25±0.31	85.4	95.8
Erythema	28	1.25±0.70	0.21±0.25	82.1	85.7
Pruritus	49	1.91±1.01	0.28±0.43	88.6	100.0

All changes from baseline were statistically significant ($p<0.001$ for all parameters except for cracks/fissures for which a statistical analysis couldn't be performed due to the small population).
Scores measured on a 5-point scale: 0=absent, 1=mild, 2=moderate, 3=evident, 4= severe.

Global Efficacy Assessment

The investigators' global assessment of treatment efficacy revealed remarkable outcomes, with 96.6% of cases rated as either "Excellent" or "Good" (Figure 1). Specifically, 55.9% (33/59) of patients achieved an "Excellent" rating, while 40.7% (24/59) received a "Good" rating.

Figure 1. Global efficacy assessment by investigators at day 15

Quality of Life Outcomes

Patient-reported QoL assessments demonstrated substantial improvements following treatment (Table 3).
A total of 88.1% (52/59) of patients reported complete satisfaction with the improvement in their QoL.
No patients reported deterioration in their condition or quality of life.

Table 3. Quality of Life Assessment and Patient Satisfaction

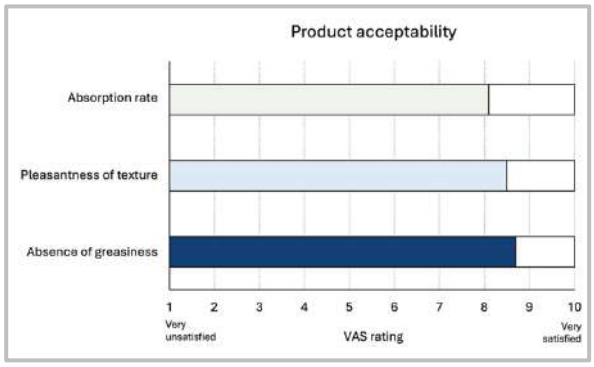
ASSESSMENT CATEGORY	RESULTS
Quality of Life (6-point Likert Scale)	
Completely satisfied, n (%)	52 (88.1)
Neutral, n (%)	7 (11.9)
Dissatisfied, n (%)	0 (0.0)

Product Acceptability and Compliance

Product acceptability, assessed through the VAS ratings (1-10; 1: very unsatisfied and 10: very satisfied), demonstrated high scores across all evaluated sensory and practical attributes (Figure 2).
The absence of greasiness received the highest rating (8.7/10), followed by pleasantness of texture (8.5/10) and absorption rate (8.1/10).

Compliance assessment revealed that 77.5% of patients found the product more convenient compared to previously used treatments. The overall cosmetic acceptability was rated positively by 94.9% of participants.

Figure 2. Product acceptability scores assessed by visual analog scale (VAS, 1-10).



Safety and Tolerability Profile

None of the 59 patients experienced local or systemic reactions during or after product application.

Discussion

This observational study promotes the supportive value of a multi-component emollient cream in managing xerosis related to various agents (iatrogenic, physical, etc), pruritus, and related symptoms in adults with AD.
The marked improvements—especially the 100% pruritus response rate and 96.6% excellent/good global efficacy—highlight the effectiveness of a formulation addressing multiple phathophysiological pathways. These results reinforce and broaden current perspectives on barrier-focused approaches for xerotic skin.
The cream's ability to relieve pruritus—a leading symptom affecting quality of life and sleep—may help disrupt the itch-scratch cycle, limiting further barrier damage and reducing reliance on pharmacological interventions (Somjorn 2024).
Improvements across both inflammatory (erythema) and barrier-related (xerosis, desquamation) signs suggest comprehensive action, in line with modern AD management concepts that emphasize both barrier support and inflammation control (Wollenberg 2025).

The global assessment ratings compare favorably with other emollients, which typically show 70–85% success rates.
The complete absence of adverse events, despite twice-daily application over 15 days, underscores the product's excellent tolerability.
Long-term adherence is further supported by favorable sensory attributes, addressing a key factor in emollient acceptability and routine use.
Our findings are consistent with recent clinical trials on multi-component emollients.
The 88.6% reduction in pruritus surpasses results from single-ingredient formulations, which typically achieve 40–60% reductions (Wollenberg 2025). Similarly, the 65.3% xerosis improvement compares well with glycerol-paraffin (50–60%) and ceramide-only products (45–55%).
The rapid symptom relief observed—often within the first week—is in line with panthenol-based formulations that enhance barrier function in 3–5 days (Proksch 2017), likely supporting greater adherence through early perceived benefit.
Strengths of this study include its real-world design reflecting routine clinical practice; comprehensive evaluation of multiple parameters with validated scales; inclusion of both clinician- and patient-reported outcomes; and assessment of product acceptability relevant to long-term use. Limitations include the open-label, single-arm design without a control group; short 15-day duration, which may not capture long-term effects; absence of objective biophysical measures (e.g., TEWL); and no post-treatment follow-up.
Future controlled studies with extended monitoring and instrumental assessments would help confirm these findings.

Conclusions

This observational study highlights the supportive value of the tested emollient cream in managing xerosis related to various agents (iatrogenic, physical, etc), pruritus and related symptoms in adults with AD. The formulation's ability to improve multiple clinical signs alongside excellent tolerability and patient satisfaction, supports its role as a supportive strategy for maintaining skin barrier health. These findings emphasize the importance of targeted, multi-functional emollients in modern xerosis care.

