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3

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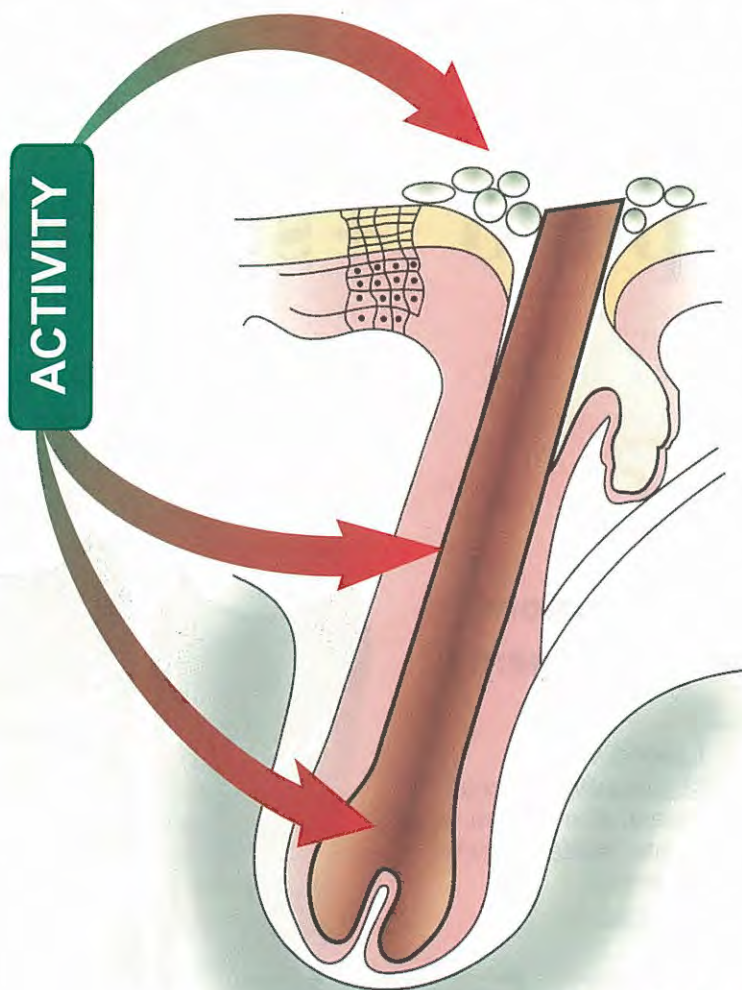


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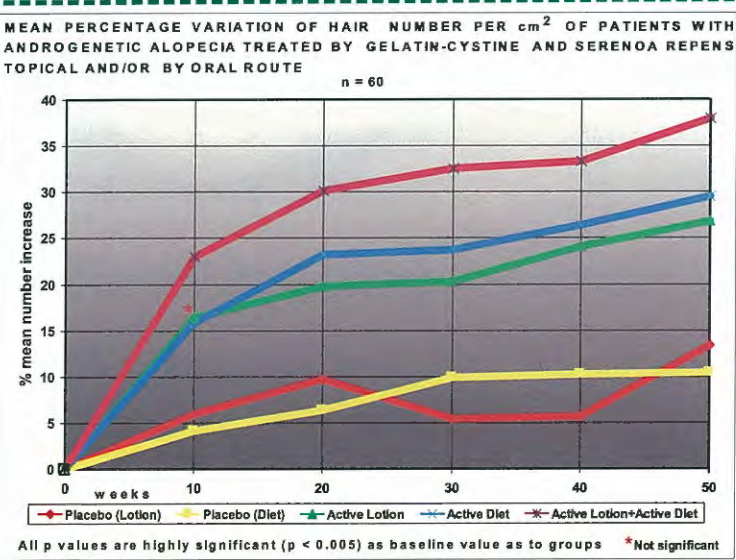
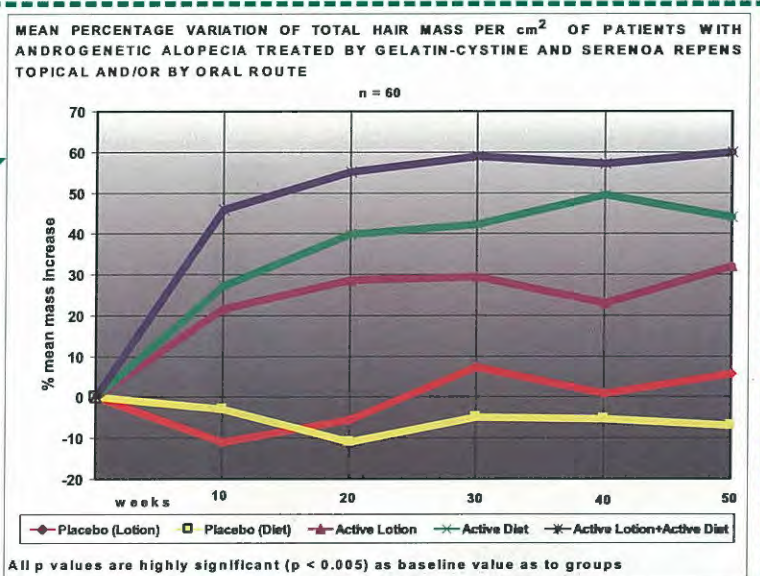
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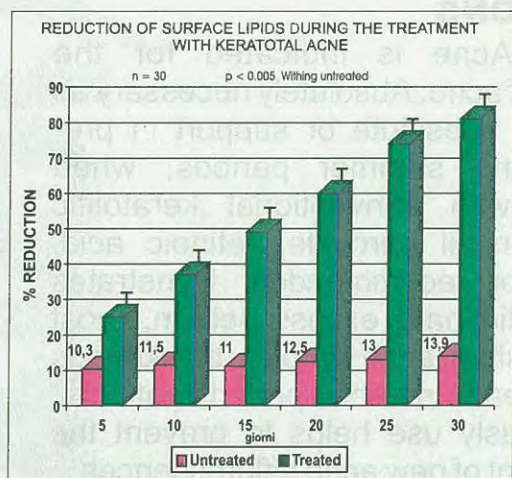
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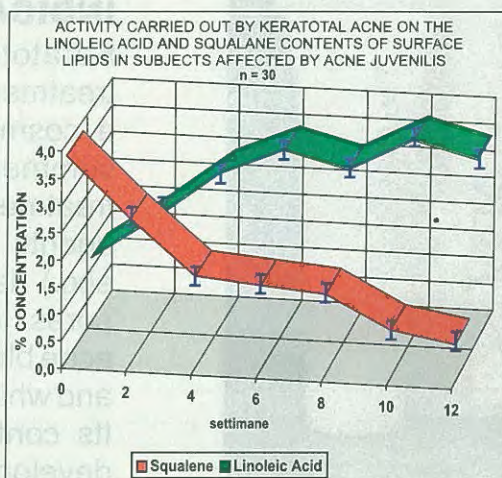
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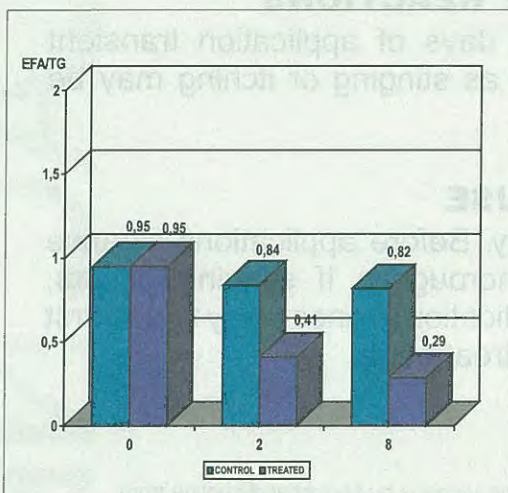
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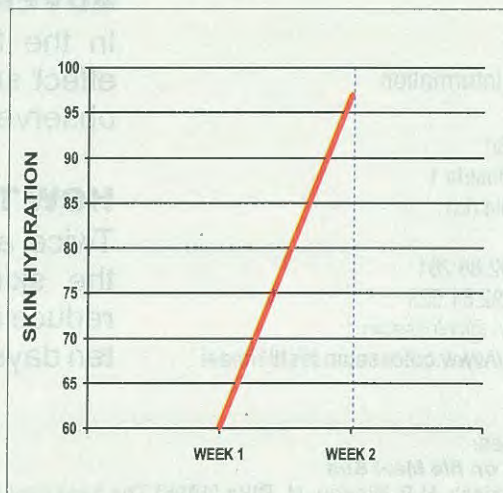
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REFERENCES:

1,2 - *Data on file Mavi Sud*

3 - M. Ghiczy, H.P. Nissen, H. Biltz (1996) The treatment of Acne Vulgaris by phosphatidylcholine from Soybeans, with a high content of linoleic acid. *J. Appl. Cosmetol.* 14, 137-145

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EFFECT OF GELATIN-CYSTINE AND SERENOA REPENS EXTRACT ON FREE RADICALS LEVEL AND HAIR GROWTH

P. Morganti*, G. Fabrizi**, B. James***, C. Bruno****

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Presented at "Singapore Clinical Dermatology 2000" - Singapore, 18 - 20 June, 1998

Key words: Hair growth, androgenetic alopecia, seborrhea, serenoa repens, cystine, gelatin-cystine, cosmeceutical, nutraceutical.

Synopsis

The influence of gelatin-cystine and serenoa repens on hair growth was studied through a long period application (50 weeks) of a new cosmeceutical lotion. On 48 volunteers (24 women and 24 men) aged between 21 and 38 years, affected by androgenetic alopecia (type III and IV according to Hamilton). 12 subjects also took a diet supplement (4 pills per day) based on gelatin-cystine. The solution and the diet supplement (placebo and active) were assigned in a randomized double-blind manner. Hair mass and the mean hair number were controlled according to Price et al. Exclusion criteria included use of topical or oral drug or diet supplement within the previous six months.

The obtained results showed an increase of hair mass from 20 to 30% ($p < 0.005$) together with a contemporary increase of hair number (from 17 to 27%) ($p < 0.005$) compared to the placebo for subjects using the lotion only.

With the diet supplement a further increase of 50% ($p < 0.005$) in hair growth and a significant decrease of blood ROS (Reactive Oxygen Species) were obtained.

Riassunto

L'influenza della gelatina-cistina e della serenoa repens sulla crescita dei capelli è stata studiata per un lungo periodo (50 settimane) applicando una nuova lozione cosmeceutica su 48 volontari (24 donne e 24 uomini) in età compresa tra i 21 e 38 anni, affetti da alopecia androgenetica (III tipo e IV secondo Hamilton).

12 soggetti sono stati sottoposti ad assunzione di un dietetico (4 pillole al giorno) a base di gelatina-cistina.

La lozione ed il dietetico (placebo e principi attivi) sono stati assegnati in modo casuale e a doppio ceco. Il peso totale ed il numero medio dei capelli è stato controllato secondo Prince et al. Il criterio di esclusione

includeva l'assunzione di sostanze medicinali per via topica, orale o di diete speciali assunti nei precedenti sei mesi.

I risultati ottenuti con la lozione attiva rispetto al placebo mostrano un incremento del peso totale dei capelli dal 20 al 30 % ($p<0.005$) insieme ad un contemporaneo incremento del numero di capelli dal 17 al 27% ($p<0.005$) rispetto al placebo.

