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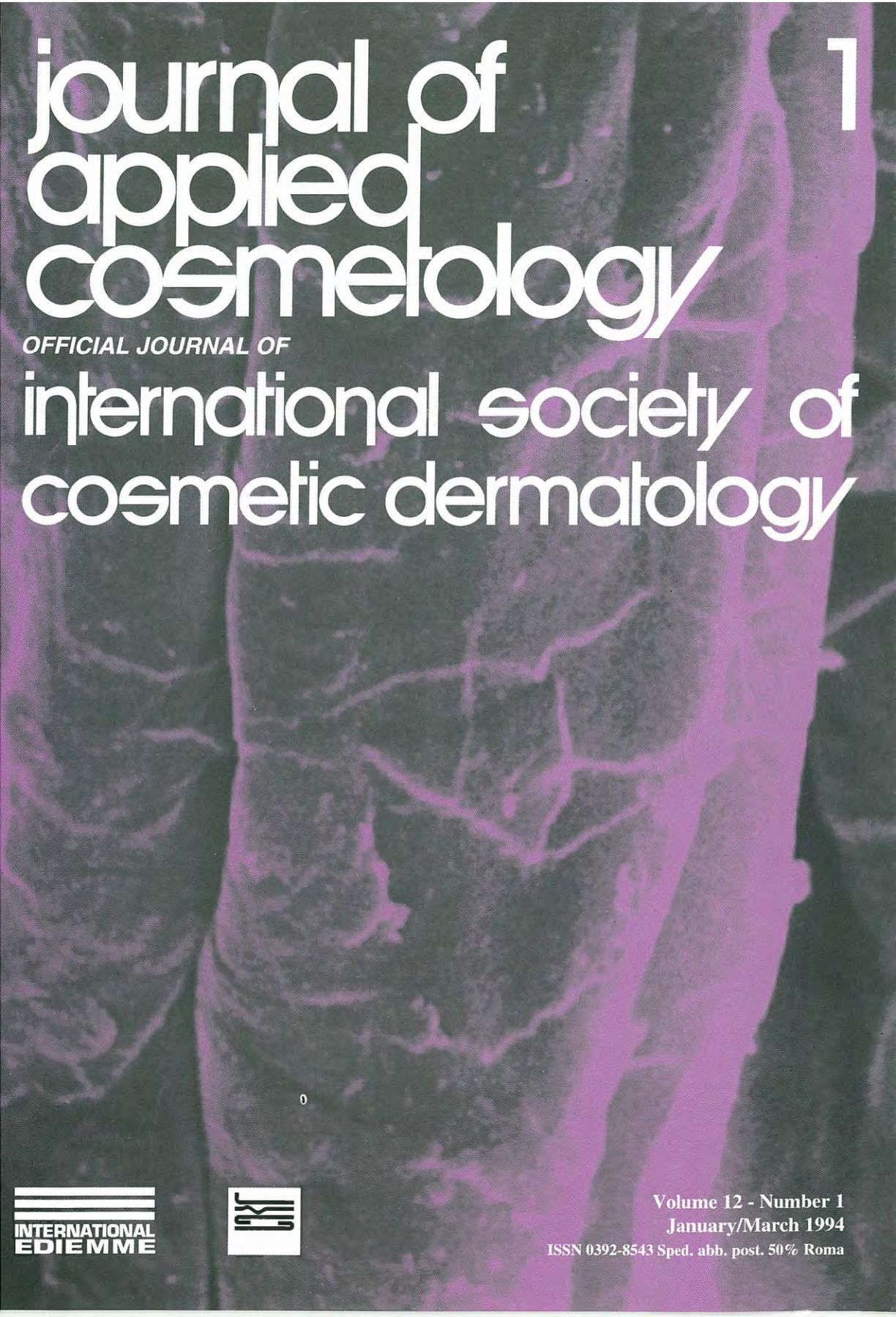

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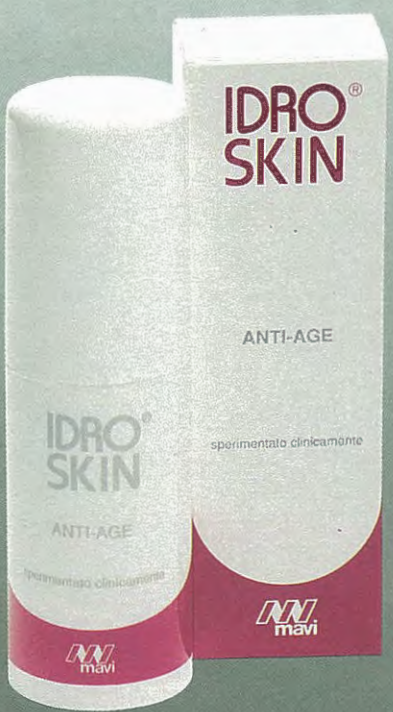

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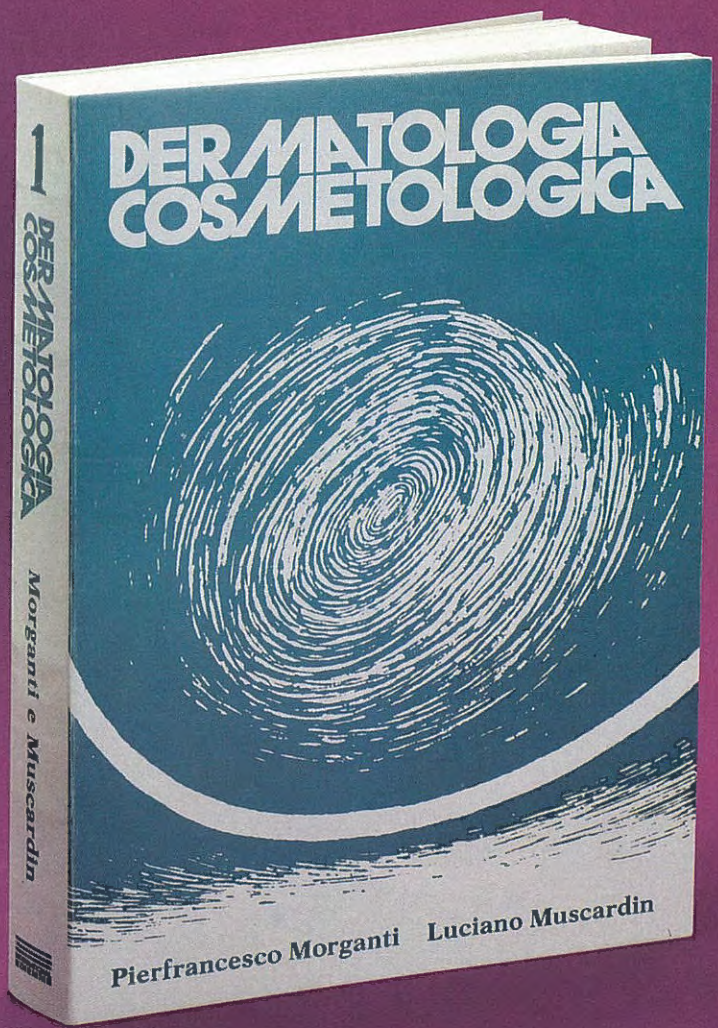

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DERMATOLOGIA COSMETOLOGICA
A cura di P. Morganti e L. Muscardin
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Indice 1° Volume

Sezione I Considerazioni Generali
1 Cenni storici
2 La bellezza della figura umana

Sezione II Fisiologia e Biologia della cute
3 Sviluppo della pelle
4 La struttura della cute
5 Biochimica e Fisiologia dell'epidermide
6 Biologia del tessuto connettivo
7 Sistema Vascolare ed innervazione della cute

Sezione III La Cute come organo di assorbimento
8 Nozioni basilari sulla permeabilità e sull'assorbimento
9 Membrane e assorbimento
10 Metabolismo della cute e degli annessi cutanei

Sezione IV Chimica e Chimico-Fisica dei preparati topici
11 Materie prime e principi attivi di uso cosmetologico
12 Emulsioni ed emulsionanti
13 Tensioattivi di uso cosmetico
14 Gli antiossidanti e i fenomeni ossidativi dei grassi
15 Antimicrobici e preservanti cutanei
16 La profumazione dei cosmetici
17 Chimica e tossicologia dei coloranti
18 Prodotti cosmetici in aerosol

Indice 2° Volume

Sezione V Trattamenti dermocosmetici del viso e del corpo
19 Detersione, protezione e normalizzazione della pelle
20 La cosmesi per l'uomo
21 Cosmetici per bambini
22 Preparati per il bagno
23 Maschere e peeling
24 I Depilanti