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Clinical–instrumental evaluation of the efficacy of two Dr Kleein® topical cosmetic regimens in the treatment of facial skin aging using VISIA® 2D analysis

Francesca Feresin

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ABSTRACT

Introduction: Facial skin aging is a complex biological process involving structural, pigmentary, vascular, and functional alterations. The use of standardized imaging systems enables objective and reproducible evaluation of cosmetic efficacy.
Objective: To evaluate the clinical and instrumental efficacy of two different Dr Kleein® topical cosmetic regimens, a line based on epigenetic principles and a neurocosmetic collagen-based line, through VISIA® 2D and VISIA® CR analysis.
Materials and Methods: Eleven female subjects (45–68 years) were enrolled in a prospective observational study. Six patients used an epigenetic cream and serum, and five used N-Cosmetic Collagen cream and serum. Products were applied twice daily for 3 months. Images were acquired at baseline (T0), after 1 month, and after 3 months (T2). Parameters analyzed included wrinkles, dyschromia, porphyrins, vascular areas, and skin uniformity. Statistical analysis was performed using paired Student's t-test.
Results: Both regimens produced instrumental VISIA® improvements across multiple skin domains. In the N-Cosmetic Collagen group, a significant improvement in skin uniformity ($p<0.01$) was observed, with favorable trends in porphyrins and red areas and inter-individual variability in structural parameters. The epigenetic regimen showed a profile oriented toward improvements in uniformity, texture, and pigmentation.
Conclusions: The data support the clinical and instrumental efficacy of both regimens in improving signs of facial skin aging.

KEYWORDS
Facial skin aging; Cosmeceuticals; Epigenetic skincare; Collagen-based topical therapy; VISIA imaging analysis.

INTRODUCTION

Skin aging results from the interaction between intrinsic factors related to cellular senescence and extrinsic factors such as sun exposure, oxidative stress, and neuro-cutaneous alterations.
These processes lead to extracellular matrix modifications, barrier dysfunction, chromatic inhomogeneity, and loss of tone and firmness (1,2,3).
In recent years, advanced cosmetology has incorporated epigenetic and neurocosmetic concepts, focusing on modulation of cellular and neuro-cutaneous mechanisms underlying aging.
At the same time, imaging systems such as VISIA® 2D and VISIA® CR allow objective, quantitative, and reproducible assessment of cosmetic effects (4).

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This study aims to evaluate the efficacy of two distinct yet complementary cosmetic approaches:
- an epigenetic regimen targeting gene expression regulation and skin self-repair processes;
- a collagen-based neurocosmetic regimen designed to support the dermal matrix and communication between the cutaneous nervous system and fibroblasts.

Materials and Methods

Study design

A prospective monocentric observational study in real-life conditions was conducted to evaluate the clinical and instrumental efficacy of two different topical cosmetic regimens for facial skin aging.

Study population

Eleven female patients aged 45–68 years with mild-to-moderate facial aging signs were enrolled.

Inclusion criteria:
- superficial and/or deep wrinkles
- dyschromia and uneven complexion
- reduced tone and firmness

Exclusion criteria:
- aesthetic or dermatologic treatments in the previous 3 months
- use of systemic or topical retinoids
- intentional sun exposure or UV lamp use during the study

Participants maintained their usual cosmetic routines, excluding the study products.

Results

Population and tolerability

All 11 patients completed the 3-month follow-up.
No adverse events were reported.

Instrumental VISIA® 2D outcomes

VISIA® analysis showed overall improvement in skin parameters in both groups, with different response patterns:
- the epigenetic regimen showed stronger effects on uniformity, texture, and superficial pigmentation;
- the collagen regimen showed greater impact on dermal quality and structural parameters.

Epigenetic group

VISIA® quantitative analysis documented multi-parametric improvement in skin quality (Table 1).

Table 1.
VISIA® numerical outcomes – Epigenetic group (T0–T2)

Parameter	Mean improvement
Skin uniformity	-38%
Wrinkles	-27%
Pores	-22%
Brown spots	-9%
Red areas	-10%
Total spots	improving trend
UV spots	variable
Porphyrins	initial fluctuation

Clinical interpretation

The epigenetic treatment resulted in:
- simultaneous improvement in multiple skin dimensions;
- reduction in chromatic inhomogeneity;
- improvement in skin texture and grain;
- attenuation of superficial lines.

The pattern suggests a functional rebalancing effect with early impact on overall skin quality (5).

N-Cosmetic Collagen group

VISIA® 2D analysis showed significant improvement in skin uniformity (Δ −30.4%; p=0.0029). Favorable trends were observed for porphyrins and red areas without statistical significance. Structural parameters showed interindividual variability (Table 2).

Table 2.
VISIA® numerical outcomes – Collagen group (T0–T2)

Parameter	Mean improvement
Skin uniformity	-27%
Porphyrins	-15%
Red areas	-10%
Total spots	-4%
Wrinkles	selective response
Pores	stabilization
UV spots	variable
Brown spots	variable

Clinical interpretation

The collagen regimen showed:

- improvement in dermal quality;
- structural skin support;
- reduction in inflammatory/sebaceous markers;
- progressive texture improvement.

The profile is consistent with extracellular matrix support and fibroblast communication enhancement (6,7,8,9,10).

Comparison between regimens

Skin domain	Epigenetic regimen	Collagen regimen
Uniformity	marked improvement	moderate improvement
Texture	early improvement	progressive improvement
Wrinkles	superficial line reduction	structural support
Pigmentation	significant response	secondary response
Microbiome	initial reorganization	stabilization
Dermal structure	moderate	high

Discussion

Both regimens produced measurable improvements in facial aging signs documented through VISIA® imaging.