Con la contemporanea assunzione del dietetico è stato ottenuto un ulteriore incremento del 50% ($p<0.005$) nella crescita dei capelli ed una diminuzione statisticamente significativa dei ROS nel sangue.

INTRODUCTION

According to our research (1-4) gelatin-cystine by oral route seems to induce hair growth. Moreover liposteroidal and alcoholic extracts of *Serenoa repens* also seem to assess effect on retarding the hair loss process in androgenetic alopecia inhibiting the 5- α -reductase (type II isozyme) activity and therefore the binding of DHT (Dehydrotestosterone) to androgen receptors (5-10). Moreover it appears that tissue sensitivity to circulating androgens and the role of 5- α -reductase activity within the hair follicle is of primary importance in the expression of androgenetic alopecia hair loss (11). The *serenoa repens* by topical or oral route seems to be comparable with finasteride without exerting the adverse side effects of a drug (12-14).

AIM

The aim of this work was two-fold:

- to control the efficacy of both the oral gelatin-cystine and the cosmeceutical lotion based on l-cystine and *serenoa repens* extracts on hair growth promotion and retarding of hair loss ;
- to quantify the radical oxygen species (ROS) before, during and after the diet supplementation.

There is increasing evidence that ROS may be involved in a variety of skin disorders and excessive production of these species occurs in certain disease states or as a result of toxic insult by selected foreign compounds drugs (xenobiotics) (15,16).

MATERIALS AND METHODS

Materials

LOTION A (Active)

Aqua (water), alcohol denat, Hydrolyzed soy protein, ethoxydiglycol, disodium cystinyl disuccinate, PPG-buteth 26, PEG-40 hydrogenated

castor oil, panthenol, ginkgo biloba (ginkgo biloba extract), carboxymethyl betaglucon, serenoa repens (saw palmetto extract), azelaic acid, piroctone olamine, ethyl nicotinate.

LOTION B (Control)

Aqua (water), alcohol denat, Hydrolyzed soy protein, ethoxydiglycol, PPG-buteth 26, PEG-40 hydrogenated castor oil, panthenol, ginkgo biloba (ginkgo biloba extract), carboxymethyl betaglucon, azelaic acid, piroctone olamine, ethyl nicotinate.

DIET SUPPLEMENT

Diet Supplement (Active)

Soy oil and gelatin, l-cistin, l-methionin, Cu, Zn.

Diet Supplement (Placebo)

Soy oil and starch

APPARATUS

- 3C System® (Rome, Italy)
- ROS-meter System® (Rome, Italy)

Methods

36 volunteers (24 women and 24 men) aged between 21 and 38 years, affected by androgenetic alopecia (type III and IV according to the Hamilton scale), were enrolled in the study for 50 weeks.

Concurrently another group of 24 subjects took also a diet supplement (4 pills a day) based on gelatin-cystine or placebo and their hair growth was compared with the other treated groups. The cosmeceutical solutions and the diet supplements were assigned in a randomized double-blind manner as follows:

12 (6 women and 6 men) received active lotion A (group 1), 12 placebo lotion B (group 2), 12 diet supplement active C (group 3), 12 supplement placebo D (group 4) and 12 lotion A and diet supplement C (group 5).

The subjects were instructed to apply the lotion two times a day (8 a.m. and 8 p.m.). They received also a mild shampoo (17) to be used during

the whole study and excluded use of topical or oral drug and diet supplement within the previous six months.

• Area Treated

A pre-selected frontal/parietal scalp area 1 cm² was hand clipped on day 0 and at 10 weeks intervals there after for a total of 50 weeks. Blood samples (0.2 ml) were also taken from the finger at 8 a.m. (day 0) and weekly for 12 weeks to control ROS.

• Measurement Method

According to Price and Menefee methodology (18, 19), hair samples were degreased in Freon TF, dried, counted on a grid and then weighed in an analytical balance at 22°C and RH 50%.

• Statistics

Paired student t-test and analysis of variance (ANO-DIA) for changes in time were used to detect significant effects of treatments.

• ROS Determination

ROS were determined by the new D-ROMS test which is based on the capability of transition metals to catalyze the formation of free radicals in presence of peroxides (20). The free radicals produced, whose quantity is directly proportional to the quantity of peroxides present in the plasma, are trapped chemically by molecules of a phenolic derivative, changed into chromophores and evaluated photo-

metrically by ROS-meter System at 505 nm. By this methodology the normal value in blood (serum or plasma or whole blood) are within the range of 250 and 300 U.CARR conventional units. The value of 1 U.CARR correspond to a concentration of 0.08 mg % of hydrogen peroxide. Subjects with value >320 U.CARR can be considered affected by oxidative stress according to the table I.

• Safety Control

The following safety parameters were assessed at each control every each month for all the period of the study. A general medical examination, blood pressure, pulse, and local tolerance such as erythema, stinging/burning and itching. For three times at beginning of the study (time 0) and at the 30th and the 50th week was controlled: the complete blood counts and urine analysis for comparing any changes from baseline.

Table I
U. CARR VALUES

U. CARR		Dosable ROS
from	300 to 320	border - line
from	320 to 340	low
from	400 to 500	high
>	500	very high

RESULT AND CONTROL

The tolerance both of the lotion and the diet complement was excellent for all subjects. No side effect was recorded.

As it is shown in Fig. 1 the sole topical treatment performed with the lotion caused an increase in hair number of 17% ($p < 0.005$) starting from week 10. This increase continued steadily throughout the study, and reached 27% ($p < 0.005$) at week 50. If we compare the increased hair number with their mass (Fig. 2) we also note a gradual increase in hair weight and eventually in hair caliber until a value of around 20% ($p < 0.005$) is reached at week 10. At week 50 the increase recorded is around 30%. This means an increase in hair growth during the anagen phase, and thus a turnaround of hair miniaturization which is typical of androgenetic alopecia.

This result is undoubtedly due to the activity performed by the extract of *serenoa repens*, which, as is known, opposes the transformation

of testosterone in dehydrotestosterone. Also, it is bound to the contemporary backing presence of l-cystine at level of hair keratogenetic area. These two activities performed at two different levels are possible thanks to the vehicle that enhances transcutaneous penetration of the active ingredients, as it was proved by another study (21).

The dietetic gelatine-cystine product (Fig. 1) acts in a similar way, causing a natural increase in hair number of 18% ($p < 0.005$) after week 10 and of 29% ($p < 0.005$) at week 50. This confirms our previous data (1-4). Indeed in this study it is also proved that gelatine-cystine causes an increase in hair mass of 24% ($p < 0.005$) after 10 weeks and of about 40% ($p < 0.005$) at week 50 (Fig. 2).

It is also interesting to note that the contemporary use of lotion and dietetic supplement cause a further increase of about 50% ($p < 0.005$), if compared with the sole use of lotion or dietetic. Such increase is evident both in number and hair mass starting from the first week of treat-

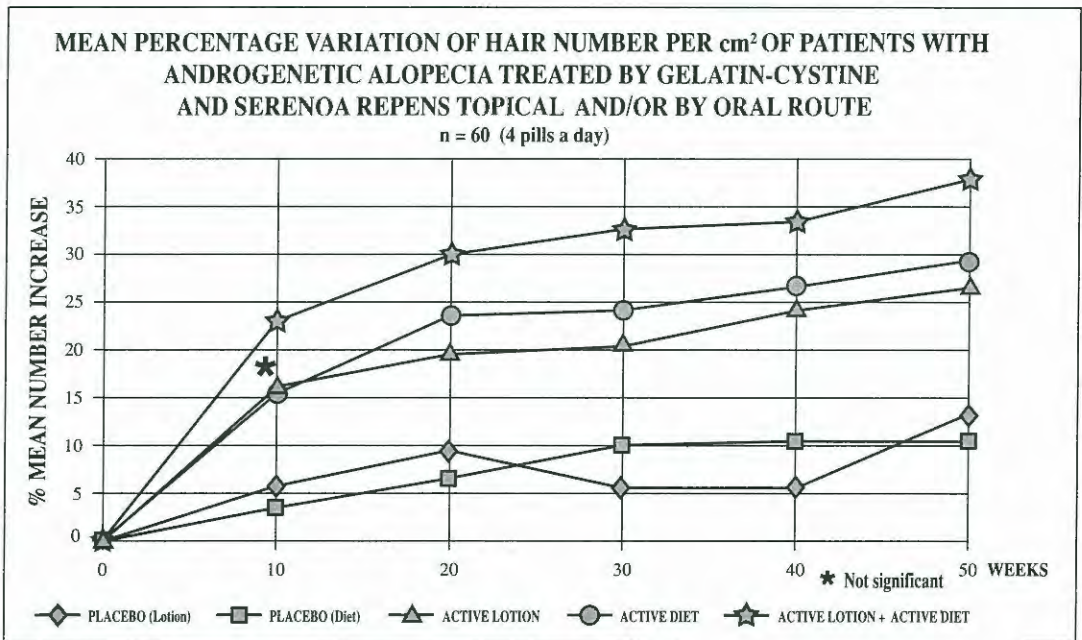


Fig. 1. All p values are highly significant ($p < 0.005$) as baseline values and as to groups.

MEAN PERCENTAGE VARIATION OF TOTAL HAIR MASS PER cm² OF PATIENTS WITH ANDROGENETIC ALOPECIA TREATED BY GELATIN-CYSTINE AND SERENOA REPENS TOPICAL AND/OR BY ORAL ROUTE

n = 60 (4 pills a day)

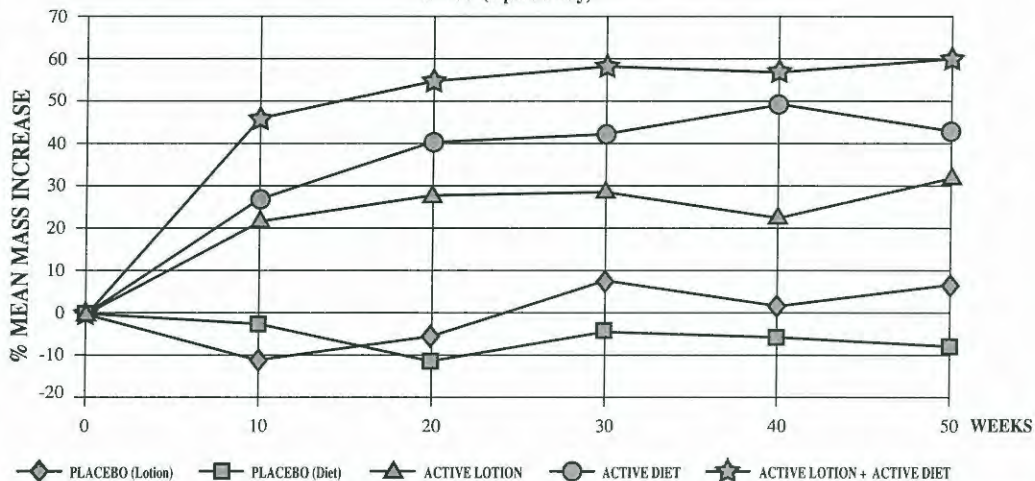


Fig. 2. All *p* values are highly significant ($p < 0.005$) as baseline values and as to groups.