Sezione VI La cute senile
25 Invecchiamento cutaneo
26 Il trattamento della cute senile

Sezione VII Cosmetici e Psiche
27 Aspetti psicosomatici e somatopsichici in dermatologia cosmetologica

Sezione VIII I danni cutanei
28 Patologia cutanea da cosmetici su baae immunologica
29 Danni da cosmetici

Sezione IX Annessi cutanei e dermocosmesi
30 Ghiandole sudoripare e sebacee
31 Deodoranti e antisudore
32 Struttura e proprietà dei capelli
33 Detersione, protezione e normalizzazione dei capelli e del cuoio capelluto
34 Cosmetici decorativi ad effetto duraturo
35 Le unghie
36 Prodotti decorativi ad effetto temporaneo superficiale

Indice 3° Volume

Sezione X Seborrea e dermocosmesi
37 Caratteristiche chimico-fisiche e funzioni fisiologiche del sebo
38 Produzione e modificazioni del sebo nel sano e nel seborroico
39 Influenza dei trattamenti cosmetologici sui lipidi di superfice del viso e del capillizio
40 Attività ormonale e ghiandole sebacee
41 Il problema terapeutico dell'acne
42 Possibilità terapeutiche nella seborrea

Sezione XI Melanogenesi e dermocosmesi
43 Il sistema pigmentario
44 Filtri solari, pigmentanti diretti e depigmentanti

Sezione XII Mucose orali e dermocosmesi
45 La salute della bocca e dei denti
46 Profilassi ed igiene dei denti e della bocca
47 Preparazioni cosmetiche per la cavità orale

Sezione XIII Prodotti speciali
48 Omeopatia e cosmetici
49 Soluzioni per lenti a contatto
50 Cosmetici ipoallergenici
51 Cosmesi su basi naturali

Sezione XIV Trattamenti estetici correttivi
52 Interventi correttivi di chirurgia plastica
53 Laserterapia
54 Crioterapia
55 Principi di mesoterapia
56 Ionoforesi
57 Interventi correttivi di "camouflage"

Sezione XV Controlli dermotossicologici
58 Valutazione delle materie prime e dei cosmetici finiti
59 Controlli tossicologici delle materie prime e del prodotto finito
60 Cosmetognosia. Funzionalità ed efficacia dei prodotti cosmetici

Sezione XVI Problemi normativi e di Marketing
61 Nozioni di marketing e di pubblicità
62 Grafica pubblicitaria: implicazioni psicologiche
63 Normative di legge sui cosmetici nei vari paesi del mondo
64 La responsabilità civile dei trattamenti cosmetici
65 Giudizio medico-legale del danno estetico

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Cosmetic Dermatology

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Editors: P. Morganti, F.J.G. Ebling

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Contents

Original Laboratory Studies

J. Appl. Cosmetol. **12**, 1-10 (January-March1994)

TOPICAL GELATIN-GLYCINE AND ALPHA-HYDROXY ACIDS FOR PHOTOAGED SKIN

P. Morganti[1], S.D. Randazzo[2], P. Palombo[3] and C. Bruno[4]

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Received: *February 20, 1992. Presented at the IV International Congress on Cosmetic Dermatology "Progress in Cosmetic Dermatology: Science and Safety" Rome (Italy) Novemer 2,1991*

Key word: *Fine Wrinkling; Skin Aging; Skin Hydration; Alpha Hydroxy acids; Gelatin-Glycine; Xerosis*

Synopsis

Skin hydration and well-being are known to depend upon the amount of water in the horny layer. Hydration depends also on the level of NMF_S (Natural Moisturizing Factors), thus on PCA (Pyrrolydone Carboxylic Acid) and on the proper intensity of *pespiratio insensibilis*. This depends in turn on balanced surface lipidic film. So-called photoageing, connected with the amount of UV and light absorbed over a lifetime, causes a decrease in skin hydration and surface lipids and increase of fine wrinkling which results in early ageing and skin xerosis. This work aims to demonstrate the rehydrating and lipid restoring action of different cosmetic emulsions. One hundred smoker women aging 52 to 63 have been investigated. They all frequented solar centers and were clearly affected by xerosis. They were treated with Gelatin-Glycine and Alpha Hydroxy Acids cosmetic emulsions for 120 days. Skin hydration and surface lipids were monitored through the new 3C System computerized equipment (Rome, Italy).
Fine wrinkling was evaluated using a visual analog scale in subject randomly treated on one side by the active cream, the other side serving as control.
Thank to the increase from 36% to 82% in surface lipids and from 31% to 90% in horny layer hydration,and to the decrease of about 17% of fine wrinkling these cosmetic treatments seem adequate for premature skin ageing caused by sun and environmental pollutants.

Riassunto

L'idratazione e lo stato di benessere della cute dipendono, come è noto, dalla quantità di acqua presente a livello del corneo. L'idratazione dipende anche dalla quantità di NMF (fattori Naturali di Idratazione), di PCA (Acido Pirrolidon Carbossilico) e dalla intensità giusta della perspiratio insensibilis, legata al film lipidico di superficie.
Il fotoinvecchiamento legato alla quantità di UV e di luce assorbita nell'arco della vita, si accompa-

gnano ad una riduzione dell'idratazione e dei lipidi di superficie ed ad un aumento delle piccole rughe cutanee superficiali. Si instaurano, quindi, invecchiamento e xerosi cutanea. Con questo lavoro si vuole dimostrare l'effetto reidratante e riequilibrante sui lipidi cutanei ottenibile con l'uso di differenti emulsioni cosmetiche. Sono state trattate 100 donne fumatrici di età compresa tra 55 e 63 anni frequentatrici abituali di "centri solari" sicuramente affette da xerosi cutanea. Sono state trattate con emulsioni a base di gelatina-glicina e alfaidrossiacidi per 120 giorni. Sia l'idratazione cutanea che i lipidi di superficie sono stati controllati utilizzando la metodica computerizzata 3C System (Roma, Italia). Le rughe sottili sono state valutate utilizzando una scala visiva analogica in soggetti trattati a doppio cieco su una guancia, mentre l'altra fungeva da controllo. Dato l'incremento, dal 36% all'82%, ottenuto sui lipidi di superficie e dal 31% al 90% dell'idratazione e la riduzione di circa il 17% delle rughe sottili, i cosmetici utilizzati sembrano utili per trattare la pelle precocemente invecchiata a causa del sole e degli inquinanti ambientali.

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Skin hydration and well-being are known to depend upon the amount of water in the horny layer. Hydration depends also on the level of NMFs (Natural Moisturizing Factors), thus on PCA (Pyrrolydone Carboxylic Acid) and on the proper intensity of perspiratio insensibilis (1-6). This depends in turn on the balanced cutaneous lipids (7-9).

So-called photoaging, connected with the amount of UV and light absorbed over a lifetime, causes a decrease in skin hydration and surface lipids and increase of epidermal keratinization and fine wrinkling which results in early ageing (10-13). Application of appropriate cosmetic emulsions can reverse these signs of ageing providing both symptomatic and objective improvement of this condition (14-17).

Moreover, it is known that Alpha Hydroxy Acids (AHA_S) and their salts seem to be effective in the treatment of xerosis and aged skin (18-21) such as gelatin-glycine seems to be useful in the prevention of premature ageing (22-27).

This double-bliend study aims to evaluate the rehydrating action, the lipid skin restoring and the ability to reduce the visual signs of fine wrinkling, of a 8% lactic and glycolic acid (AHA_S) emulsion versus the same 6% gelatin-glycine enriched one. Skin hydration and surface lipids were controlled by the new 3C SYSTEM computerized equipment (28-29).

According to Lever (30) fine wrinkling was evaluated using the visual analog scale in subjects randomly treated on one face side by the active cream, the other side serving as control.

Material and methods

Material

QM® Soothing lotion[1]

Distilled water, orange flower water, sorbitol, witch hazel extract, dimethicone copolyol, camomile extract, imidazolidynil urea, lactic acid, glycolic acid, quaternium-15, Gelatin-Glycine, Peg-40 hidrogenated castor oil, fragrance, disodium EDTA.

QM® 10 Base (control)

Distilled water, caprilic/capric triglyceride, glycerine, cyclomethicone, cetyl-dimethicone copolyol, cetearyl octanoate, isopropyl lanolate, squalane, octyl stearate, sodium chloride, soluble collagen, sodium PCA, tocopheryl acetate, retinyl palmitate, propyl paraben, methyl paraben, BHT, imidazolidynil urea.