The epigenetic regimen showed a faster impact on functional skin quality, particularly uniformity, texture, and pigmentation.

The collagen neurocosmetic regimen showed improvement in dermal quality and structural support.

Overall:

- epigenetic approach acts primarily on global skin quality;
- collagen approach acts on dermal structure and tone.

These mechanisms appear complementary.

Conclusions

Daily application of the two Dr Kleein® cosmetic regimens for 3 months leads to clinically and instrumentally documented improvement in facial skin aging parameters.

Specifically:

- the epigenetic regimen improves uniformity, texture, and pigmentation;
- the collagen regimen improves dermal quality and structural support;
- both contribute to overall skin quality improvement.

Standardized imaging such as VISIA® represents a valuable tool for objective cosmetic efficacy evaluation.

Figure 1. VISIA® 2D analysis of a representative patient from the Epigenetic group at baseline (T0) and after 3 months of treatment (T2).
(1A) Baseline assessment (T0) showing the full set of VISIA® 2D filters used in the study (total spots, wrinkles, skin uniformity/texture, pores, UV spots, brown spots, red areas, and porphyrins).
(1B) End-of-treatment assessment (T2) showing the same VISIA® 2D filters as in panel A, enabling direct comparison with baseline.
(1C) Red areas (vascular feature) comparison between T0 (left) and T2 (right), showing a visible reduction in erythematous/vascular areas after treatment.
(1D) Brown spots comparison between T0 (left) and T2 (right), highlighting a reduction in hyperpigmented areas and improved chromatic homogeneity at T2.
Overall, after 3 months of treatment with the epigenetic booster and cream, a qualitative improvement in pigmentary inhomogeneity and vascular features is observed, together with a more uniform complexion, consistent with the quantitative instrumental findings.

Figure 2.
VISIA® 2D analysis of a representative patient from the Collagen group at baseline (T0) and after 3 months of treatment (T2).
(2A) Baseline assessment (T0) showing the full set of VISIA® 2D filters used in the study (total spots, wrinkles, skin uniformity/texture, pores, UV spots, brown spots, red areas, and porphyrins).
(2B) End-of-treatment assessment (T2) showing the same VISIA® 2D filters as in panel A, allowing direct comparison with baseline.
(2C) Red areas (vascular feature) comparison between T0 (left) and T2 (right), showing a reduction in erythematous/vascular areas following treatment.
(2D) Brown spots comparison between T0 (left) and T2 (right), highlighting a reduction in hyperpigmented areas and improved chromatic homogeneity at T2.
Overall, after 3 months of treatment with the collagen-based serum and cream, a qualitative improvement in pigmentary inhomogeneity and vascular features is observed, together with enhanced skin texture and uniformity, consistent with the quantitative instrumental findings.

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Remission of chronic recalcitrant warts following anti-COVID-19

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SUMMARY

We report three patients with chronic recalcitrant plantar warts who recovered following anti-COVID-19 vaccination.

KEYWORDS
Recalcitrant warts, anti-COVID-19 vaccination

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CASE REPORTS

Case 1

A 37-year-old Caucasian male was seen because of giant and painful plantar warts (**Fig. 1**). The patient stated that his warts appeared in 1990. He was affected by hypothyroidism and in therapy with levothyroxine.

Over the years, the patient was treated with 30% salicilyc acid, 50% urea, curettage, cryosurgery, lasertherapy and acitretin (30 mg/day for 8 months).

In June 2020, the patient decided to stop all treatments. In February 2021, he was vaccinated with two doses of mRNA BNT162b2 (Pfizer-BioNTech).

In April 2021, all warts disappeared (**Fig. 2**).

The patient was examined several times until February 2026: no lesions were observed.

Case 2

A 61-year-old Caucasian female was admitted in February 2020 with painful plantar warts. The patient was in good general health and not in therapy with systemic drugs. She was treated with salicylic acid, 5% imiquimod, curettage, cryosurgery and lasertherapy. In April 2021 she was subjected to two doses of ChAdOx1-S (Astra Zeneca) and one dose of mRNA BNT162b2. Three weeks later, all warts disappeared. Follow up (October 2025) was negative.