ROS RECOVERY IN PATIENTS (MALE AND FEMALE) WITH ANDROGENETIC ALOPECIA TREATED BY GELATIN-CYSTINE AND SERENOA REPENS TOPICAL AND/OR BY ORAL ROUTE

n = 60 (4 pills a day)

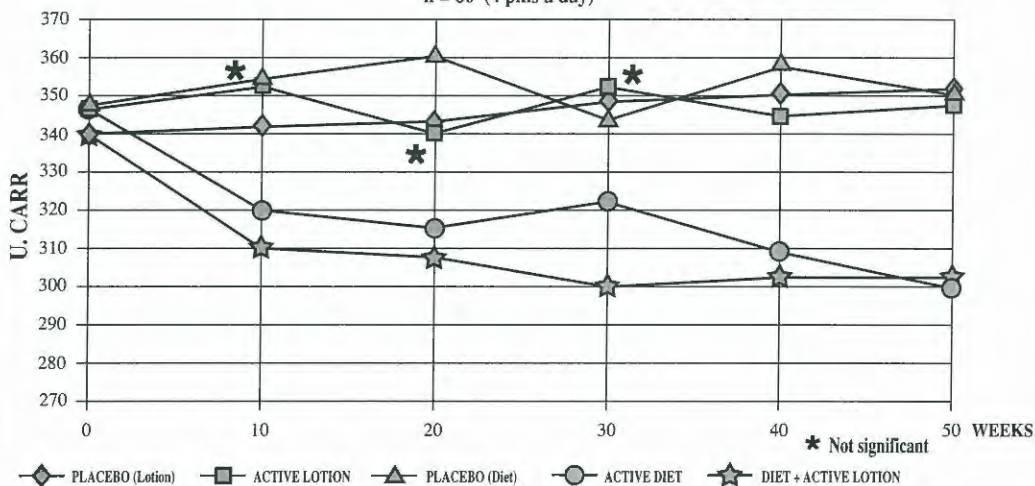


Fig. 3. All *p* values are highly significant ($p < 0.005$) as baseline values and as to groups.

ment, and increases proportionally until it reaches its peak at week 50 (Fig. 1-2).

Concerning ROS control it should be considered that all groups presented at the beginning of the study values (340 ± 15) that prove, according to Tab. 1, a slight oxidative stress.

As it is shown in Fig. 3 this slight stress stays almost unchanged in groups treated with the lotion or placebo both topical and oral, whilst it goes back to normal values in groups treated with the sole dietetic or with dietetic and lotion. Thus we can deduce that the only activity performed on ROS is carried out by gelatin-cystine by oral route. These first laboratory data prove the possibility of treating subjects suffering from androgenetic alopecia not only with drugs but also with cosmeceuticals and nutraceuticals appropriately formulated and capable of affecting hair regrowth as well.

Moreover, these data seem to confirm the activity performed at pilosebaceous bulb level both by I-cystine and by antiandrogens contained in *Serenoa Repens*.

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DPPG LIPOSOMES AS PREFERENTIAL VEHICLES FOR "HUMAN-IDENTICAL" CERAMIDES

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Synopsis

Epidermal ceramides are an heterogeneous group of sphingolipids corresponding to the largest polar lipid class among the human epidermal lipids, playing a major role in the regulation of epidermal water dynamics.

However, the incorporation of ceramides in topical formulations, a major goal for the dermatology therapeutical or cosmetological assessment, presents many different and complex problems. These are mainly attributed to the specific physical and chemical properties of these compounds particularly due to their characteristic acyl chains leading to phase separation and crystallisation. Several approaches were chosen to address these problems and to ensure a proper deliver of ceramides within epidermis but, the results obtained are sometimes controversial and often inconclusive.

In the present paper, the authors developed a liposomal formulation choosing DPPG, a negatively charged lipid, to prepare liposomes as a preferential vehicle for "human-identical" ceramides. The results obtained, regarding the formulations stability, seem to suggest good operational conditions for this vehicle which also seems to be particularly suitable for the topical use of ceramides.

Riassunto

Le ceramidi dell'epidermide sono un gruppo eterogeneo di sfingolipidi corrispondenti alla più ampia classe popolare di lipidi tra i lipidi della cute umana, che giocano un ruolo fondamentale nella regolazione delle dinamiche idriche nell'epidermide.

Tuttavia l'inclusione di ceramidi in formulazione topiche, che sarebbero un obiettivo essenziale per la dermatologia terapeutica e per valutazioni cosmetiche, presenta molti problemi differenti e complessi. Questi vengono soprattutto attribuiti alle specifiche proprietà fisiche e chimiche di questi componenti particolarmente dovute alle loro caratteristiche catene di acile che provocano separazione di fase e cristallizzazione.

Diversi approcci sono stati scelti per affrontare questi problemi e assicurare una trasmissione adatta delle ceramidi all'interno dell'epidermide ma i risultati ottenuti sono a volte controversi e spesso inconcludenti.

Nel presente lavoro gli autori hanno messo a punto una formulazione liposomica scegliendo il DPPG, un lipide caricato negativamente, per preparare liposomi come veicolo preferenziale per ceramidi "identiche alle umane".

I risultati ottenuti, per quanto riguarda la stabilità delle formulazioni, sembrano suggerire buone condizioni operative per questo veicolo che sembra essere altresì particolarmente adatto per l'uso topico delle ceramidi.

INTRODUCTION

Ceramides are an heterogeneous group of sphingolipids which correspond to almost half of the lipid content of human healthy stratum corneum. Ceramides are produced by deglycosylation of the glucosylceramides shortly after their extrusion into the intercellular space. This seems to justify the high ceramide content of the human epidermal cornified layer (7-9).

The recognition of the important functions attributed to ceramides in the preservation of cutaneous barrier integrity (8) their potential therapeutic and/or cosmetological interest lead to a remarkable amount of papers published focusing on their extraction, synthesis and formulation (16, 4, 12, 11, 7).

Nevertheless, the practical utilisation of ceramides is still a complex matter, involving different limiting factors from their origin (ceramides from vegetal sources are often used without demonstration of its equivalence to the human identical ones), to formulation and stability (12, 13 1). From a clinical perspective, it is also important to ensure that topically applied ceramides are effectively distributed within epidermis, which stresses the need to ensure formulation stability and, simultaneously, epidermal distribution effectiveness.

Liposomes are formed by phospholipid bi-layers dispersed in aqueous media. These vesicles are able to interact with hydrophobic and hydrophilic substances which will be located inside the vesicle according to their physical-chemical characteristics. The capacity of a substance to electrostatically interact with liposomal bi-layers determines the incorporation efficacy. Water soluble drugs will be included in the liposome's aqueous compartments while hydrophobic drugs will be associated with the bi-layer hydrophobic region (hydrocarbon chains). Other substances may be associated with the membrane through electrostatic interactions. Ceramides will probably interact with liposomes by this mechanism due to their amphiphilic structure with a polar

group and a long hydrocarbon chain.

The use of dipalmitoylphosphoglycerol (DPPG) a negatively charged lipid, in the preparation of liposomes may be advantageous since the negative charge on the vesicles surface leads to vesicle-vesicle repulsion. The addition of a charge-inducing agent to the liposomal preparation increase the electrostatic repulsion energy avoiding vesicle aggregation and fusion, increasing the shelf life of the formulation (14).

Liposomes containing human-identical ceramides have been described to penetrate and interact with human stratum corneum components (6, 13) despite some difficulties in its technical management (9), while ceramides from other origins, such as yeast derived acylceramides are known to cause aggregation and fusion of liposomes (1).

For the specific purpose of this study which basically consisted in defining a formulation pattern containing human-identical ceramides for topical application, DPPG-liposomes were considered as an appropriate vehicle and tested accordingly.

MATERIAL AND METHODS

Formulation and Ceramide inclusion

Liposomes were prepared containing 0.1% (w/w) of ceramides (kindly supplied by Gist-Brocades-Netherlands). Firstly, 180-200mg of lipids 1,2-Dipalmitoyl-sn-glycero-3-phosphoglycerol, Na (DPPG, Na) were solubilized, with or without ceramides in 5 ml of an appropriate mixture of solvents (chloroform: methanol; 1:1) and this solution was dried under vacuum. The obtained film was then suspended in Phosphate buffer (pH 7.4) with the aid of a sonication probe. The empty liposomes and those containing 0.1% ceramides III, III+IIIb, or VI had an average diameter ranging from 100 to 500nm. Liposomal structure was identified by optical microscopy.

The following liposomal formulations were prepared and characterised:

- (A) containing empty liposomes
- (B) containing liposomes with 0.1% ceramide IIIs (III+IIIb)
- (C) containing liposomes with 0.1% ceramide VI

Characterisation of the liposomal formulations

The formulations were characterised by means of differential scanning calorimetry (DSC) (Perkin-Elmer Thermal Analysis System, UK) and photon correlation spectroscopy (PCS). DSC characterisation basically consisted in submitting liposomes to several temperature cycles (three heating / cooling cycles, ranging from -10°C to 90°C /min) through which DSC profiles changes could be obtained and studied. DSC analysis was performed using a heating rate of 10°C/min and a cooling rate of 20 °C/min. PSC measurements were carried out using a Malvern (Malvern Zetasizer, UK).

RESULTS AND DISCUSSION

Incorporation of ceramides in liposomes present several difficulties that should be taken into account to achieve a stable formulation. Generally the incorporation capacity of liposomes to hydrophobic molecules increases as the lipid content increases or with the increase of the liposome dimension. In the case of amphiphilic molecules the liposome loading efficiency mainly depends on the molecule affinity for the bilayer, on the density and charge distribution at the liposomal membrane as on the medium ionic strength (14).

It was also considered that ceramide would be incorporated into a lipid bilayer composed of long-acyl chains so that they would be completely surrounded by a hydrophobic environment. DPPG was chosen for this purpose, also taking

into account that these phospholipids proved to be up-taken and non-toxic when incorporated in negatively charged liposomes applied in the dorsal pig's skin (13) .

Preparation of liposomes include different steps, involving a lipid hydration step followed by redispersion and reduction of vesicle size. In the present work, sonication was chosen for liposome preparation.

Ceramides may promote vesicle aggregation because these molecules do not necessarily exhibit any sort of preference for a orientation within a membrane so that the formation of membrane-membrane links is a real possibility. We tried to overcome this problem choosing DPPG liposomes which repel one another.

Liposomal formulations were fully controlled and characterised using the DSC calorimetric method. This technique is no time-consuming and allows full assessment of phase separation and formulation's stability (5, 3) .

DSC profiles of empty liposomes and of liposomes containing 0.1% (w/w), III-IIIb (IIIs), and VI are shown in Figures 1, 2, 3. Table I lists the values obtained with the formulations for peak temperature and the amplitude of the reaction involved.

Empty liposomes showed a steady behaviour when submitted to the DSC temperature cycles (Figure 1). The unchanged phase transition temperature between curves 1 and 2 confirmed the good thermal stability of this lipid.

Liposomes containing ceramide III analysed 24 hours after preparation (plots not shown) exhibited phase separation on the first heat cycle. The second and third runs presented a clearly visible phase separation phenomena and peak separation. The peak was characteristic of the DPPG alone, showing that this formulation was unstable and separation occur.

This instability lead us to the preparation of liposomes containing a mixture of ceramide III (III and IIIb; 60:40, containing a total 0.1% w/w). The DSC profile presented by these liposomes is shown in Figure 2.