QM® 10/GG

Base + 6% Gelatin-Glycine (GG)

QM® 10/AHAs

Base + 8% AHAs (lactic acid, glycolic acid and ammonium lactilate)

QM® 10/AHAs/GG[2]

Base + 8% AHAs + 6% Gelatin-Glycine

Methods

Cosmetic Treatments

One hundred smoker women ageing 52 to 63 were selected and enrolled. They all frequented solar centers and were clearly affected by sun-induced alterations classifiable as "smoker's face" (31).

The creams, sufficient for sixteen weeks of treatment, were then dispensed to all the volunteers by means of a randomisation code that balanced the right-left distribution in groups of five.

The Cream Containers were identified only by group letter (A,B,C,D,E) volunteer number and the notation "side to be used on (right or left)".

The volunteers, divided into 5 groups of 20 individuals, received two different creams to use for right and left side.

They were instructed to use the cosmetic products twice daily (morning and evening) on the assigned (right or left) face side for 16 weeks, after using the QM® Soothing lotion and abundant water rinsing. All enrolled women had routinely applied emollient creams or lotions, but no one had used creams for at least a week before the start of the study.

[1] Trade name QM10 NUTRIENTE

[2] Trade name QM LOZIONE TONICA

The mean values for surface sebum and skin hydration were taken from each subject by carrying out four separate measurements in adjacent areas on the cheeks, as previously described (28).These measurements were taken weekly (monday morning) by the 3C System Dermotech (29), between 8.30 and 11.30 under standardized condition. Fine wrinkling was evaluated in the same areas, as later described.

3C System Dermotech

Surface sebum and skin hydration were measured by the use of the 3C System Dermotech (Roma, Italy) (28-29).
This computerized system permits a simple and quick determination of the quantity of lipids and water at the surface of the skin, while the environmental conditions are automatically standardized (50% RH and 22 C°) by the use of proper correction factors. Obtained results are reported in Figure 1 and 2.

Fine wrinkling evaluation

According to Lever et al. (30) fine wrinkling was clinically evaluated on the cheek area assessing individual signs on a 0-10 visual analog scale.
All the volunteers were treated on one face side by the study cream, the other serving as control. To determine the possible long-term effects of Hydroxy acid and Gelatin-Glycine treatments, the fine wrinkles were evaluated prior, during and after each week use of various formulations for all the treatment period (16 weeks).
By 8, 12 and 16 weeks the difference between the two sides was highly significant in 4 of the 5 groups controlled. Results are listed in Table I-V

Results and comments

This study demonstrate that photoageing of the skin can be successfully treated with an 8% Alpha-Hydroxy Acid Emulsion, a 6% Gelatin-Glycine emulsion or a more active emulsion containing both the active compounds in the same concentrations.
Moreover, significant differences were found among the four tested formulations in their ability to significantly increase skin hydration and surface lipids and to reduce fine wrinkling. As it is possible to see from; Figures 1-2, components of the vehicles (QM10-base cream) are also active in treating skin photoaging, increasing both moisture (31%) and surface skin lipids

Table I.

RESULTS OF QM10-GG CREAM (GELATIN-GLYCINE) TREATMENT OF FINE WRINKLES OF FACE[1]

WEEKS	QM10-GG (active)	QM10 BASE (vehicle)	DIFFERENCE	
0	542	545	-2	
4	498	521	-23[2]	4.4%
8	485	537	-52[2]	9.6%
12	438	508	-70[3]	13.7%
16	414	499	-85[3]	17%

[1] Fine wrinkles on the face in 20 women treated on one side by Gelatin-Glycine cream (QM10-GG) and on the other side by vehicle only, at random. Mean scores (0-10) visual analog scale) X 100
[2] p<0.05
[3] p<0.001

Table II.

RESULTS OF QM10-AHA$_S$ CREAM (ALPHA-HYDROXY ACIDS) TREATMENT OF FINE WRINKLES OF FACE[1]

WEEKS	QM10-AHA$_S$ (active)	QM10 BASE (vehicle)	DIFFERENCE	
0	615	619	-4	
4	581	601	-20[2]	3.3%
8	538	592	-54[2]	9.1%
12	517	586	-69[3]	11.8%
16	492	582	-90[3]	15.5%

[1] Fine wrinkles on the face in 20 women treated on one side by Alpha-Hydroxy Acids cream (QM10-AHAs) and on the other side by vehicle only, at random. Mean scores (0-10) visual analog scale X 100
[2] p<0.05
[3] p<0.01

Table III.

RESULTS OF QM10-GG CREAM (GELATIN-GLYCINE) VERSUS QM10-AHA$_S$ CREAM TREATMENT OF FINE WRINKLES OF FACE[1]

WEEKS	QM10-GG	QM10 AHAs	DIFFERENCE
0	583	586	-3[2]
4	565	569	-4[2]
8	557	557	0
12	528	529	1[2]
16	504	500	4[2]

[1] Fine wrinkles on the face in 20 women treated on one side by Alpha-Hydroxy Acids cream (QM10-AHAs) and on the other side by QM10-GG, at random. Mean scores (0-10) visual analog scale) X 100
[2] n.s.

(36%). The difference of mean hydration, surface lipids increase and fine wrinkling for the two Gelatin-Glycine (QM10-GG) and Alpha Hydrox Acid (QM10-AHA$_S$) treatments approached significance at week 4 until the last day of treatment (4 months).

Formulation QM10-AHA$_S$/GG, which contained both GG (Gelatin-Glycine) and AHA$_S$ (Alpha Hydroxy Acid), proved superior to the other formulation used. In fact, at the completion of the study, the mean hydration and surface lipids increase (expressed as percentage of mean initial dry skin severity) was respectively 80% (moisture) and 63% (surface lipids), in the face treated with formula QM10-GG and QM10-AHA$_S$ compared to 90% (moisture) and 82% (surface lipids) recorded for the face treated with formula QM10-GG/AHA$_S$ containing

Table IV.

RESULTS OF QM10-GG/AHA$_S$ CREAM (GELATINE-GLYCINE + ALPHA-HYDROXY ACIDS) VERSUS QM10-AHA$_S$ CREAM TREATMENT OF FINE WRINKLES OF FACE[1]

WEEKS	QM10-GG/AHAs	QM10-AHAs	DIFFERENCE	
0	600	603	-3	
4	567	584	-17[2]	3%
8	501	530	-29[2]	5.5%
12	470	503	-33[2]	6.6%
16	446	485	-39[2]	8%

[1] Fine wrinkles on the face in 20 women treated on one side by Gelatin-Glycine + Alpha-Hydroxy Acids cream (QM10-GG/AHA$_S$) and on the other side by Alpha-Hydroxy Acids cream (QM10-AHA$_S$), at random. Mean scores (0-10) visual analog scale X 100
[2] $p<0.05$

Table V.

RESULTS OF QM10-GG/AHAs (GELATIN-GLYCINE + ALPHA-HYDROXY ACIDS) VERSUS QM10-GG CREAM TREATMENT OF FINE WRINKLES OF FACE[1]

WEEKS	QM10-GG/AHAs	QM10-GG	DIFFERENCE	
0	569	573	-4	
4	540	565	-25[2]	4.4%
8	486	510	-24[2]	4.7%
12	432	463	-31[2]	6.7%
16	422	459	-37[2]	8%

[1] Fine wrinkles on the face in 20 women treated on one side by Gelatin-Glycine + Alpha-Hydroxy Acids cream (QM10-GG/AHA$_S$) and on the other side by Gelatin-Glycine cream (QM10-GG), at random. Mean scores (0-10) visual analog scale X 100
[2] $p<0.05$

both the active compounds Gelatin-Glycine and Alpha Hydroxy Acids.

Same interesting results were obtained in the fine wrinkling test. By week 4 to week 16 the differences between the vehicle (QM10-base) and the different active creams were highly significant ($p< 0.05$).

It was obtained a reduction of fine wrinkles from 5% ($p< 0.05$) to about 17% ($p<0.001$) respectively at 4 and 16 weeks for the face treated with formula QM10-GG and formula QM10-AHA$_S$; and 8% ($p< 0.05$) further increase with formula QM10-GG/AHA$_S$.

Thanks to the increase of 82% in surface lipids and 90% in horny layer hydration and thanks also to the obtained decrease of about 17% of fine wrinkling the Gelatin-Glycine and Alpha Hydroxy Acid formulations (QM10-GG/AHA$_S$)

seem an adequate cosmetic treatment for skin dryness and premature skin aging caused by sun and environmental pollutants.