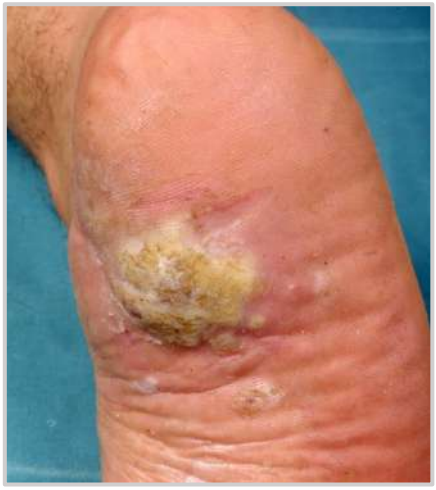
Case 3

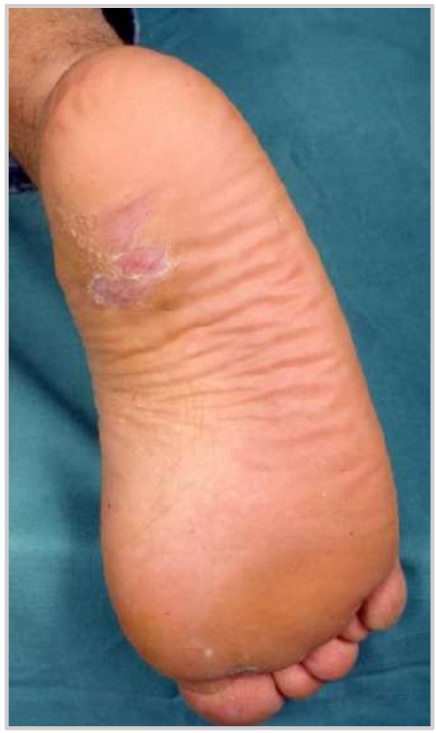
A 53-year-old Caucasian female was admitted with left plantar warts that appeared in 2016.
The patient was in good general health and not in therapy with systemic drugs. From 2017 to 2020, she was unsuccessfully treated with 30% salicylic acid, 50% urea, cryosurgery and oral echinacea. In June 2021 she was vaccinated with two doses of mRNA BNT162b2.
In winter 2021, complete remission of warts was observed. Follow up (May 2025) was negative.

DISCUSSION

To our knowledge, five patients with viral warts who recovered following anti-COVID-19 vaccination were reported in the literature.[1-4]
They were four adults[1-4] and one child.[3]
Three patients were immunocompetent and two were immunodepressed because of thrombotic thrombocytopenic purpura[3] and HIV,[4] respectively.
It is inexplicable that two patients reported in the literature,[1,3] plus one of ours, were affected by hypothyroidism.
The five patients reported in the literature were affected by warts on the face,[2] hands[1,3,4] and feet.[4]
All patients were affected by warts for a long period of time: one year,[2] two years,[1] four years,[3] eight years[3] and ten years.[4]
As previously mentioned, one of our patients had been suffering from plantar warts for more than thirty years.
Two patients were vaccinated with ChAdOx1-S,[1,2] two with mRNA BNT162b2 and one with mRNA-1273 (Moderna).
Complete remission of warts was observed ten days,[2] two weeks,[4] three weeks[3] and four weeks[1,3] following the second or the third dose of vaccines.
Data on follow up (negative eight months later) are available for two patients.[3,4]
In immunocompetent patients, approximately 90% of HPV lesions heal spontaneously within two years.[5] Furthermore, some vaccines (measles, mumps, rubella and Bacillus Calmette–Guerin) are used topically or intralesionally for the treatment of warts.[6,7] In warts treated with immunotherapy, a significant IL-10 downregulation, and IL-1 and IFN-γ upregulation were detected.[8]

The therapeutical action of anti-Covid-19 vaccines would be demonstrated by the rapid and complete remission of warts (as previously mentioned, from ten days to four weeks) following the second or third dose of vaccines.
Also the long negative follow up (more than four years in two of our patiens) would confirm the therapeutical role of vaccines.
However, we obviously cannot rule out a late spontaneous remission.





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Plasma exeresis for scar treatment: a pilot study with the novel airplasma® technology

Stefania Guida

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ABSTRACT

Background. Plasma exeresis is an emerging minimally invasive technique that uses a plasma arc generated from ambient air to sublimate superficial tissues without contact, allowing precise ablation and promoting tissue regeneration. A novel device, Oneyonis®, employing airplasma® technology, operates at low temperatures and shallow penetration depth, potentially offering a safe and effective option for scar remodeling.
Objective. To evaluate the efficacy and safety of plasma exeresis using airplasma® technology in the treatment of post-traumatic and post-surgical scars.
Methods. This retrospective pilot study included five patients with hypertrophic, or mixed-type scars. Each scar was treated with air-based plasma exeresis in two halves using different settings: power 5/pulse 0 and power 50/pulse 40. Patients received four monthly treatment sessions. Efficacy was assessed using the modified Vancouver Scar Scale (mVSS) and objective measurements (area, red pixel intensity, pigmentation) via ImageJ® software, comparing results at different time points. Pain and adverse events were recorded to evaluate safety.
Results. Efficacy and safety endpoints were reached. Accordingly, significant improvements were observed in total mVSS scores from baseline to one month after the last session of treatment on both sides of the scars.
No major adverse events occurred; minor erythema and swelling resolved within days.
Conclusions. Airplasma®-based plasma exeresis appears to be a safe and effective modality for scar remodeling, with significant improvements in scar characteristics and a favorable safety profile. The portability, low thermal impact, and ease of use of the devide support its application in outpatient dermatologic and aesthetic settings. Larger, controlled studies are warranted to confirm these preliminary findings.

KEYWORDS
plasma exeresis, airplasma®, scar treatment, mVSS, dermatologic surgery, minimally invasive technology

INTRODUCTION

Plasma exeresis air-based, is a novel, emerging, and minimally invasive technique gaining attention in dermatology, aesthetic medicine and precision surgery, for the treatment of various skin conditions. Unlike lasers or electrosurgical devices, plasma air-based operates by ionizing ambient air—without the need for exogenous gases—to generate a plasma arc.[1,2,3] This arc sublimates superficial tissues with or without direct contact, allowing for precise ablation with minimal thermal diffusion. As a result, the procedure reduces adverse effects and promotes faster healing. [4, 5, 6]

Recently, novel devices capable of generating plasma from ambient air have entered the market. One such device, Oneyonis®, utilizes airplasma® technology (Otech Industry, Alessandria, Italy).