Table I			
Formulation	Runs	Peak (°C)	ΔH (J/g)
<i>Empty Liposomes</i>	1	42.0	3.5
	2	42.2	2.8
<i>Liposome + ceramide III+IIIb</i>	1	39.5	0.7
	2	41.4	0.9
<i>Liposome + ceramide VI</i>	1	50.1	4.3
	2	45.8	2.7

Table I. Peak temperatures and ΔH obtained with liposomal formulations (Peak - peak temperature ; ΔH - peak temperature area).

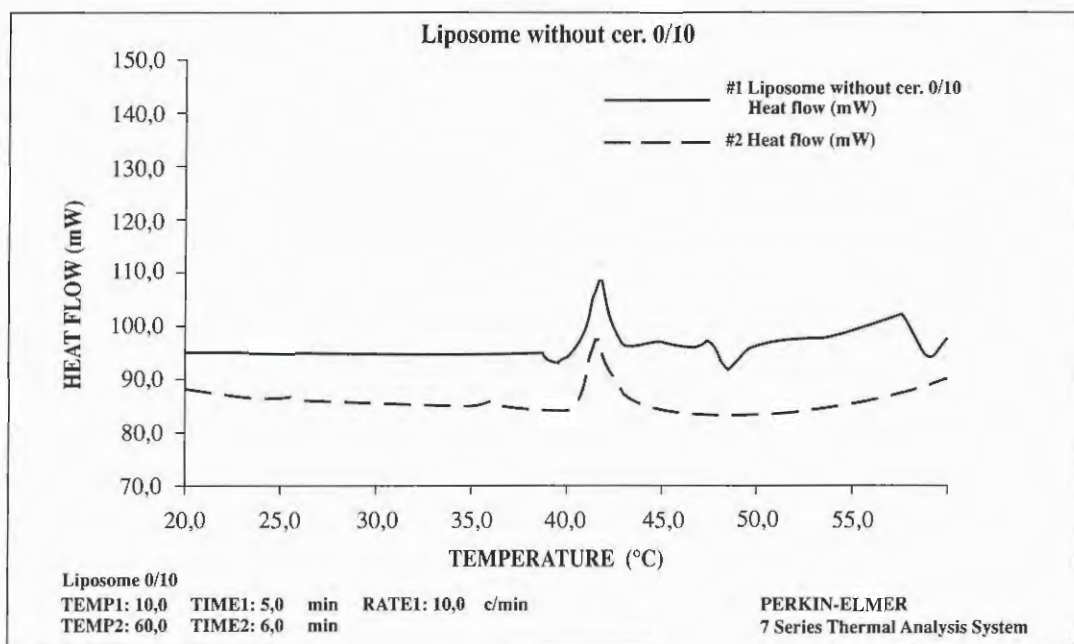


Fig. 1. DSC profile of empty negatively charged liposomes (see text)

Despite the differences in the first thermograms when compared to further runs, probably indicating that a rearrangement has occurred, this liposomes did not showed a clear separation from the lipids glass transition temperature, indica-

ting a strong interaction with DPPG. This is probably due to the fact that ceramide mixture (III and IIIb) has a lower transition temperature probably induced by ceramide IIIb inclusion. The presence of a double bound in the acyl

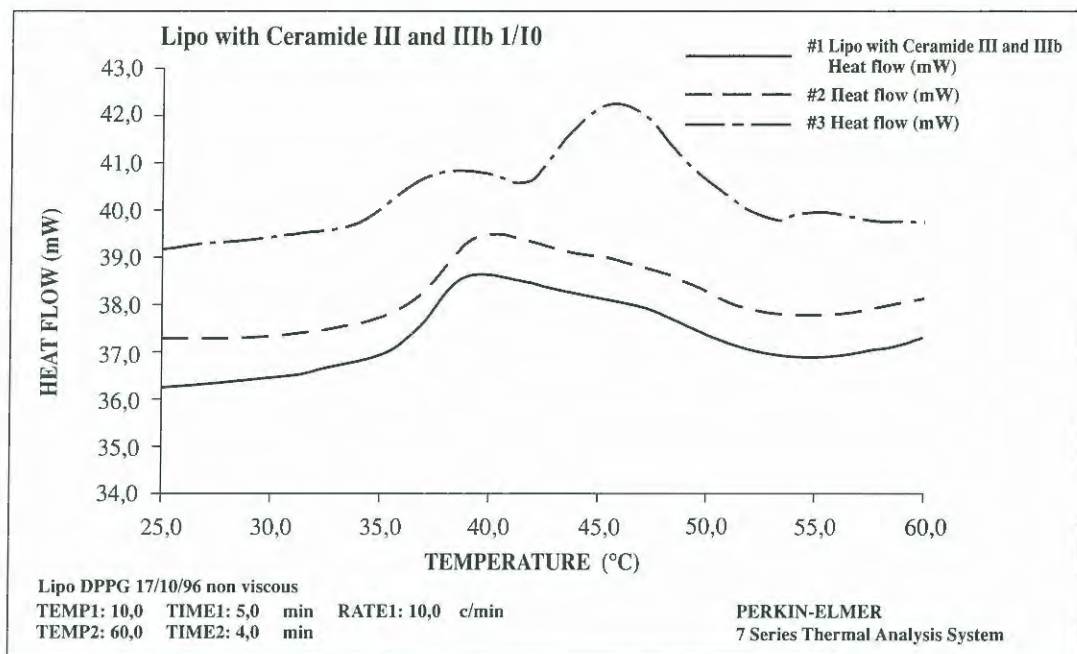


Fig. 2. DSC profile of negatively charged liposomes containing ceramide III - IIIb mixture (see text)

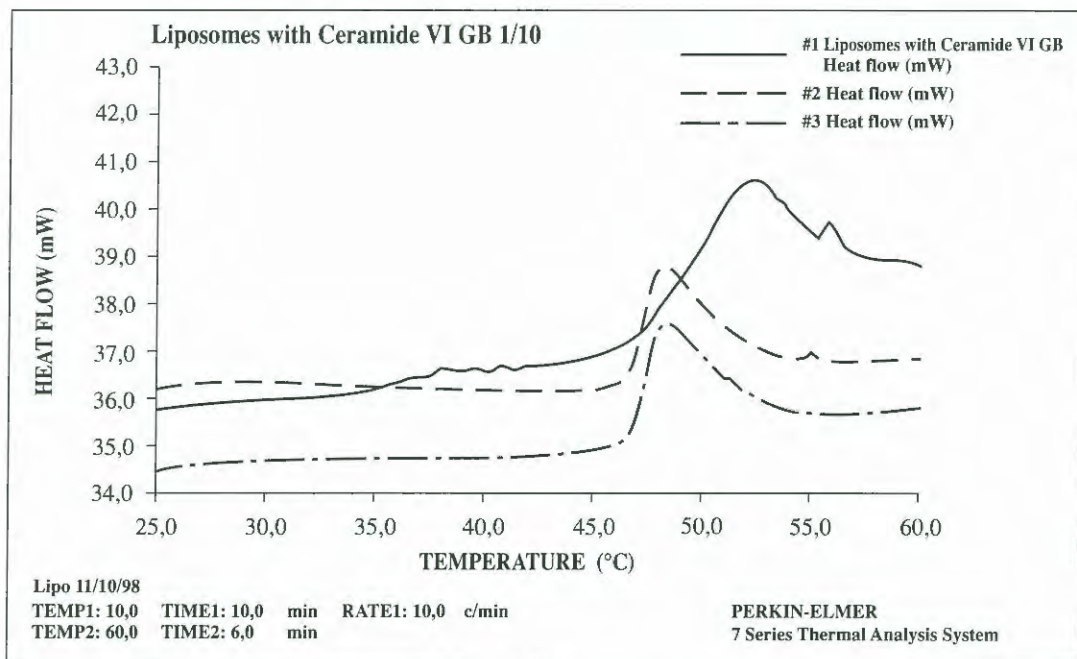


Fig. 3. DSC profile of negatively charged liposomes containing ceramide VI (see text)

chain of ceramide IIIb decreases rotation and system enthalpy, reducing the transition temperature of the lipid mixture (10).

DSC profile of liposomes containing ceramide VI (0.1% w/w) (Figure 3), clearly showed a slight change in the phase transition temperature comparing curves 1 and 2. These changes probably reflect a reorganisation of the membrane structure. However, subsequently heat cycles did not revealed any major changes and the formulation remained stable. The peak temperature remained at 46°C, far from the DPPG alone (42°C), indicating that molecules of ceramide were interacting with the membrane lipids causing a marked change in the formulation's phase transition temperature.

CONCLUSIONS

The present paper clearly suggests that the incorporation of ceramides in DPPG liposomes is feasible and appears to be an adequate strategy to prevent lipid phase separation, ceramide aggregation and precipitation during storage. The results also suggest that liposomes can be considered as preferential vehicles for ceramides of human origin as in the present case. The preparation methodology chosen allow to easily obtain small vesicles particularly useful for topical formulation purposes.

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A PEAT OF PALEOZOIC ORIGIN AS A MULTIFUNCTIONAL INGREDIENT FOR SKIN CARE

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Key words: Peat, skin hydration, beauty mask, free radicals, skin ageing, lipid peroxides, vitamin-C

Synopsis

A peat of paleozoic origin was used recently for skin care treatments. This organic peat, having the appearance of a brown blackish mixture, originates from the anaerobic decomposition of plants lived 30.000 years ago. Given its rich composition in minerals, sterols and fatty acids our team decided to test its activity on ageing skin, using it as a face mask.

The test was carried on a group of 30 women aged between 47-62 for a 90 days period. The peat and a comparative vehicle formulation being applied, on randomized basis, to bilateral symmetrical areas of the face. Each subject was used as her own control and the mask was applied 3 times a week, leaving it to act 15 minutes and controlling skin hydration, TEWL, surface lipids, skin firmness, skin hydroperoxides and the depigmentation activity. The obtained result, controlled weekly, has showed an interesting anti-ageing activity of this peat when weekly used as mask treatment. The daily and combined use with a vitamin-C cream has increased the results.

Riassunto

Una torba di origine paleozoica è stata usata recentemente per trattamenti di cura della pelle. Questa torba si presenta come una miscela marrone-nerastra originata dalla decomposizione anaerobica delle piante vissute oltre 30.000 anni fa. Data la sua ricca composizione di minerali, steroli e acidi grassi, la nostra equipè ha deciso di testare la sua attività sulla pelle invecchiata usandola come maschera per il viso.

Il test è stato effettuato su un gruppo di 30 donne di una età compresa fra i 47-62 anni per un periodo di 90 giorni. Una torba sotto forma di maschera e una formulazione di paragone sono state applicate a doppio ceco su aree bilaterali simmetriche del viso.

Ogni soggetto fungeva da controllo di se stesso. La maschera è stata applicata 3 volte alla settimana e lasciata agire per 15 minuti. Settimanalmente è stata controllata l'idratazione, la TEWL, i lipidi di superficie, l'elasticità, gli idroperossidi e l'attività depigmentante. I risultati ottenuti hanno posto in evidenza una interessante attività anti-invecchiamento legata all'uso settimanale di questa nuova torba. I risultati vengono

ulteriormente migliorati dall'uso giornaliero di una crema a base di vitamina-C.