FIG.1

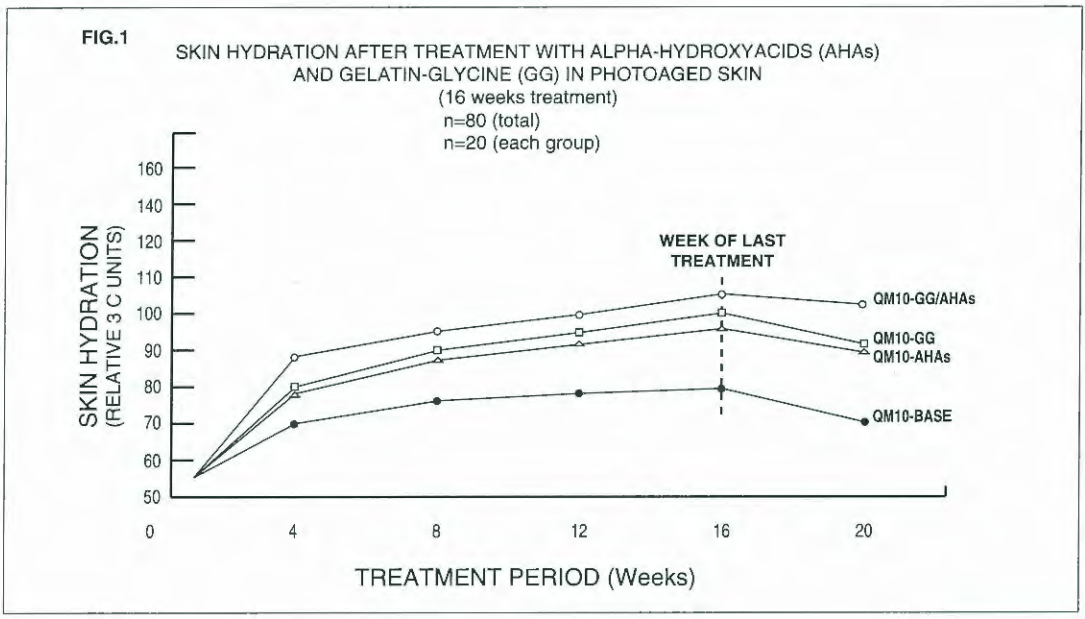
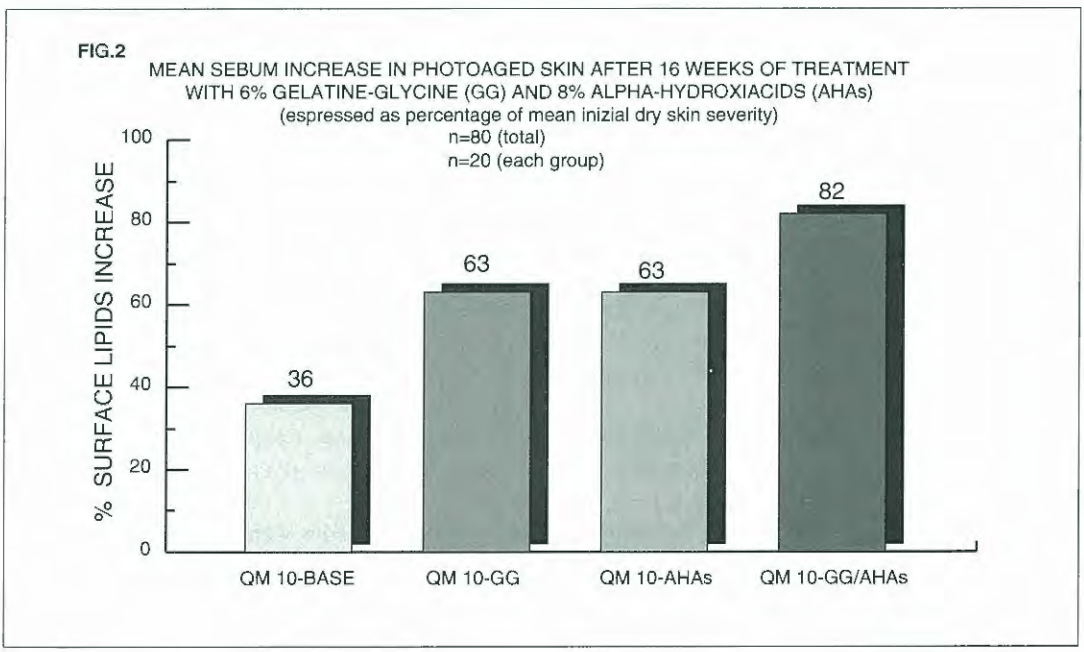


FIG.2



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FAST AND NONINVASIVE METHOD FOR ASSESSING SKIN HYDRATION

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Received: *November 4, 1992. Presented at the IV International Congress on Cosmetic Dermatology "Progress in Cosmetic Dermatology: Science and Safety" Rome (Italy) Novemer 2,1991*

Key word: *Skin Hydration; Skin pH; TEWL; Skin Surface Lipids; 3C System®; Skin Measurements; Xerotic Skin.*

Synopsis

To control skin hydration many, somewhat clumsy methods are used which have been developed to investigate and monitor pharmaceutical and cosmetic products in properly airconditioned surroundings. These methods can almost never be adapted for out-patient use by dermatologists who usually have different requirements.
The 3C System® Dermotech is a new, simple and user-friendly computerized tool for accurate and fast real-time measurement of skin temperature, pH, hydration, TEWL and surface sebum. It does not require to be used in airconditioned environments since displayed measurements are always automatically related to an environmental temperature of 22°C and to a 50% RH by the use of proper correction factors. By this new equipment skin hydration and surface sebum was controlled on thirty women aged 25 to 35 years affected by serious skin xerosis who underwater cosmetic treatment for 120 days.
Results showed that topic constant cosmetic one-dose administrations are able to supply xerotic skin with the necessary water and lipid to restore the skin's eco-system.

Riassunto

Per controllare l'idratazione cutanea sono stati sviluppati ed utilizzati molti metodi per studiare l'attività svolta a livello cutaneo sia da farmaci che da cosmetici in condizioni ambientali controllate. Questi metodi non sono adatti per uso ambulatoriale. Il 3C System® Dermotech è un nuovo apparecchio computerizzato semplice da usare ed in grado di rilevare in tempo reale la temperatura, il pH, l'idratazione, la TEWL ed il sebo cutaneo di superficie. Non richiede un ambiente di lavoro controllato poichè le misurazioni sono automaticamente rapportate ad una temperatura di 22°C ed una umidità relativa del 50% a mezzo di appropriati fattori di correzione. Questa nuova apparecchiatura è stata così utilizzata per controllare l'idratazione ed i lipidi di superficie di 30 donne di età compresa tra 25 e 35 anni, affette da secchezza cutanea pronunciata e trattate con un cosmetico monodose. I risultati ottenuti dimostrano che il trattamento costante della monodose cosmetica utilizzata è in grado di riportare alla norma la cute xerotica.

Introduction

Skin condition is usually controlled by physician only on the basis of their medical experience. The new 3C System® Dermotech method controls skin condition faultlessy and objectively.

3C System® Dermotech rapidly and precisely measures the skin temperature, pH value, moisture, surface sebum, and TEWL. The resulting figures are directly displayed on a screen and recorded cards. The measured rates are always adjusted to 22° C room temperature and 50% relative humidity through correction factors. (1-8)

This computerized system allows a throught cutaneous checkup. It permits a simple and quick detemination of the quantity of lipids at the surface of the skin, a reading of the water content linked to NMF, the control of TEWL and the pH of the skin.

All of this is done while ambient environmental conditions are automatically standardized. Measurements of the moisture provide an index for Hydration or dehydration. Measurements of lipid content provide a Soothing Index. These acc mathematical values are available on a corr screen and can be printed out, as desired.

Adjustment to room values is crucial, since moisture rises even by 200% with 80 to humidity in the outside environment. Like moisture increases with increase of the temperature (Figure 1) (9).

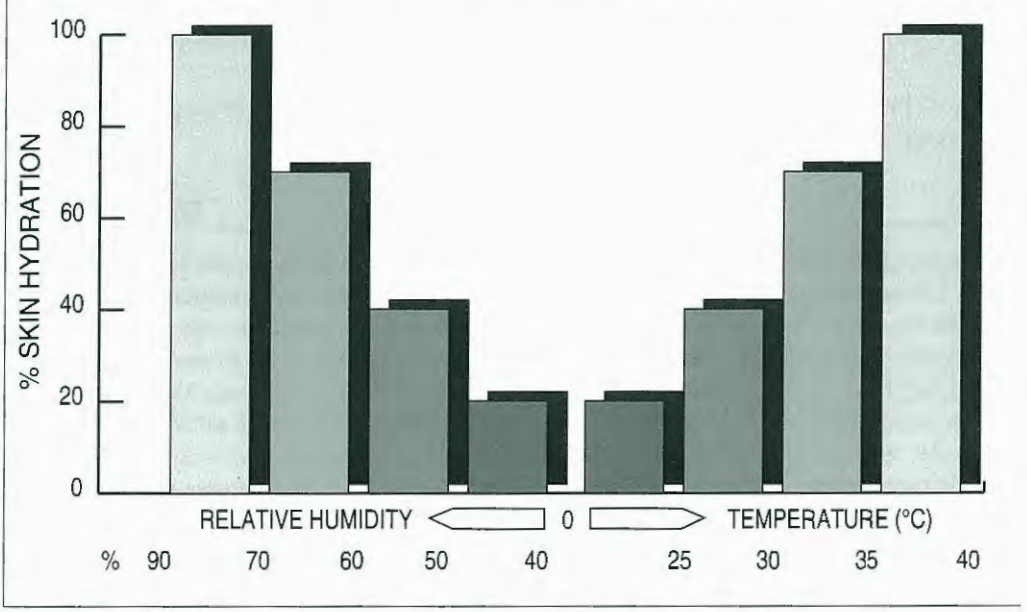
This new equipment allows for an easier scription of treatment by physicians, since hydrating and shooting indexes are direct splayed on the screen (1,2,4).