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Operating at temperatures below 50°C (122°F) and with a limited damage to surrounding tissues reaching up to 200–300 μm, this device enables safe and effective treatment of delicate anatomic areas, including the skin. Its portability and lack of special safety requirements for operators or patients make it suitable for both intraoperative settings and outpatient.[7]

Previous studies have demonstrated the efficacy of plasma exeresis in treating conditions such as nonsurgical blepharoplasty, acne, keloids, and skin laxity.[8-10] Non-invasive imaging has revealed that the treatment promotes collagen remodeling, replacing degenerated fibers with long, straight, aligned bundles—indicative of neocollagenesis.[8]

These findings support the broader application of plasma exeresis in both aesthetic and reparative dermatology.

This pilot study aims to evaluate the efficacy and safety of plasma exeresis air-based technology for remodeling scars resulting from trauma or surgery.

Both clinical outcomes and objective parameters, such as pigmentation and vascularity, were assessed.

Materials and Methods

Study population

This is a retrospective study involving patients seeking scar treatment for aesthetic and functional reasons. Eligible participants presented with hypertrophic, or mixed-type scars resulting from trauma or surgery. Patient eligibility for study inclusion was at least 2 points on the modified Vancouver Scar Scale (mVSS).

Exclusion criteria for treatment were: keloids, allergy to local anesthetics or topical disinfectants, a history of connective tissue disease, any treatment for scars within 6 months before the study, pregnancy, breastfeeding, immunosuppressive treatment, severe systemic diseases, and active skin lesions in the area to be treated.

The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and its later amendments or comparable ethical standards. All patients provided written informed consent prior to treatment. Patient data were anonymized to ensure patient confidentiality.

Treatment Protocol

Each scar was divided into two symmetrical halves.

The upper/left half was treated with plasma level 5, pulse 0, while the lower/right half received a protocol with plasma level 50, pulse 40.

At baseline, the plasma level 5, pulse 0 setting was well tolerated (Visual Analogue Scale (VAS) pain score: 1), whereas the plasma level 50, pulse 40 setting caused greater discomfort (VAS: 6). Therefore, for subsequent treatment sessions, local anesthesia (mepivacaine with adrenaline) was administered after disinfecting the treatment area.

Patients underwent four treatment sessions, each spaced one month apart (T0 to T3), and last evaluation was performed one month after the last treatment session (T4

Efficacy

Photographs were taken at baseline (T0) and one month after each treatment session (T1 to T4), with patients in a standing position under standardized lighting conditions.

All images were captured and stored at a single center. Each patient served as their own control.

Efficacy was estimated according to clinical and objective assessments.

Clinical outcomes were assessed using, at different time points (T0 up to T4), the mVSS which evaluates: Vascularity (0–3), Pigmentation (0–3), Pliability (0–5), Height/Thickness (0–3), Pain (0–3), Itch (0–3). Higher mVSS scores indicate more severe scarring.[11,12]

Additionally, ImageJ software was used to quantify: scar area, red pixel intensity (RGB), pigmentation.[13-16]

Safety

Adverse events (AEs) were recorded at each subject assessment and were graded according to major AEs when requiring medical intervention such as worsening of the scar, increased vascularization or pigmentation and minor AEs not needing medical intervention such as erythema, bruising and swelling.

End Points

The primary efficacy end point was a mean ◎1-point reduction in mVSS, as obtained comparing T0 and T4. The primary safety end point for the study was the absence of major events.

Statistical analysis

Statistical analysis was performed employing SPSS version 24 (IBM Corp, Armonk, NY, US).

Quantitative variables were described as mean ± standard deviation (SD) and range while qualitative variables were reported as frequencies.
Paired Student's t-tests were used to assess differences between time points.
A p-value ≤0.05 was considered a statistically significant result.

Results

A total of five patients were included in the study, comprising four females and one male, with a mean age of 37.8◎17.2 years (range 22-60).
All patients had Fitzpatrick skin phototypes I–III.
Scar types included three hypertrophic, and two mixed-type (atrophic and hypertrophic).
Baseline characteristics were reported in Table 1.
All patients underwent 4 treatments for each scar.

Table 1. Baseline characteristics of scars.

patient	sex/age	Fitzpatrick skin phototype	scar
1	F/60	III	hypertrophic
2	F/31	I	mixed-type
3	F/52	III	hypertrophic
4	M/24	II	hypertrophic
5	F/22	III	mixed-type

Paired t-tests were conducted to evaluate changes in scar characteristics over time and reported for each side of the treated scar according to different protocols, Table 2.

Table 2. Baseline (T0) and 1 month after last treatment session (T4), according to modified Vancouver Scar Scale (mVSS)

	T0 (Mean ± SD)	T4 (Mean ± SD)	p-value
Lower or right side – power 50 – pulse 40			
Vascularity/erythema	1 ± 1.2	0.8 ± 0.5	0.704
Pigmentation	1 ± 0.7	1 ± 0.7	—
Pliability	1.6 ± 1.8	0.6 ± 1.3	0.142
Height	1.2 ± 0.8	0.4 ± 0.6	0.016*
Pain	0.2 ± 0.5	0	0.374
Itch	0	0	—
Total mVSS	5 ± 1.9	2.8 ± 1.5	0.004*
Upper or left side – power 5 – pulse 0			
Vascularity erythema	1 ± 1.2	0.8 ± 0.5	0.704
Pigmentation	1.7 ± 0.2	1.7 ± 0.4	0.909
Pliability	1.6 ± 1.8	0	0.075
Height	1.2 ± 0.8	0.8 ± 0.5	0.040*
Pain	0.2 ± 0.5	0	0.172
Itch	0	0	—
Total mVSS	4 ± 1.8	1.8 ± 1.3	0.040*

According to results, the primary efficacy outcome was met and a mean ◎1-point reduction in mVSS was achieved. Specifically, a significant reduction of mVSS was obtained from T0 to T4 on both sides.