A peat or bio-mud of paleozoic origin was used recently for skin treatments (1-5). This organic bio-

mud, originated from the anaerobic decomposition of plants lived 30,000 years ago, has the appearance of a brown-blackish mixture at pH of 5.1 and a rich content of proteins, aminoacids, sterols free fatty

Table I

CHEMICAL AND PHISICAL CHARACTERISTICS

pH of centrifuged liquid	5.1
Dry residue at 105°	10,36%
Ashes	14,58% on dry residue
Ammonia on centrifuged liquid	traces
Nitrites on centrifuged liquid	traces
Phosphates on centrifuged liquid	absent
Bisulphides on centrifuged liquid	absent
Chloroformic extract	0.59 on dry residue
Organic nitrogen as per Kjedal	1.85% on dry residue
Proteins and aminoacids (Bradford)	7,35% on dry residue

Table II

CHEMICAL AND PHISICAL CHARACTERISTICS PEAT MUD ASHES' ANALYSIS

Na ₂ O	1,155	Equal to	Na+	0,85%	(0,37 m eq/g)
K ₂ O	0,24%	Equal to	K+	0,20%	(0,05 m eq/g)
CaO	29,10%	Equal to	Ca++	20,80%	(10,40 m eq/g)
MgO	2,22%	Equal to	Mg++	1,34%	(1,10 m eq/g)
SrO	0,08%	Equal to	Sr++	0,07%	(0,01 m eq/g)
Fe ₂ O ₃	5,04%	Equal to	Fe+++	3,53%	(1,89 m eq/g)
MnO	0,10%	Equal to	Mn++	0,08%	(0,03 m eq/g)
Ni++	12 ppm				
Zn++	39 ppm				
Cr+3	2,8 ppm				
Pb++	0,2 ppm				
Cu++	17,0 ppm				
Cd++	Traces				
Li+	Traces				
Al ⁺³	Traces				
As ⁺³	0,60 ppm				
Hg++	0,07 ppm				
Se ⁺⁴	Traces				
Cl-	0,77%				
SO ₃	34,70%	Equal to	SO ₄ +	41,70%	(8,68 m eq/g)
P ₂ O ₅	0,02%	Equal to	PO ₄ ⁻³	0,03%	(0,009 m eq/g)
N ₂ O ₅	0,48%	Equal to	NO ₃ -	0,56%	(0,09 m eq/g)
SiO ₂	14,00%				

acids and trace elements (Tab. I and II).

AIM

Given these interesting contents the purpose of this study was to test its activity on skin ageing, using this bio-mud as a normal face mask.

MATERIALS AND METHODS

Materials

Bio-mud (mask A): 100% natural brown-blackish organic mixture having characteristics showed in tables I - II.

Control mud (mask B): as control formulation it was used a common clay mask taken from the market.

Vitamin-C - phospholipidic cream : Aqua (water), Cocoglycerides, Lecithin, C12-16 alcohols, Palmitic acid, Olea europaea (unsaponifiable olive oil), Butyrospermum parkii (shea butter), Cyclomethicone, Glycerin, Ethoxydiglycol, Sodium PCA, Glyceryl stearate, PEG-100 stearate, Cetearyl alcohol, Dimethicone, Glycine, Butylmethoxydibenzoyl methane, Citrus aurantium (orange extract), Tocopheryl acetate, PEG-8, Tocopherol, Ascorbyl palmitate, Ascorbic acid, Citric acid, Titanium dioxide, Mica, Xanthan gum, Parfum (fragrance).

Skin toner : Aqua (water), Calendula officinalis, Sorbitol, Hamamelis virginiana, Chamomilla recutita, Glycine, Sodium PCA, Hydrolyzed soy protein, Disodium EDTA, Imidazolidinyl urea, Chlorexidine digluconate, Propylene glycol.

EXPERIMENTAL DESIGN

The study was carried on 30 volunteer women of phototype 3 aged between 47-62 for a 90 days period. All selected volunteers showed clear signs of photoageing on their face such as wrinkles, hyperpigmented spots, dryness and dehydration. 10 other women served as untreated control using cream and toner twice a day.

The mask was applied as a thin layer 3 times a week

for 36 total applications leaving it to act 15 minutes each time. Soon after it was removed and cleansed with a cotton pad soaked always with the same alcoholic skin toner supplied by us. On the wet skin was applied the vitamin-C cream.

A double-blind treatment was performed after teaching patients how to apply the mask A and B in the evening (8 p.m.) at home to the right or left half of the face. The study masks, packaged in identical tube (200 ml) had to be always applied to the same designed skin area (right or left).

This cosmetic treatment lasted 12 weeks between November 1997 and January 1998, and tests were made always by the same researcher at 0, 4, 8 and 12 weeks, always on the day following the last application. During the entire study the researcher checked also that the mask had been regularly applied according to instructions.

During the treatment no other cosmetic products was used except the vitamin-C - phospholipidic cream provided by us. This cream had to be applied all over the face in the morning and in the evening. In this way we had the possibility of controlling skin hydration, surface lipids, skin firmness, skin depigmentation and skin hydroprolides.

Thirty days before starting the study all systemic drugs or dietetics were discontinued.

HYDRATION AND SURFACE SKIN LIPIDS

Quantitative measurements of skin hydration and surface skin lipids were performed according to Cardillo and Morganti methodology (6) before (0) and after 4, 8 and 12 weeks of treatments, always in the morning from 10 to 12 on skin cleaned the night before.

This computerized methodology collects up to 10/15 measurements over 25 second sampling period and records the mean value automatically standardizing the environmental conditions, since it is known that rate of water loss and consequently skin hydration is affected by environmental factors. To alleviate the possibility of the patient's

physiologic state, the other major factor influencing rate of water loss, it was asked to rest in the testing room for 30 minutes before measurements. Possible site-to-site variation was eliminated by random selection of treated sites.

Skin hydration was assessed by measuring total capacitance of the horny layer and the values are expressed in 3C arbitrary units; skin lipids, absorbed by a special frosted plastic foil, are measured photomethrally and expressed as ($\mu\text{g}/\text{cm}^2$).

The instrument probe was held perpendicular to the skin surface and allowed to equilibrate for 20 seconds. All the obtained results are expressed as mean values of the measurements performed on four different right or left sites (cheek, forehead, chin and nose). The obtained results are reported on fig. 1-2.

SKIN DEPIGMENTATION

According to Duteil and Ortonne (7) the activity of bio-mud was assessed in a light induced skin pigmentation. 4 zones were treated, all located on the middle of the back: two were treated respectively with the bio-mud, and the clay control mask and two were left untreated.

Each product was applied 3 times a week for 12 weeks, leaving it to act 15 minutes. At the end of the 12 weeks, 3 test zones were exposed to UVB-UVA rays with a total of 3 times, the minimal erythema dose distributed progressively over 3 consecutive days. 10 days after last irradiation, the induced photopigmentation was assessed by a chromameter.

Compared with the commercial control treatment the bio-mud proved a slightly preventive depigmenting effect on light-acquired skin pigmentation. (Fig. 3)

SKIN FIRMNESS

Skin firmness was evaluated measuring the skin elasticity by the use of a torsional equipment (8). Torsional equipment acts through a disk glued to the skin, which is rotated by a motor powered by a controlled voltage, thereby loading the peripheral skin with a torque, the value of which can be adjusted

and evaluated.

This test has the purpose to quantitatively assess the skin changes which are usually detectable by palpation but not measurable otherwise.

The obtained results are reported on fig. 4.

MEASUREMENT OF SKIN FREE RADICALS

Skin free radicals were evaluated measuring the concentration of lipid peroxides according to methodology of Pugliese (9).

A glass cylinder measuring 5 cm in diameter was placed on the skin and held snugly, extracting the lipids by two different aliquots of 5 ml portion of acetone. The lipid residue, dried under nitrogen stream, was emulsified with sodium dodecyl sulfate, acetic acid and thiobarbituric acid. The supernatant extracted, read at 531 nm, gave the concentration of lipid peroxides as MDA precursors.

The obtained results are reported on fig. 5.

RESULTS AND COMMENTS

As is shown in figures 1-5 this Bio-Mud proved to have interesting cosmetic properties, that definitely enhance both skin moisture (+ 67%), skin lipids (+55%) and firmness (+ 28%) (Fig. 1, 2, 4).

Moreover, it has been proved an interesting depigmenting activity and it was effectiveness towards free radicals (Fig. 3,5).

We would like to stress that these activities are performed at a certain level also by the vitamin-C cream, when it is used as a base of a daily treatment. However, they are clearly strengthened by the specific use of the bio-mud.

Indeed, when this bio-mud is replaced by a common mud, these properties are practically nonexistent. Moreover the only revealed efficacy is, in our opinion, due to the activity of the vitamin-C cream.

Therefore we can deduce that the vitamin-C cream has a remarkable activity on free radicals, surface lipids and skin moisture. It is capable of rebalancing ageing skin bringing back skin values to normality.

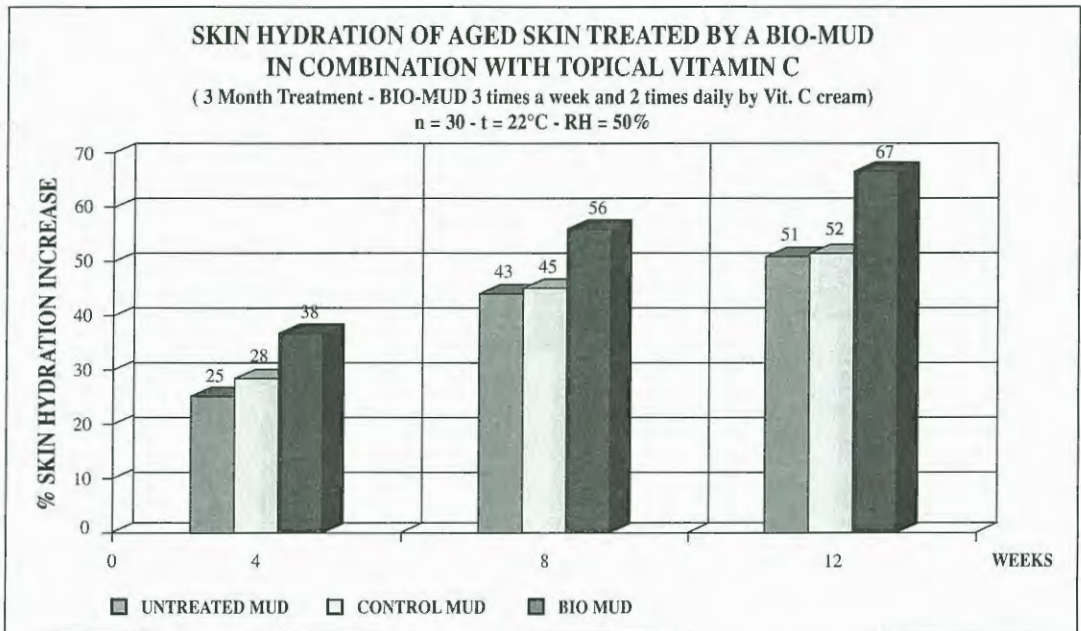


Fig. 1. All *p* values are highly significant ($p < 0.005$) as baseline values and as to groups. Untreated Mud versus Control Mud NOT-Significant.