Hydrating and soothing indexes express th ter and lipid amounts needed to restore the to its normal moisture rates.

Infact an increased Hydration Index (H.I) c sponds to an increased rehydrating powe the cosmetic, in similar fashion, an incr Protective Index (P.I.) corresponds to an ir sed ability to provide sun protection, an Soothing Index (S.I.) relates to the ability balance the surface lipidic film.

Moreover this remarkable new technology

Fig. 1 RELATIVE HUMIDITY, SKIN TEMPERATURE AND HYDRATION



provides information necessary for the selection of cosmetic products correctly formulated to rebalance skin hydration and surface lipidic film. Differently skin types, classified according to numeric references similar to those now used for sun protection, may be matched to cosmetic lines, based upon a factual reading of the patient's cutaneous ecosystem.

Matherials and methods

Material

Single-dose cream [1] (S.I. 20)

Cyclomethicone, Petrolatum, Decyloleate, Ceteareth-20, Stearyl Heptanoate, Sunflower seed oil, Borago oil, Sorbitan Sesquioleate, Pentaerytril Cocoate, Stearilcitrate, Ceresin, Beeswax, Alluminium Stearate, Isopropyl Lanolate, Lanolin Alcohol, Capric Trygliceride, Squalane, Cetyl Alcohol, Micronized Titanium Bioxide, Bisabolol, Lecithin, Wheat Bran Lipids, Tocopheryl Acetate.

Cleansing Lotion [2]

Distilled water, Ceteareth-6, Isopropyl Myristate, Isoctyl Stearate, Sorbitol, Glycerin, Propylene Giycol, Tocopheryl Acetate, Retinyl Palmitate, Imidazolidynil Urea, Fragrance, Linoleic Acid, Linolenic Acid, Methyl Paraben, Soluble Collagen, Carbomer 940, Disodium EDTA.

Method

3C System® Dermotech

Surface sebum and skin hydration were measured on the skin cheeks by the use of the 3C System® Dermotech. This computerized system permits a simple and a quick determination of the quantity of lipids and hydration at the surface of the skin, while environmental condition are automatically standardized (RH=50% t=22°C).

The 3C System® measures the skin hydration through the capacitative resistance of the stratum corneum and adjacent epidermis to a maximum

Fig. 2

[1] Trade name IDROSKIN® 20

[2] Trade name MAVIGEN® LATTE

penetration depth of 80 µm. Its measurement principle is based on the differing dielectric constants of water and of other substances, eliminating any influence of the living object. Hydration is expressed in relative 3C units.
Skin lipids are measured photometrically through the use of a special transparent plastic folium. It is pressed against the skin for few seconds allowing aderence of skin lipids in a 1 cm2 area. The obtained readings are automatically converted into µg/cm_2.
Folium used may be also utilized for thin layer and gas liquid cromathography (Fig. 2)
The TEWL measurements are based on the estimation of the vapour-pressure gradient immediatly adjacent to the surface of the skin. The surrounding microclimate influence is automatically balanced through correction factors.
pH is directly measured on the skin. The pH probe, with an automatic temperature compensation, has an amplifier built into a replaceable pH elettrode completely resinated. The signal, of low impedance, trasmitted to the meter is directly displayed on the screen and recorded cards with a resolution and accurancy of ±0.2 and an operating temperature from 0 to 50°C.

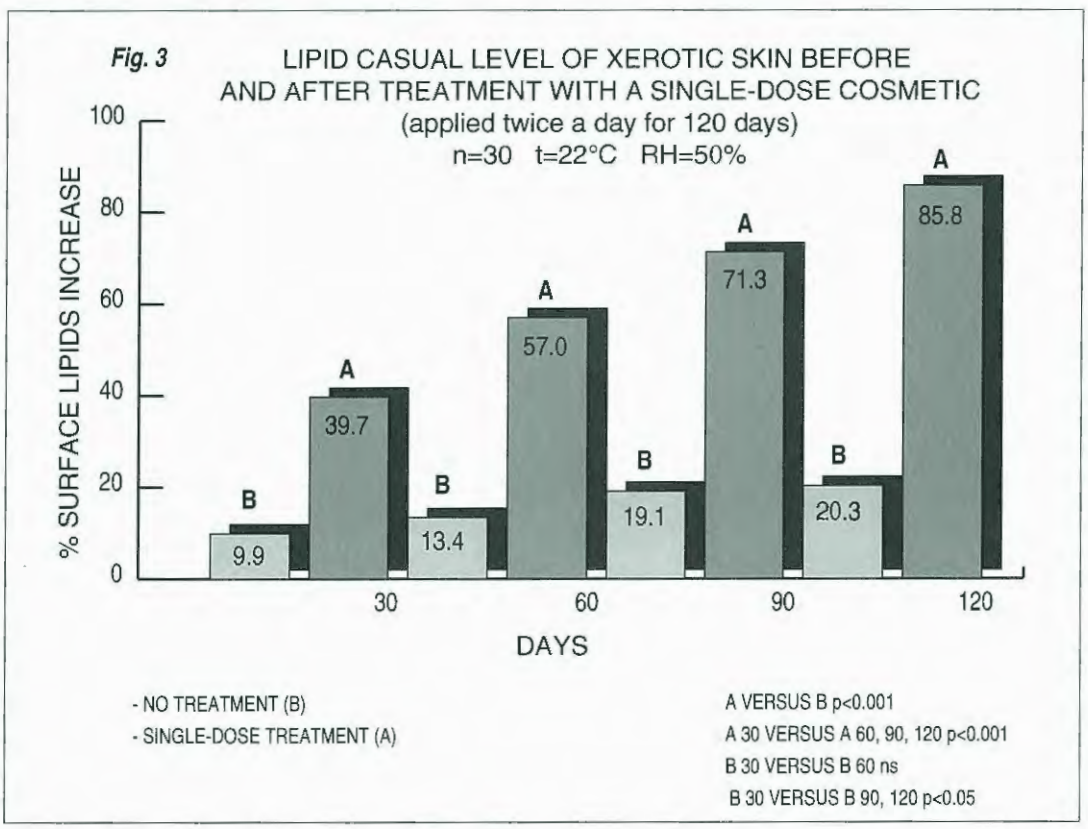
Cosmetic treatment

By this method skin moisture and surface sebum were measured in 30 female out-patients aged 25 to 35 with clear syntoms of skin xerosis and divided into two groups of 15 peoples:
group A: cosmetic treatment

group B: no treatment (control)

The study lasted 120 days from December 1990 to March 1991.