Interestingly, height was the single parameter that resulted significantly reduced on both treated sides (Figures 1,2). A trend toward improvement of pliability from T0 to T4 (1.6 ± 1.8 vs 0, p=0.075), was observed on the side treated with power 5/pulse 0.
In addition, a quantitative analysis with ImageJ software was performed to evaluate the overall scar area, red pixel intensity, and pigmentation at baseline (T0) and after each treatment session (T1–T4); the results are summarized in Table 3.

Figure 1.
Clinical pictures of a hypertrophic scar on the right side of a 52-year-old woman at T0 and T1

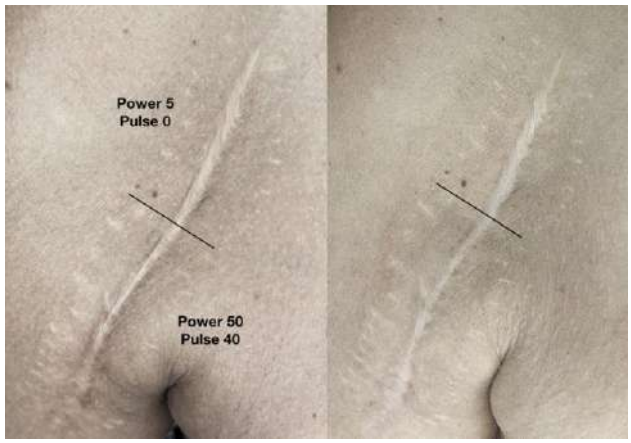
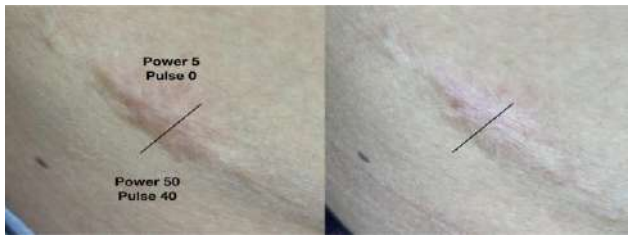


Figure 2. Clinical pictures of a hypertrophic scar on the right abdomen of a 22-year-old man at T0 and T1



	Value (mean ± SD)	Range (min-max)
Area T0	14895.20 ± 7590.40	9023.00 - 27875.00
Area T1	15529.60 ± 8041.19	9270.00 - 29514.00
Area T2	13633.00 ± 8305.04	7054.00 - 27851.00
Area T3	14500.00 ± 8250.16	9457.00 - 29071.00
Area T4	13682.00 ± 9371.41	7681.00 - 27658.00
Red pixel T0	14859.20 ± 7604.18	9023.00 - 27875.00
Red pixel T1	15529.60 ± 8041.19	9270.00 - 29514.00
Red pixel T2	13632.20 ± 8305.13	7054.00 - 27851.00
Red pixel T3	14500.00 ± 8250.16	9457.00 - 29071.00
Red pixel T4	13682.00 ± 9371.41	7681.00 - 27658.00
Pigmentation T0	1.80 ± 0.16	1.62 - 1.99
Pigmentation T1	1.76 ± 0.15	1.66 - 2.00
Pigmentation T2	1.80 ± 0.14	1.65 - 1.97
Pigmentation T3	4076.32 ± 9110.68	2.00 - 20374.00
Pigmentation T4	4578.68 ± 9153.55	1.79 - 18309.00

Table 3. Quantitative analysis with ImageJ software showing scar area, red pixel intensity, and pigmentation at baseline (T0) and after each treatment session (T1-T4)

Additionally, safety endpoint was met due to the absence of major adverse events.
Erythema and swelling were observed after treatment for up to 2 days on the upper/left side while 5 days on the lower/right side.

Discussion

The results of this pilot study support the efficacy and safety of plasma air-based in the treatment of post-traumatic and post-surgical hypertrophic scars, with different protocols. The results of this study met the efficacy and safety endopoints due to improvement of 1-point mVSS and the absence of adverse events. Additionally, a statistically significant reduction in the mVSS scores was observed, particularly in parameters such as height, with a trend toward improvement in pigmentation and vascularity. These findings are consistent with previous literature and further corroborated by the recent study by Delavar et al.[10], which demonstrated significant improvements in keloid scars following plasma exeresis.
Delavar et al. reported a significant reduction in keloid thickness, pigmentation, pliability, and vascularity of keloids after 5 months in 24 scars of 16 patients. Similarly, our study observed a significant decrease in scar height, suggesting that plasma air-based promotes dermal remodeling and scar softening. Although our sample size was smaller and focused on non-keloid scars, the direction and magnitude of improvement align with those seen in keloid treatment.
Importantly, our study highlight the absence of major adverse events and the high tolerability of the airplasma-based plasma exeresis in hypertrophic and mixed-type scars after up to one month after the last treatment session. Additionally, pain scores remained low throughout the treatment course. Delavar et al.[10] also noted no recurrences or significant side effects during a five-month follow-up, reinforcing the safety profile of plasma exeresis.
The mechanism underlying these clinical improvements is likely multifactorial. Plasma exeresis induces controlled thermal injury that stimulates fibroblast activity and neocollagenesis while preserving the epidermal barrier, which acts as a natural dressing. This unique healing environment may explain the observed improvements in scar texture without the pigmentary disturbances often associated with laser[17] or cryotherapy-based treatments[18].
The pilot study by Rossi et al.8 revealed collagen remodeling from degenerated to organized, long, straight fibers after plasma exeresis treatment. Although our study did not explore collagen remodeling directly, the clinical improvements and objective metrics suggest a comparable regenerative mechanism.
Another peculiarity of this study is that we employed a novel airplasma® technology device (Oneyonis®), which operates at lower temperatures and without exogenous gases, as compared to previous tools.[1,2,3]
This difference in technology may offer additional advantages in terms of safety and portability, particularly in outpatient settings, also considering the limited damage in surrounding tissues.[4,5,6]
Despite the promising results, limitations remain. The small sample size and lack of a control group in both studies limit the generalizability of findings. Furthermore, long-term outcomes beyond five months remain to be established.
Future studies should aim to include larger, randomized cohorts and explore histological changes to better understand the regenerative mechanisms of plasma air-based technology.