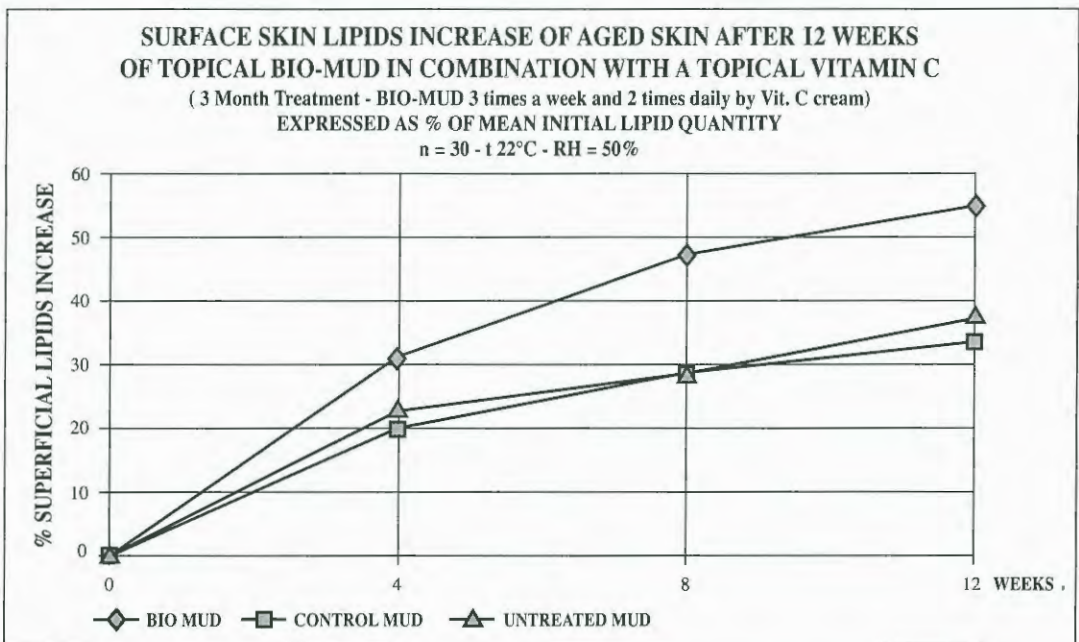


Fig. 2. All *p* values are highly significant ($p < 0.005$) as baseline values and as to groups. Untreated Mud versus Control Mud NOT-Significant.

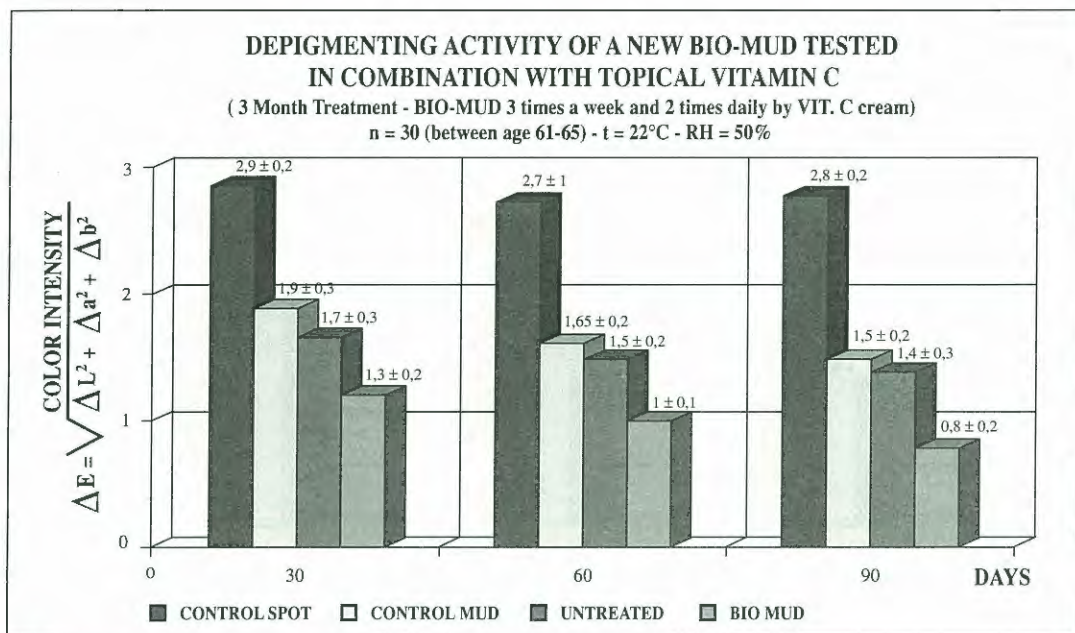


Fig. 3. All *p* values are highly significant (*p* < 0.005) as baseline values and as to groups. Untreated Mud versus Control Mud NOT-Significant.

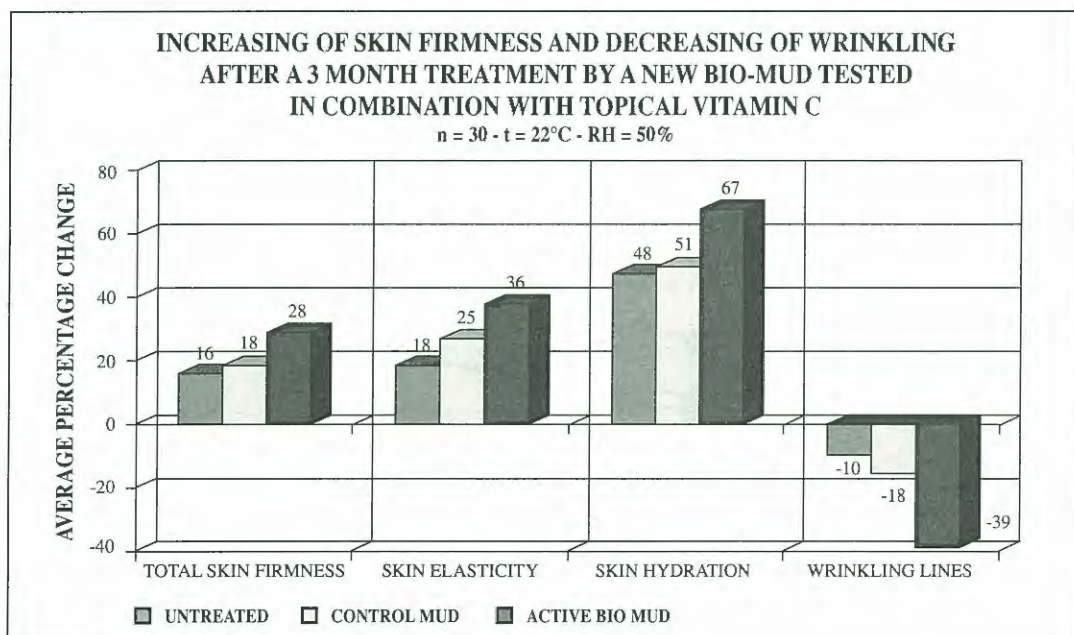


Fig. 4. All *p* values are highly significant (*p* < 0.005) as baseline values and as to groups. Untreated Mud versus Control Mud NOT-Significant.

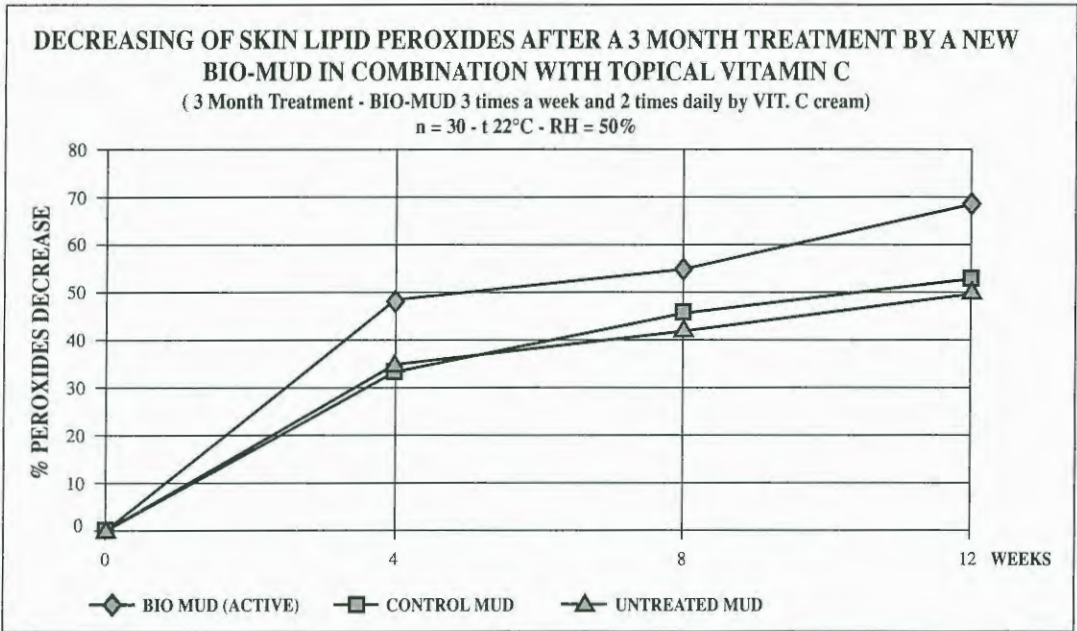


Fig. 5. All *p* values are highly significant ($p < 0.005$) as baseline values and as to groups. Untreated Mud versus Control Mud NOT-Significant.

On the other hand, Bio-Mud clearly enhances its qualities.

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TRAUMATIC NAIL ABNORMALITIES

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Key words: *self-induced nail disorders, post-traumatic onychodystrophies, occupational onychodystrophies*

Synopsis

The nail plate is frequently affected by traumatism that can be post-traumatic, occupational or self-induced. Among the self-induced nail disorders a psychiatric counselling must be sometimes considered. These include the "median dystrophy", the "Heller's canaliform dystrophy", the "onychophagy" and the "onychotillomania".

The post-traumatic onychodystrophies include traumas of the pterigium, subungual haematomas, "melanonychia striata", "ingrown nail", "pincer nail" and "onychogriphosis". Lastly, there are occupational onychodystrophies, including "onychoschizia" or "brittle nails", "koilonychia", "chronic paronychia" and "onycholysis".

Riassunto

Le unghie sono frequentemente colpite da traumi di varia origine. Questi possono essere chirurgici, accidentali, professionali o auto-provocate. Tra le patologie ungueali auto-provocate deve spesso essere preso in considerazione un consulto psichiatrico. Tra queste patologie si rilevano la "distrofia mediana", la "distrofia canaliforme di Heller", la "onicofagia" e la "onicotillomania".

I traumi, chirurgici o accidentali, provocano fissurazioni dello pterigio, ematomi subungueali, "melanonychia striata", "unghia incarnita", "unghie a pinza" e "onicogrifosi". Infine, ricordiamo le patologie ungueali da cause professionali, tra cui "fragilità ungueale" o "onicoschizia", "coilonychia", "perionissi cronica" e "onicolisi".

The nail plate is frequently affected by traumas of different origin and due to its slow growth rate, signs of previous traumas remain on the nails for several months.

SELF-INDUCED NAIL DISORDERS

1. Median dystrophy

This is a very common nail plate disorder, occurring on the thumb or, less frequently, on the second finger of one or both hands (Fig. 1). Median dystrophy is usually caused by repeated self-induced damage caused by the patient who makes a pressure on the base of the nail with the index finger of the same hand. Clinically, the nail plate shows a central longitudinal depression, crossed by small transversal lines (1). Occasionally, the dystrophy acquires a darkish colour due to deposition of exogenous material. The cuticle is often damaged or lost.