Fig. 3

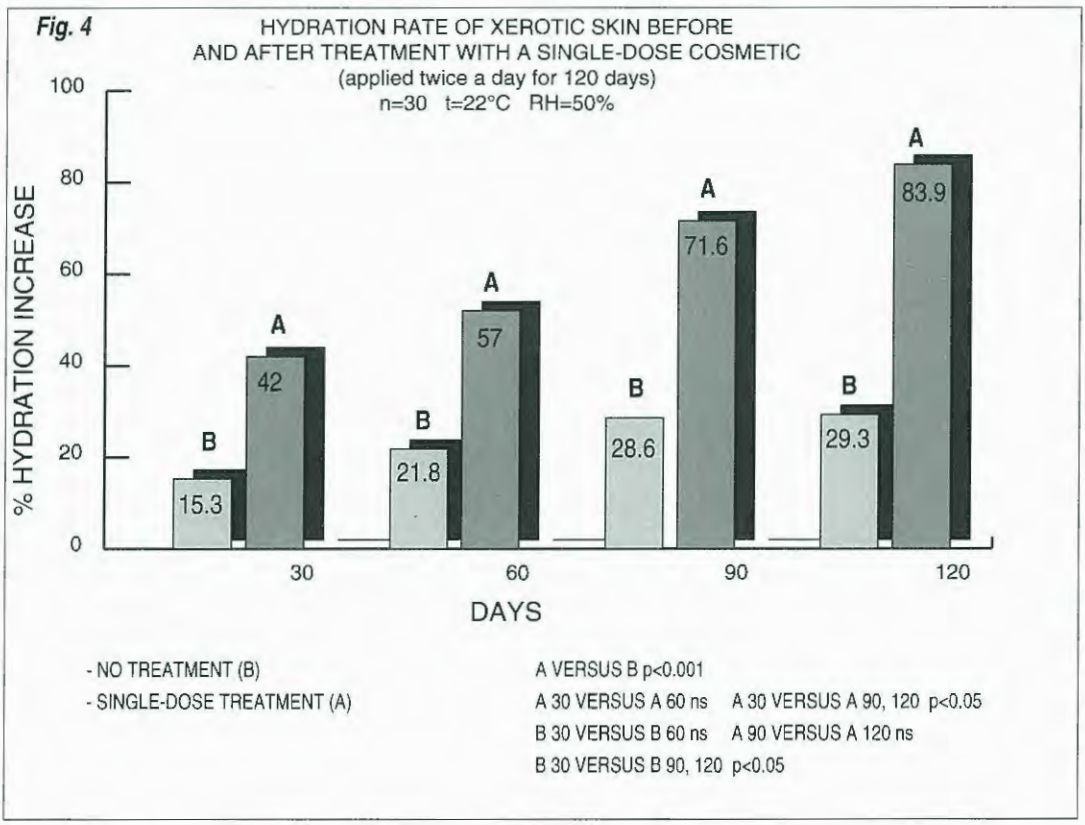


Controls were always performed weekly at 10 a.m. into out-patient departments.
Patients' skin was cleansed with a cleansing lotion (Mavigen® Latte) provided by us and the study product (Idroskin® 20-single-dose-cream S.I. 20) was applied twice a day (11 a.m. and 9 p.m.).
The mean values for surface sebum and skin hydration were taken from each subject by carring out four separate measurements in adjiacent areas on the cheeks, as previously described (4).
Results are shown in Figure 3 and 4.

Results and comments

These obtained data suggests that the normal moisture and sebum rate can be restored in the xerotic skin when a well-formulated cosmetic is applied. In this way it is possible to obtain an immediate improvement in skin smoothness and longer term rejuvenating of the xerotic skin can be the result of a successful cosmetic therapy. Moreover this new 3C System® Dermotech can be easily used also in standard consulting rooms and the patient can be provided with a printed description of measurement taken at each encounter, as well as the cosmetic and pharmacological products which are recommended for the continuation of the treatment program.

Fig. 4



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ORAL ADMINISTRATION OF GELATIN-GLYCINE FOR AGED SKIN

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Received: *November 6, 1992. Presented at the IV International Congress on Cosmetic Dermatology "Progress in Cosmetic Dermatology: Science and Safety" Rome (Italy) Novemer 2,1991*

Key word: *Skin Lipids; Skin Hydration; TEWL; Lipid Peroxide; Aged Skin; Photoaging; Gelatin-Glycine; Oral Cosmesis; 3C System®; Skin Measurements; Free Radicals; AHAs.*

Synopsis

A major part of the visible alterations associated with skin ageing reflects functional modifications in the behavior of various time components within the skin. The reduction in the water-holding capacity and in surface lipids of stratum corneum and its subsequent dryness also influence the general aspect of the skin. Superimposed on the innate aging process are the effects of a lifetime of exposure to the elements, the most damaging being UV radiation. In face UV light is responsible for most of the caracteristics associated with aging skin. The aim of this study, was to evaluate, on photoaged skin of 60 women, the combined use of topical cosmetics together with oral Gelatin-Glycine (QM® Dietetic) on their surface skin lipids, hydration and TEWL monitored for 90 days using the new 3C System® computerized equipment. In addition, the Gelatin-Glycine's protective action against UV-induced lipidic peroxidation was assessed by maloinildialdehyde determination. Interesting improvements noted in these various parameters suggest that Gelatin-Glycine may be useful in the prevention of premature skin ageing.

Riassunto

La maggior parte delle alterazioni visibili, associate all'invecchiamento della pelle , riflettono modificazioni funzionali dei vari tessuti cutanei. La ridotta capacità di legare acqua dello strato corneo, associata con una diminuzione dei lipidi di superficie e con la conseguente secchezza cutanea, influenzano l'aspetto generale della pelle. Tutte queste carenze vengono ulteriormente accentuate dagli effetti provocati nel tempo dagli inquinanti ambientali e dagli agenti atmosferici, quali soprattutto le radiazioni solari. Infatti gli UV sono i maggiori responsabili dell'invecchiamento cutaneo estrinseco. Scopo di questo lavoro è di valutare l'attività svolta, sulla cute di 60 donne fotoesposte, dall'azione contemporanea di cosmetici e di un dietetico a base di Gelatina-Glicina (QM® Dietetico). Come parametri di controllo sono stati scelti l'idratazione cutanea, i lipidi di superficie e la TEWL, che sono stati controllati mediante l'uso di una apparecchiatura computerizzata, il 3C System®. Inoltre è stata valutata anche l'attività protettiva esplicata dalla Gelatina-Glicina contro i danni provocati dagli UV sui lipidi cutanei, determinando la quantità di radicali liberi (perossidi) con il metodo della Malonildialdeide. Gli interessanti miglioramenti notati su questi parametri di controllo, suggeriscono l'uso della Gelatina-Glicina nella prevenzione e nel trattamento dell'invecchiamento cutaneo.

Ageing causes the skin's fatty tissue to wear and connective tissue to alter, resulting in changes in skin color, thickness and elasticity. In addition, a steady decrease in sebum production reaches its peak at the age of 50 to 60, while even more significant changes in the skin's water content are taking place (1-3). Alterations in the connective tissue include decreases in the volnme of its colloidal chemicals, and in the enzymatic reactivity in elastic and collagen fibers (4). Such phenomena increase in winter due to low relative humidity. In fact, the horny layer competes effortlessly with the environment in captnring water. If not properly treated, skin dehydrates, loses flexibility and ages prematurely. Therefore, a proper amount of surface lipids, and of the horny layer's water content has to be preserved. Simultaneously, collagen production should be stimulated and damage from free radicals should he reduced (5-7).
The objective of this study was to determine, on photaged skin, the combined use of topical cosmetics together with oral Gelatin-Glycine (QM® Dietetic).

Material and methods

Materials

QM® Cleansing Lotion[1]
Distilled water, Ceteareth-6, Isopropyl myristate, Octyl stearate, Sorbitol, Glycerin, Propylene glycol, Tocopheril acetate, Rethynil palmitate, Imidazolidynil urea, Linoleic acid, Linolenic acid, Methylparaben, Hydrolized collagen, Gelatin-Glycine, Disodium EDTA.

QM® Antiage Drops[2]
Soluble collagen, Propylene Glycol, Glycerin, Sodium PCA, Lactic Acid, Glycine, PCA-Argynine, Panthenol, Glycolic Acid, Peg-40-Hydrogenated Castor oil, Fragrance.

QM®-H10 Cream[3]
Water, C12-18 acid PEG-8 ester, Ceteareth-10, Isopropyl Lanoleate, Stearyl heptanoate, Sorbitol, Beeswax, Cetearyl octanoate, Spermaceti, Myristyl alcohol, Mineral oil, Desamido collagen, Glycerin, Witch hazel extract, Linoleic acid, Linolenic acid, cyclomethicone, Dimethicone copolyol, Sodium PCA, Tocopheryl acetate, Gelatin-Glycine, Allantoin, Lecithin, Glycolic acid, Imidazolidynil urea, Methil paraben, Propyl paraben, Disodium EDTA.

QM® Dietetic[4] (Gelatin-Glycine pills) (active)
Gelatin-Glycine 225mg, Ascorbic acid 22.5mg, PP Vitamin 7.5mg, Fe++ 3.6mg, Zu 3mg, Mn 0.75mg, Cu 0.6mg, B1 vit. 0.45mg, B2 vit. 0.68mg, B6 vit. 0.52mg, Folic Acid 0.75mg, B12 vit. 0.75mg

Control Pill
Gelatin-Starch 255 mg

[1] Trade name QM LOZIONE DETERGENTE
[2] Trade name QM ANTIAGE GOCCE
[3] Trade name QM 10 IDRATANTE
[4] Trade name QM DIETETICO

Methods

3C System® Dermotech

Surface sebum skin hydration and TEWL were measured on the forehead by the nse of the 3C System® Dermotech. This computerized system permits a simple and quick determination of the quantity of lipids, hydration and TEWL at the surface of the skin, while environmental conditions are automatically standardized (RH=50% t=22 C). The 3C System® reports sebum data in $\mu g/cm_2$, TEWL in $g/m^2.h$ and hydration data in 3C Values by direct readout.