Conclusion

In conclusion, our findings suggest that plasma air-based treatment is a safe, effective, and minimally invasive option for scar remodeling.
Its favorable safety profile, ease of use, and potential for outpatient application make it a compelling alternative or adjunct to existing scar treatment modalities.
Plasma exeresis offers several advantages over traditional methods, including no need for exogenous gases, minimal thermal damage, no electrical current through the body, suitability for outpatient settings due its portability.
These features make it a promising tool not only for aesthetic procedures but also for therapeutic applications such as scar management.

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Facial photodamage treated with fractional 532 nm Q-switched laser: case report and exploratory quantification of the dyschromic area

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ABSTRACT

Introduction: The 532 nm laser is often used for superficial discolorations in facial photodamage. In practice, however, protocols and endpoints vary greatly, and ready-to-use instrumental metrics are not always available to report.
Methods: This paper aims to describe the case of a 67-year-old woman (Fitzpatrick II skin type) with facial photodamage and photoaging. She underwent full-face Q-switched 532 nm laser treatment in fractional mode, after topical anesthesia and post-procedure cooling. Documentation was performed with standardized VISIA photographs at baseline, immediately post-procedure, and at 40 days. An exploratory analysis of the images was then performed, calculated on an automatically segmented facial ROI (redness and brown discoloration).
Results: The treatment was well tolerated. Adverse events were limited to mild transient erythema and a sensation of heat in the following days, with no other complications reported. At follow-up, imaging suggested a reduction in dyschromia compared to baseline; image-derived proxies were consistent with this observation, while the expected erythematous reaction was documented in the immediate post-operative period.
Conclusions: In this single case, fractionated Q-switched 532 nm radiation was safe and consistent with improvement in dyschromia at follow-up based on standardized photographic assessment and exploratory proxies. The N=1 design and the use of unvalidated proxies limit inference and generalizability; prospective studies with standardized outcomes are needed.

KEYWORDS
Facial phoyodamage, Q-switched 532 nm laser, Fitzpatrick II skin type

INTRODUCTION

Facial photodamage is a "mixed" picture, in which discoloration and alterations in skin quality coexist with more structural signs such as wrinkles and changes in texture. Over time, fractional photothermolysis has popularized the concept of controlled, regularly distributed microlesions, with the aim of stimulating more predictable remodeling and generally more manageable recovery. (1)
In non-ablative rejuvenation, systems combining 532 nm and/or 1064 nm wavelengths with fractional optics (often in the picosecond domain) have been evaluated for targets such as discoloration, pores, and texture. (2)
Small clinical studies have reported results on photoaging and the perception of age, with protocols and endpoints that are not always comparable. (3)

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In prospective split-face studies, 532 nm and 1064 nm approaches with fractional optics have also been evaluated in controlled settings for safety and efficacy. (4) In parallel, in more specific contexts such as solar lentigo, split-face comparisons have compared different strategies, including 532 nm picosecond-domain versus 532 nm Q-switched/nanosecond protocols. (5) Other studies have compared 532 nm/1064 nm Q-switched Nd:YAG settings, highlighting how settings and patient selection can influence outcomes. (6)
This variability makes it useful to have the clearest and most reproducible reporting possible, both for treatment parameters and outcome measures.
In this sense, reviews discussing laser protocols in dermatology emphasize how standardizing parameters and endpoints is crucial for interpreting and comparing results. (7)
This case report describes a 532 nm Q-switched laser treatment in FRACTIONAL mode for facial photodamage, documented with VISIA images and an exploratory evaluation derived from the images.

Materials and Methods

The patient treated is a 67-year-old woman with photodamage and photoaging of the face, Fitzpatrick skin type II.
No previous aesthetic or dermatological treatments were reported on the face. The treatment was performed with a 532 nm Q-switched laser (DEKA TORO) using the handpiece in fractional mode.
The procedure was performed on the entire face in a single session, with one pass, setting a spot size of 8 mm, a fluence of 0.40 J/cm², and a frequency of 5 Hz. The clinical endpoint sought during treatment was mild, uniform erythema. Before the procedure, a simple cleansing was performed and topical anesthesia with 5% lidocaine was applied for 10 minutes.
Specific eye protection for 532 nm was used for both the patient and the operator. At the end of the treatment, air cooling at -4°C was applied for 5 minutes, at a distance of approximately 60 cm.
Post-procedure, conservative management was recommended with moisturizing cream and cold compresses in case of heat sensation in the following days. Sunscreen with SPF 50+ was prescribed, reapplied every 2 hours during direct exposure, and the patient was advised to avoid sun exposure.