The treatment requires the cooperation of the patient,

who must stop the habit of pressing and pushing back the cuticle. In case of paronychia, twice daily application of timolol 4% in clorophorm lotion can be beneficial.

2. Heller's canaliform dystrophy

Heller's canaliform dystrophy is localized on the thumb of one or both hands and can also be considered a traumatic condition.

The longitudinal dystrophy is much deeper and depressed and reaches the distal portion of the nail, forming a kind of "point of an arrow" or "Christmas tree" (2). Sometimes a characteristic enlargement of the lunula is observed, probably due to the continuous trauma in the matrix area. This disorder can heal spontaneously, but relapses are frequent.

3. Onychophagy

Onychophagy or nail-biting is one of the most fre-



Fig. 1. Self-induced median dystrophy

quent causes of nail alterations. Onychophagy leads to the progressive disappearance of the nail plate with exposure of the hyponychium and nail bed. Moreover, the continuous trauma can be the cause of acute paronychia as well as periungual warts and pyogenic granulomas.

In very severe cases a striated melanonychia can be encountered, caused by the post-traumatic activation of the nail matrix melanocytes. In children, onychophagy must be considered paraphysiological and tends to disappear after puberty. When persists during adulthood, onychophagy has no favorable prognosis and may require psychiatric counselling (3-4).

4. Onychotillomania

This pathology can be the symptom of a severe psychiatric disorder. The nail alterations are different depending on the modality and the instruments utilized by the patient (Fig.2). The repeated traumas

often cause haemorrhages of the nail bed and, sometimes, haematomas. Erosions, ulcerative lesions and atrophic scars may be observed. Sometimes, the matrix injury is so dramatic that onychotillomania is indistinguishable from other onychodystrophies, such as nail lichen planus. Usually the patient refuses to admit that the damage is self-induced (4-6).

POST-TRAUMATIC ONYCHODYSTROPHY

Traumatic insults to the nail matrix often cause a permanent onychodystrophy. When the matrix is diffusely affected, the nail plate can be totally or partially absent.

1. Fissuration, haematomas, melanonychia

A chronic distal nail matrix trauma causes a fissu-



Fig. 2. Onychotillomania

ration of the open margin of the nail plate. When the trauma is acute, it provokes a subungual haematoma. In this case, a blood drain is useful to avoid matrix compression.

The subungual haematomas are different from those in other cutaneous areas, because the blood accumulates in the deepest nail plate layers.

This explains why the haematomas are progressively eliminated with nail growth.

Rarely, a very severe trauma can cause a partial nail bed amputation, so that the distal nail plate has an overcurvature on the bed, which appears shorter than normal. Toenails can also be affected by traumatic diseases. These traumatizations can be caused by the use of tight shoes, high-heeled shoes or tennis-shoes, but very often there is a preexisting natural predisposition.

While walking, the repeated pressure on the toenail causes a traumatic onycholysis, which is usually bilateral, and often colonized by fungi and/or bacteria.

The treatment includes avoidance of trauma and topical application of antiseptic ointments on the nail bed, after the mechanical avulsion of the damaged portion of the nail plate. Several foot malformations can produce overlapping of the toes with lateral onycholysis or friction melanonychia (Fig.3) due to the pressure (7-9).

2. Ingrowing nail

Ingrowing nail is most frequently seen in young adults, especially males. This condition usually affects the great toenail and may be bilateral.

Ingrowing toenail is most frequently caused by the congenital malalignment of the big toenail (10). Other predisposing factors are hyperhidrosis, abnormally long toes, congenital excessive convexity of the nails and/or hypertrophic lateral nail fold.

This problem can be inherited as an autosomal dominant trait. In this condition, the edge of the nail plate forms spicules that penetrate into the lateral nail fold



Fig. 3. *Friction melanonychia*

epithelium, provoking a foreign body inflammatory reaction. The lateral nail fold is painful and shows erythema and swelling.

At a second stage, a pseudopyogenic granuloma and a xeropurulent exudation may be observed. In the most severe cases, the nail fold becomes hypertrophic and partially covers the nail plate (11).

The granulation tissue can be reduced by application of a topical steroid. The embedded spicula should always be removed. It is then useful to place nonadsorbent cotton beneath the nail plate to elevate its lateral edge.

When the condition is recurrent, a chemical avulsion of the lateral matrix is advisable, using 85% aqueous phenol solution.

3. Pincer nails

In pincer nails there is a pronounced transverse overcurvature of the nail plate of the great toenail that compresses the lateral margins on the nail bed. This

onychodystrophy causes considerable pain. It is usually of traumatic origin due to pressure from inadequate shoes or subungual exostosis (12-13).

4. Onychogriphosis

In onychogriphosis one side of the nail matrix grows quicker than the other.

This asymmetric nail growth creates an overcurvature of the nail plate backwards to the nail bed portion where the nail grows more slowly. The nail becomes very hard, yellow in colour and may be crossed by numerous transversal furrows. The nail bed is always hyperkeratotic.

Onychogriphosis affects the toenails, most commonly the big toe. This disorder is usually encountered in elderly patients, affected by peripheral vascular diseases or podiatric alterations.

The treatment of onychogriphosis is conservative, with chemical avulsion of the nail plate and a periodical pedicure (14).

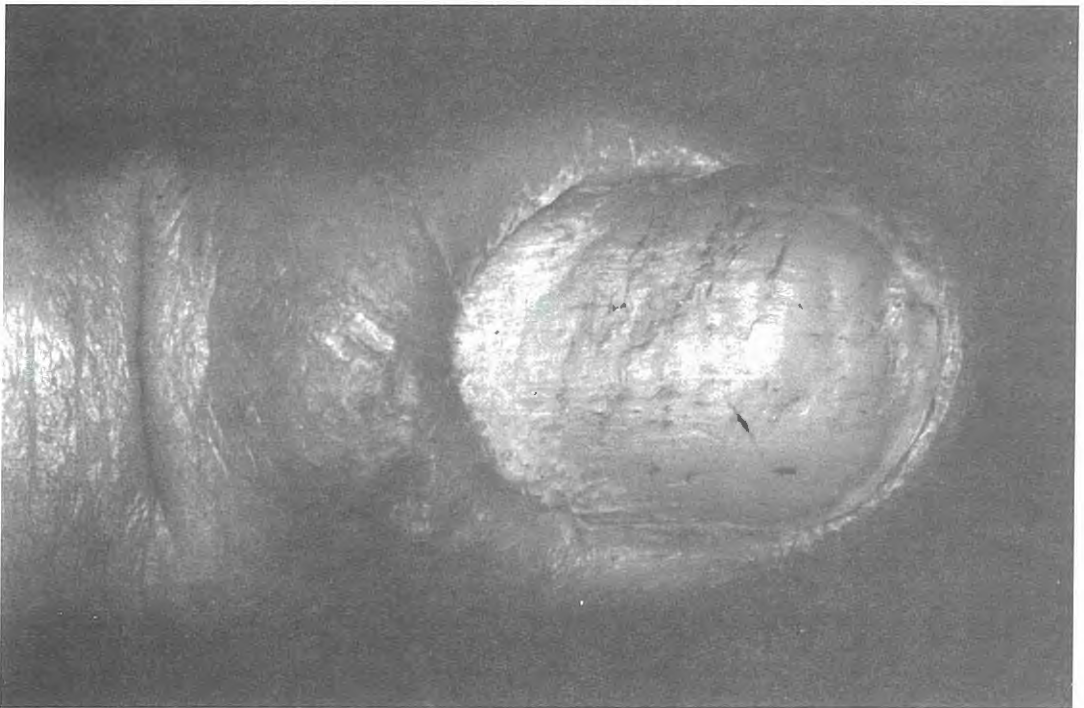


Fig. 4. Chronic paronychia

OCCUPATIONAL ONYCHODYSTROPHIES

1. Nail brittleness

Nail fragility is an environmental disorder. The frequent immersion of the hands in water and the contact with detergents, alkalis or solvents produces nail dehydration and brittleness. Most commonly the nail plate shows "onychoschizia" with progressive exfoliation of the superficial layers.

Oral biotin 5 mg/daily improves nail brittleness (15).

2. Koilonychia

In koilonychia the nail shows a spoon-shaped appearance. This condition is a consequence of nail plate thinning and may be due to occupational causes or be a consequence of iron deficiency.

3. Chronic paronychia

Paronychia (Fig.4), the chronic inflammation of the periungual tissue, generally begins with the traumatic elimination of the cuticle due to manicure or maceration. This permits penetration of microorganisms and/or irritative agents under the proximal nail fold. As a consequence, microbial agents, including yeasts (*Candida albicans*) and bacteria (*Pseudomonas aeruginosa*, *Proteus mirabilis*, *Proteus morganii*, *Escherichia coli* and *Staphylococcus spp.*) are frequently isolated.

In some cases, chronic paronychia may be the consequence of an immediate hypersensitivity reaction to food allergens. Clinically, the periungual tissues show erythema and swelling. This is frequently associated with superficial nail plate alterations, due to injury of the proximal portion of nail matrix.

The treatment consists of isolation and elimination of predisposing factors, including traumatic cosmetic treatments. Cortisomic creams are helpful,



Fig. 5. Idiopathic onycholysis

but only with good protective habits by the patient (11, 16-17).

4. Onycholysis

Onycholysis is the separation of the nail plate from the nail bed at the distal or lateral margins (Fig.5). The nail plate is white-coloured due to air penetration, whereas a *Pseudomonas spp.* colonization, following the onycholysis, can give a yellow-green appearance. One or more nails may be affected and usually the condition is idiopathic. Sometimes it can be a feature of systemic disorders or the side effect of drug agents. In the case of traumatic onycholysis due to pressure from footwear, the toe nails can also be affected, although onycholysis is usually seen in finger nails. Idiopathic onycholysis may be frequently observed in housewives, as a consequence of the frequent immersion of the hands in water and the contact with detergents and solvents (18-19).

Onycholysis may be encountered in nail psoriasis, where it is associated with other typical features of this dermatosis, including pitting, discolouration, splinter haemorrhages and oily spots (20).

Onycholysis is also the first sign of onychomycosis. Differential diagnosis, if only one finger is affected, must be made also with subungual tumours.

Treatment consists of removing the damaged portion of nail plate and the application of antibiotic creams to avoid colonization by microorganisms.

Photoonycholysis is an uncommon condition occurring after the ingestion of phototoxic drugs, such as tetracyclines, and as a complication of PUVA therapy (21).

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MEDICINA ESTETICA. METODOLOGIE DIAGNOSTICHE, PREVENTIVE E CORRETTIVE

AESTHETIC MEDICINE:
DIAGNOSTIC, PREVENTIVE, CORRECTIVE METHODS

C.A. Bartoletti

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other Countries: Lit. 160.000

This interesting book offers a description of over seventy non-invasive treatment methods used in Aesthetic Medicine which were presented at the 19th National Conference of the Italian Society of Aesthetic Medicine (S.I.M.E.).

The first four chapters discuss the most recent methods used in Aesthetic Medicine to prevent or correct the most commonly found defects and imperfections such as obesity, localized fat, oedematous and, fibrosclerotic panniculopathies, commonly called "cellulite", phlebolympopathies, skin ageing, hair loss and hypertrichosis. The last chapter completes the presentation by reporting the most recent Italian and international developments in the diagnosis of the imperfections of the face and body. The various diagnostic and treatment methods are extensively described and illustrated by over a hundred among the most qualified experts in Aesthetic Medicine.