Photoaged skin

Pre-exposure to UV-A-emitting lamp
During testing the 60 panelists were pre-exposed to UV-A radiations for one months two times a week. They received 50 joul/cm2 of UVA

(340-400 nm) 15 min. on the entire face.
For UV-A exposure (photoaged skin) it was used the apparatus UV-A sun with filtered metal halide lamps. UVA Cryl was the plastic filter system used.

Cosmetic treatment

Sixty women volunteers, between 35 and 45 years of age, all pre-exposed to UVA as previously described, were divided into 3 groups of 20 individuals. Each group was randomly given Pills sufficient for three months of treatment (4 pills a day).
The three groups were:
Group B: Topical cosmetic treatment only and control pills
Group A: Combined use of topical cosmetics together with oral products based upon gelatin-glycine (QM® Dietetic 4 a day)
Group C: No treatment (only control pills).
The pills were administered orally (4 a day) for 90 consecutive days from April to June 1991.

Fig. 1
LIPID LEVEL INCREASE OF UVA PRE-TREATED FOREHEAD SKIN (30 days photoaged) AFTER COMBINED USE OF TOPICAL COSMETICS TOGETHER WITH ORAL GELATIN-GLYCINE QM® (4 pills a day by 90 days)
n=60 t=22°C RH=50%

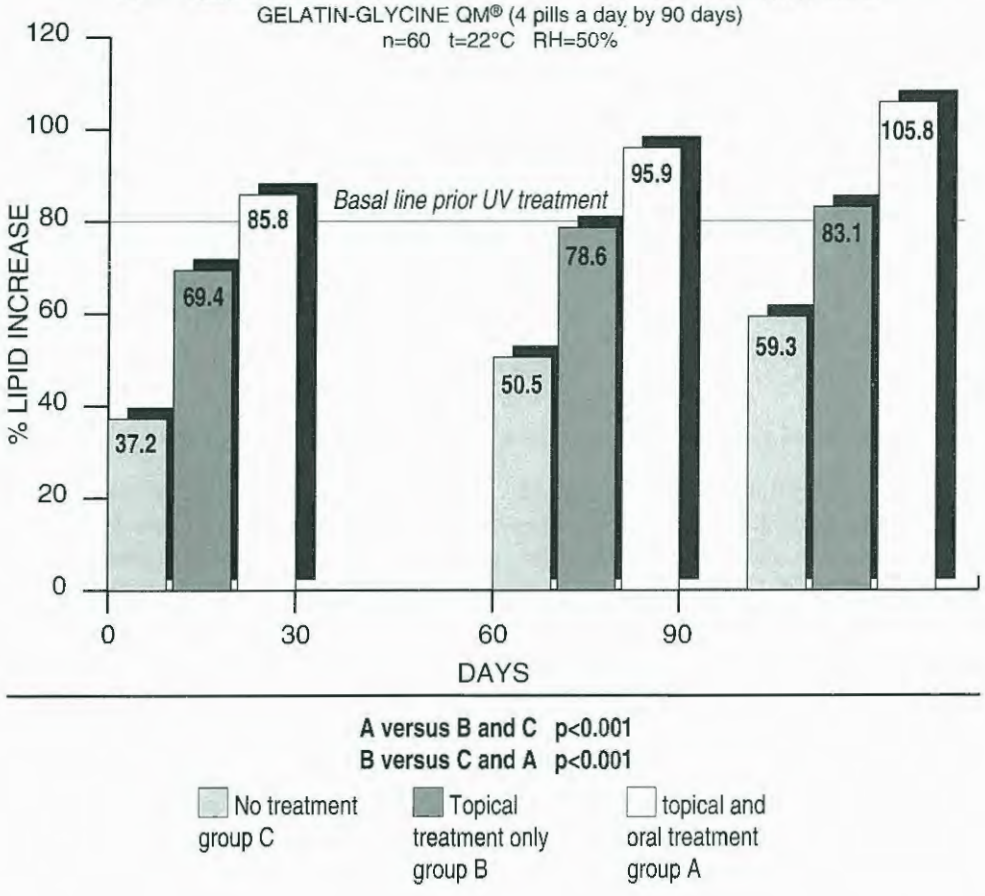
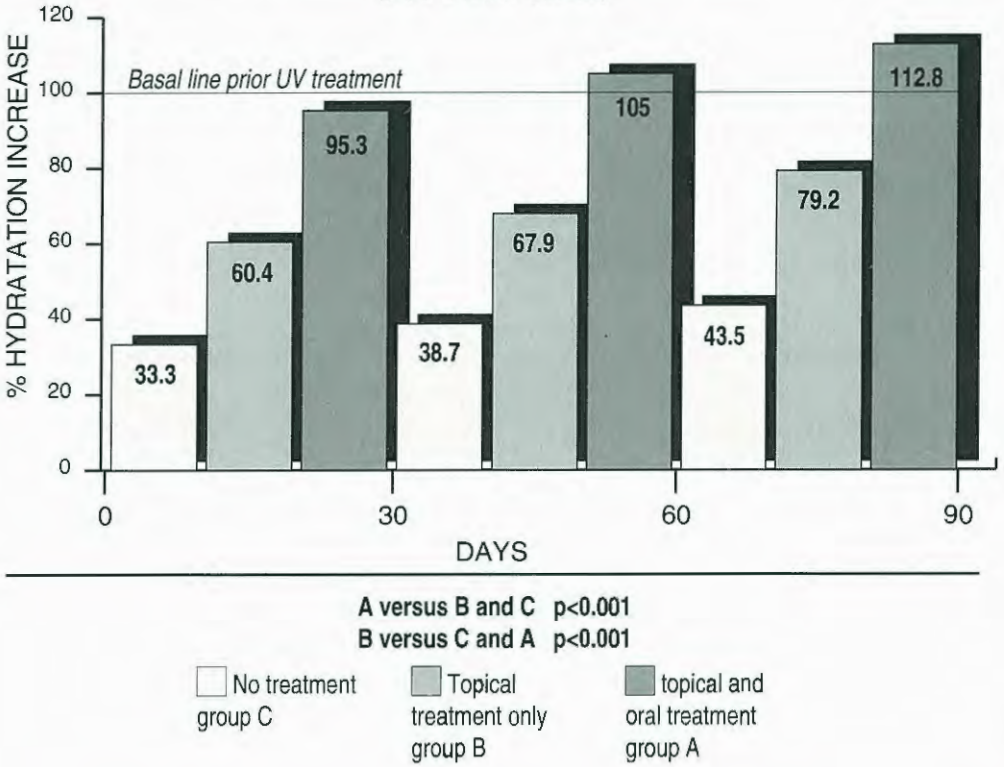


Fig. 2
HYDRATATION INCREASE OF UVA PRE-TREATED FOREHEAD SKIN (30 days photoaged)
AFTER COMBINED USE OF TOPICAL COSMETICS TOGETHER WITH ORAL
GELATIN-GLYCINE QM® (4 pills a day by 90 days)
n=60 t=22°C RH=50%