Imaging and timepoints Photographic documentation was performed using standardized VISIA images at the following timepoints: baseline, immediate post-procedure (5 minutes after the end of the procedure, after cooling), and 40-day follow-up. (8) The acquisitions were performed with the same setup (positioning, lighting, and distance) and without makeup or products on the face before the shot. The images were analyzed exploratoryly with Fiji (ImageJ) to obtain a descriptive measure of the dyschromic component. For each timepoint (baseline, immediate post-procedure, and follow-up), three standardized views were considered.
A region of interest (ROI) corresponding to the entire face, excluding eyes and lips, was defined to maintain a comparable area between acquisitions. Within the ROI, areas compatible with brown discoloration were segmented using automatic thresholding, and the resulting area percentage was calculated by applying the same criterion to all timepoints. The results are reported as the mean and range across the three views available for each timepoint.

Resukts

The treatment was overall well tolerated.
Post-procedure, the patient reported mild erythema, consistent with the desired clinical endpoint, which resolved within a few days (approximately 4 days), and a sensation of warmth in the following days (up to 7 days).
No edema, crusting, scaling, or post-inflammatory pigmentation changes were reported; no treatment was required other than moisturizer, cold compresses as needed, and sunscreen.
During follow-up, the patient reported no sun exposure and did not apply any active topicals to her face; the recommendation to avoid sun exposure and to use SPF 50+ sunscreen during direct exposure was maintained.
Photographic documentation is standardized at three timepoints (baseline, immediate post-procedure, and 40 days). Exploratory image analysis using Fiji (ImageJ) showed a reduction in descriptive proxies of brown discoloration at follow-up compared to baseline. The complete quantitative results (mean and range across the three views per timepoint) are reported in Table 1.

Fig. 1. Standardized VISIA facial photographs at baseline and at 40-day follow-up (three views per timepoint: frontal, right oblique, left oblique).

Tabella 1. Image-derived proxies across timepoints (VISIA photographs; Fiji/ImageJ analysis)

Timepoint	Redness proxy (CIELab a*) — mean (range)	Hyperpigmented area (%) — mean (range)
Baseline	14.72 (14.42–15.04)	18.1 (15.4–20.3)
Immediate post-procedure (5 min)	16.05 (15.71–16.35)	19.0 (14.3–22.1)
Follow-up (40 days)	13.88 (13.50–14.28)	15.1 (12.6–16.4)

Footnote: Values are descriptive proxies derived from standardized VISIA photographs. For each timepoint, three views were analyzed and summarized as mean (range). The region of interest included the full-face excluding eyes and lips. Immediate post-procedure values may reflect transient procedural erythema.

Discussion

In this case report, standardized photographic documentation and exploratory image-derived analysis suggest an expected pattern: an erythematous reaction in the immediate post-operative period, followed by a more stable picture at follow-up. This is consistent with the desired clinical endpoint (mild, uniform erythema) and the rationale for fractionated treatments, which aim for a controlled and distributed effect. (1)

Fig. 2. Standardized VISIA facial photographs obtained 5 minutes after completion of the procedure (after 5 minutes of air cooling at -4°C, approximately 60 cm from the face)

Much of the recent literature on non-ablative rejuvenation with fractionated optics concerns 532/1064 nm systems in the picosecond domain, with reported results on texture and discoloration and a generally favorable tolerability profile. (2)

Other pilot studies have described benefits on photoaging and age perception. (3) 532 nm and 1064 nm approaches with fractionated optics have also been evaluated for safety and efficacy in prospective split-face studies in controlled settings. (4) Although not comparable in terms of technology (picosecond vs. Q-switched/nanosecond), these studies highlight two points that are also useful for interpreting the present case: the centrality of patient selection and the importance of comparably reported parameters and outcomes.

In more specific contexts such as solar lentigo, split-face comparisons between 532 nm picosecond and 532 nm Q-switched show variable outcomes based on settings, phototype, and endpoint definition. (5) Comparisons between different Q-switched strategies at 532/1064 nm similarly report results influenced by parameters and evaluation criteria. (6)

This is relevant when the outcome is primarily photographic: even with a standardized setup, the interpretation of the change can be affected by non-clinical variables. Methodological studies on the VISIA system underline that precision and repeatability are highly dependent on controlled acquisition conditions. (8)

For this reason, in this report, quantification with Fiji/ImageJ has been presented as a descriptive proxy, with numbers confined to Table 1 and cautious interpretation, without inferences on unmeasured parameters. Some reviews discuss the use of laser strategies more generally and the need to standardize parameters and endpoints in publications. (7)

In other contexts, fractionation has also been proposed as a possible platform for adjunctive approaches or for the delivery of active ingredients; such evidence is not directly superimposable on photodamage treated with 532 nm and is cited only as a research perspective. (9) In parallel, data on populations with higher phototypes remind us of the need for careful selection and preventive measures to reduce the risk of post-treatment dyschromia. (10)Overall, this case describes a 532 nm Q-switched fractional protocol, in phototype II, with a 40-day follow-up and good tolerability, associated with a descriptive signal of improvement in the dyschromic component.

Conclusion

In this single case, the 532 nm Q-switched laser in FRACTIONAL mode was well tolerated and was associated with a descriptive improvement in the dyschromic component at the 40-day follow-up on standardized images. Analysis with Fiji/ImageJ was exploratory and serves to support the photographic evaluation.

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