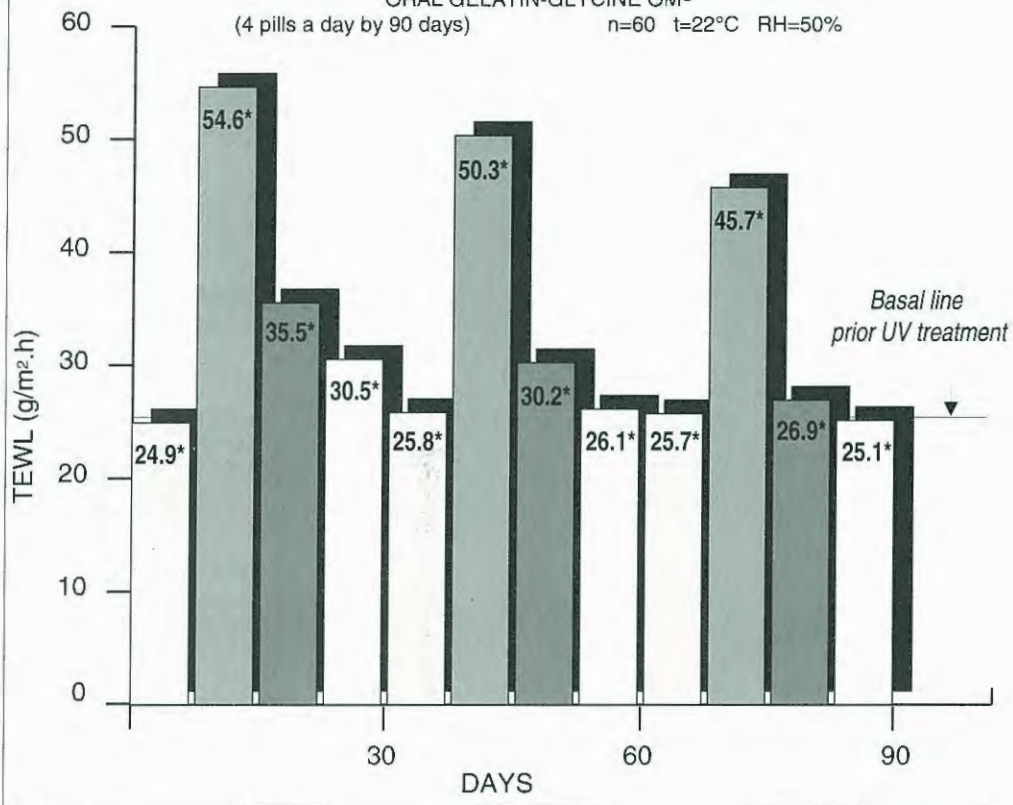
Four weeks before treatment period, drug and diet food were prohibited, and all the 60 subjects used no cosmetics, except the Cleansing lotion QM provided by us.

During the treatment period (90 days) 40 subjects (Group A + Group B) used two different cosmetic products (QM® drops and QM® H-10 cream) to be applied twice a day with *ad libidum* applications, after using the QM® cleansing lotion and abundant water rinsing. 20 subjects only (Group A) have taken, orally, the active pills (QM®) and all 60 were pre-exposed to UVA radiations for one month two time a week as previously described.

The mean values for surface sebum and skin hydration and TEWL were taken from each subject by carrying out four separate measurements, in adjacent areas on the forehead or/and on the cheeks, as previously described in our studies. (10) These measurements were taken, by 3C System® Dermotech, between 8:30 and 10:30 under standardized conditions. Results are listed in Figure 1-3.

Skin lipids peroxidation was assessed by Ohkido et all methodology (8) reading at 531 nm the final concentration of peroxides determined as malonydialdehyde (MDA) precursor (8). Results are listed in Figure 4

Fig. 3
TEWL DECREASE OF UVA-PRE-TREATED FOREHEAD SKIN (30 days PHOTOAGED)
AFTER COMBINED USE OF TOPICAL COSMETICS TOGETHER WITH
ORAL GELATIN-GLYCINE OM®
(4 pills a day by 90 days) n=60 t=22°C RH=50%



*Medium values of 20 determinations

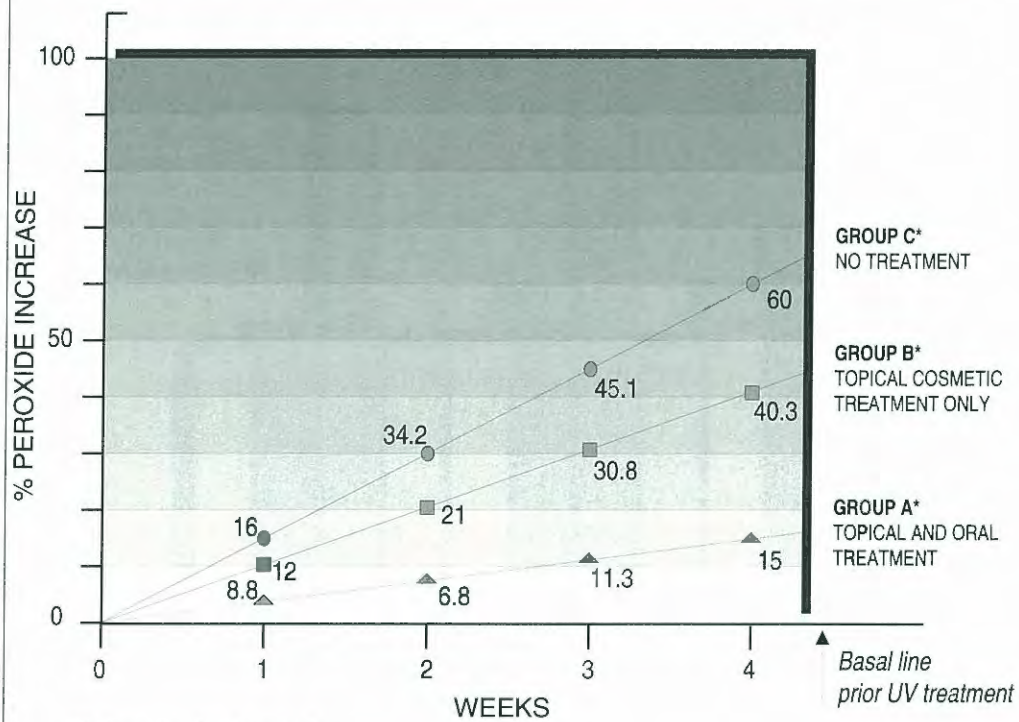
- Basal value versus group C 30, 60, 90 $p<0.001$
- Basal value versus group A and B 30, 60, 90 ns
- Group C versus Group A e B 30, 60, 90 $p<0.05$

Measurement of skin hydroperoxides

It seems to be a linear relationship between the quantity of peroxides recovered on the skin and the subject's ageing (8).

Since the production of lipid peroxides are markedly influenced by UV light it was controlled the level of peroxidation of skin lipids before and after exposition to UV-A radiation. Each week and at the end of the first month of experimental period, skin lipids were extracted from cheek and/or forehead skin areas, using acetone as the solvent, according to Pugliese (9).

Fig. 4
LIPID PEROXIDES VARIATION OF UVA PRE-EXPOSED CHEEKS SKIN (30 days photoaged)
AFTER COMBINED USE OF TOPICAL COSMETICS TOGETHER WITH
ORAL GELATIN-GLYCINE QM
(MDA METHODOLOGY 1990) 4 pills a day by 30 days n=60 t=22°C RH=50%



* Medium value of 20 determinations
P< 0.05

Results and Discussion

These results support our previous obtained data (11,12). Gelatin-Glycine QM® seems to exert an interesting moisturizing and anti-wrinkle action (Fig. 1-4). It seems to be an interesting relationship between the quantity of peroxides recovered in photoexposed skin and the protective action exerted by topical application and and oral administration of Gelatin-Glycine QM® (Fig. 4). The combined use of topical cosmetics together with oral gelatin-glycine (QM® Dietetic) is associated with a significative decrease (from 33 to 75%) of the quantity of skin hydroperoxides, with an interesting increase of surface moisturizing (from 180 to 260%) and skin lipids (from 95 to 160%) and decrease of TEWL (50% about). It is also interesting to point out the altered values by UV treatment of superficial skin lipids, hydration, TEWL and lipid peroxides come back to basal values soon after 60/90 days of topical and oral Gelatin-Glycine QM® use. Improvement noted in these various parameters, confirms that Gelatin-Glycine may represent an effective cosmetic therapy for the treatment of photoaging or premature ageing of the skin.

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Chiuso in tipografia: May 30, 1994

Journal of Applied Cosmetology published quarterly by INTERNATIONAL EDIEMME, Via Innocenzo XI, 41 00165 Roma Italy. Direttore responsabile P. Morganti. Direzione, Redazione ed Amministrazione: Via Innocenzo XI, 41-00165 Roma Italy. Stampa: Grafica Flaminia, Roma. Impaginazione: GRAFÒ Comunicazione Visiva, Roma. Spedizione in abbonamento postale gruppo 50% Roma. Aut. del Tirib. di Roma n. 3173/83 del 8-7-83.

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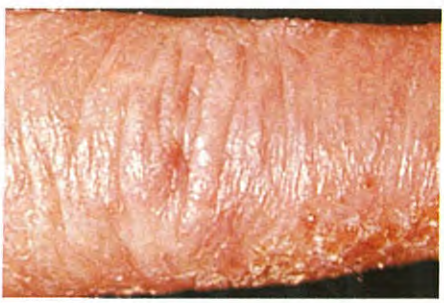
Ipercheratosi intrinseca



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Emulsione - Ammonio Lattato 14%
KERATOTAL 2
Emulsione - Ammonio Lattato 8%
KERATOTAL SHAMPOO
Ammonio Lattato 7%
KERATOTAL BAGNO
Olii lineari e ramificati - Ammonio Lattato 5%

Modo d'uso: localmente 2 volte al dì.

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