The book contains descriptions of the following, methods and approaches:

Morphological and functional assessments for making diagnoses:

Postural assessments (plantar support, body posture), Body Assessment. Skin assessment (skin check-up, trichological check-up, epiluminescent dermatoscopy). Angiological assessment (Doppler ultrasound, videocapillaroscopy, Dynamic telethermography). Ultrasound assessment of the hypoderm. Densitometry of body tissues.

Methods for ensuring Hygiene and Prevention:

Health-conscious diets. Physical activities for keeping fit. Relaxation techniques (autogenous training and biofeedback, stretching). Skin hygiene and cosmetic treatment. Spa techniques.

Methods for correcting obesity:

Diet therapy. Physical activity. Drug therapy. Surgery.

Methods for correcting phlebo-lymphopathies:

Photoderm. Scleropathy. Outpatient Phlebectomy. Chiva. Medical treatment of lymphedema. Elastocompression. Manual and mechanical lymphatic drainage.

Methods to correct localized fat and edematofibrosclerotic disorders of the panniculus adiposus (cellulitis):

Mesotherapy. Electrolipolysis. Oxygen and ozone therapy. Carboxytherapy. Ultrasound hydrolipoclasia.

Liposculpture. Body-building. Electrostimulation of the muscles.

Methods for correcting skin ageing:

Botox, Collagen, HylanB, Sodium hyaluronate, Artecoll, Goretex, Lipofilling. Depigmenting, Peeling (Retinoic acid, glycolic acid, resorcinol, trichloracetic acid, Exoderm, Molding mask, Cryopeeling). Microabrasion of the skin, Skin abrasion, Cryotherapy, Planned diathermal surgery, Medical tattoos, Aesthetic dermography, Camouflage, Laser resurfacing, CO₂ ultrapulse, CO₂ Silk Touch, Erbium CO₂.

Methods for correcting baldness:

Medical treatment of baldness. Follicular microautotransplantation.

Methods for correcting hypertrichosis:

Laser epilation: Alexandrite LPIR, Epilight, Epilaser System.

New Developments in Aesthetic Medicine:

New non-invasive skin assessment methods: 3C System, Derming Tester, Assessment of skin texture (wrinkles). "Easy Peel", "Blue Peel" according to Obagi, High Potency peel.

New techniques:

Soft cryotherapy, Histofreezer.

New cosmetic active substances:

Aminocinchona, Betaglukan, Cytonacre, Terbinafina.

This volume has been edited by Carlo Alberto Bartoletti whose name is well known in the Italian and international circles of Aesthetic Medicine. He founded the Italian Society of Aesthetic Medicine in 1975 and has organized all of its national conferences. It is a few years now that he is the director of the Scuola Internazionale di Medicina Estetica of the Fatebenefratelli Foundation.

This is the first European book that brings together in a comprehensive manner all of the methods used in the practice of Aesthetic Medicine and is an indispensable working tool for all those who operate in this sector and for those who wish to specialize in this field. It is therefore an excellent reference book for the physicians, dermatologists and plastic surgeons who work in Aesthetic Medicine and for the pharmacists or biologists and in general for all the operators who in one capacity or another and either directly or indirectly have to do with this new and fascinating discipline.

P. Morganti, Ph.D

Editor in Chief



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5th Asian Dermatological Congress

ORIENTAL MEDICINE TOWARD THE WORLD

October 14-17, 1998 - Beijing, China

Organized by

Chinese Society of Dermatology

Co-Organized by

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Peking Union Medical College

Capital University of Medical Sciences

Under the Auspices of

Asian Dermatological Association

Chinese Medical Association

The Secretariat for the 5TH ADC
c/o Chinese Medical Association

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Scientific Program at a Glance for 5th ADC

Plenary Lectures	Hall 1		October 15	October 16	October 17
		08:30 - 08:50	Opening Ceremony	Klaus Wolff	Alfred W. Kopf
		08:50 - 09:10			Albert M. Kligman
		09:10 - 09:30	Rod J. Hay	Kunihiko Tamaki	James J. Leyden
		09:30 - 09:50		Shaoxi Wu	Fenella Wajnarowska
		09:50 - 10:10	Stephen I. Katz	Robin Marks	Ken Hashimoto
		10:10 - 10:30		Unandar Budimulja	Kunihiko Yoshikawa
		10:30 - 10:50	Takeij Nishikawa	Kimweng Chow	Stefania Jablonska
		10:50 - 11:10	Xuejun Zhu	Xiran Li	Shih-Feng Tsai
		11:10 - 11:30	Sungnack Lee	Jai il Youn	Xiangsheng Chen
11:30 - 11:50	Chu-kwan Wong	Jean Revuz	Michihito Niimura		
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	Hall 2	SS2: Allergic Skin Disorders (Schering Plough)	SS4: Acne (Galderma)	SS6: STD (Pfizer)	
15:20	Hall 3	WS ² 1: Dermatopathology (ASD ³)	WS7: Psoriasis	WS12: Cosmetic Dermat. (ISCD ⁴ Active Group)	
	Hall 8			WS13: Oriental Medicine	
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16:00 18:00	Hall 3	WS2: Dermatopathology	WS8: Psoriasis	WS14: Cosmetic Dermat.	
	Hall 6-7	WS3: Photodermatology	WS9: Dermatitis and Eczema	WS15: Skin Neoplasm	
	Hall 8	WS4: Pigmented Skin Disorders	WS10: Autoimmune Skin Disor.	WS16: Basic Science in Dermat.	
	Hall 10	WS5: Case Reports	WS11: Mycoses	WS17: Miscellaneous Skin Disord.	
	Hall 11-12	WS6: Infections Skin Disorders			
		Welcome Banquet at Great Hall of People		Hall 1: Farewell Banquet with Traditional Shows	

¹ SS: Sponsored Symposia² WS: Workshop³ ASD: Asian Society of Dermatology⁴ ISCD: International Society of Cosmetic Dermatology

5th Asian Dermatological Congress

1° ISCD WORKSHOP ON COSMETIC DERMATOLOGY



International Society of
Cosmetic Dermatology

17 October, 1998 - h. 13.20 - 15.20 - Hall 3
HAIR LOSS AND SKIN AGEING

Chairmen: P. Morganti, C.E. Orfanos

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5th Asian Dermatological Congress
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Chairmen: Y. Asada, Z. Yuan

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for more informations please contact:

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1° ISCD WORKSHOP ON COSMETIC DERMATOLOGY

Lectures and Posters

ABSTRACTS INDEX

5th Asian Dermatological Congress
1° ISCD WORKSHOP ON COSMETIC DERMATOLOGY
HAIR LOSS AND SKIN AGEING

UV AND HAIR WEATHERING

P. Morganti

President/Director R&D - Mavi Sud Srl Aprilia (LT) Italy

Head Dept. of Cosmetic Dermatology Accademia di Storia dell'Arte Sanitaria, Rome, Italy

The term "weathering" describes the structural changes in the hair shaft from root to tip due to the cumulative effects of environment, such as exposure to UV radiations, air pollutants, sea and chlorinated swimming pool water and cosmetic procedure such as combing, brushing, bleaching and permanent waving. Scalp hair, having anagen phase for up to 6 years and being subject to more weathering damage shows more deep cuticular and cortical degeneration, most noticeable at the distal ends.

The final result of the accumulated damage is many split and broken hair.

The hair becomes dry and brittle, losing its extensibility, springiness and lustre.

Moreover UV light lowers the tensile strength of hair and this damage is accelerated by sea and especially by pool chlorinated water which degrades protein at the epicuticle layer level.

Progressive deterioration of the cuticular and cortical layers facilitates further damage from usual grooming, such as combing, brushing or excessive blow-drying.

To minimize the environmental degradation of hair, it should be protected from solar radiation and extensive exposure to sea and swimming pool water by the use of suitable cosmetic products. This presentation will focus on the potential advantages of treating the hair with a non-ionic polyglycosides shampoo enriched with a new substantive sunscreen. Some recent data will be discussed.

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HAIR LOSS AND SKIN AGEING

A SPECIAL FOAM FOR CLEANSING THE SKIN

P. Palombo*, **P. Morganti****, **G. Fabrizi*****, **L. Tiberi******, **A. Fionda****** and **A. Cardillo*******

* Department of Plastic Surgery, C.T.O. "A. Alesini" Hospital, Rome - Italy

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The skin with its area between 1.5 and 2.3 mq. is the largest organ of the human body.

With the exception of the nails, no skin area appears to be without a resident microbial flora and all areas have a transient or contaminant bacteria and fungi whose staphylococci and micrococci represent major groups.

What it is interesting to remember is that gram-negative bacilli and fungi are particularly affected by high temperature and especially by humidity.

For the above reasons we deemed it interesting to control the antimicrobial and antifungal efficiency of a new cleansing foam in different condition of temperature and humidity, in order to evaluate its effectiveness at different latitudes, given the present mobility of world population.

In our studies we used a handwash viable-count sampling technique, the hands being rinsed via standard way with our foam.

The studied foam caused a progressive reduction of 99% of bacteria and fungi after six successive treatments in any condition of humidity.

The same reduction was also obtained after a single application.

No side effects were observed.

This foam thanks to its antibacterial activity and user-friendliness can be considered a new cosmeceutical for the daily usage of frequent travellers and for daily hand washing of doctors and medical personnel at surgeries and departments.

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HAIR LOSS AND SKIN AGEING

ALPHA AND BETA HYDROXY ACIDS: AGEING SKIN REVOLUTION

C. Jacobson

Past-President ISCD - 3600 Gaston Ave., #1051 Dallas Tx 75246 - USA

Over the past 5 years, the cosmetic industry has inundated with hydroxy acid and hydroxy acid variants in the treatment of photoaging and chronological aging skin.

For the most part, early treatment took place with glycolic and lactic acid, but subsequently newer products such as the trihydroxy acids or the triple fruit acid preparations containing various combinations. In addition, there has a recrudescence of the use of beta hydroxy acids which have been an old standby and dermatologic treatment in the form of exfoliating agents with the implication of some anti-inflammatory capabilities. In addition, there are a combination of hydroxy acids combining both the alpha and the beta varieties. This creates some technical problems because one is hydrophilic and the other is lipophilic. There is some indication that combination could be beneficial. The latest alpha hydroxy acids are the poly hydroxy preparations which are larger molecular weight alpha hydroxy acids. Since these penetrate the skin slower than the lower molecular weight products, they tend to be better accepted by people with sensitive skin. Technical aspects of all of these preparations will be discussed together with the input of the Food and Drug Administration of the United States in regard to treating these products as cosmetics or drugs. Data will be given to substantiate the various aspects of all of these products.

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HAIR LOSS AND SKIN AGEING

THE DECOCTION OF TRADITIONAL CHINESE HERBS IN THE COSMETIC TREATMENT OF ACNE VULGARIS

Zhang Huai-Liang, Liu Ji-He, Chen Zheng-Qing, Yu Jing, Shao Jing-Pin
Institute of Dermatology, CAMS & PUMC

In order to improve the cosmetic affect of acne vulgaris, 334 cases of acne vulgaris were treated with the decoction of traditional Chinese herbs and facial mask, 118 patients were male and 216 female with their aged 16-41 years. The duration of the disease ranged from 6 months to 13 years. According to Pillsbury's classification, 36 cases were of type I, 209 type II, 82 type III, and 7 type IV.

The major components of the decoction consisted of coptis root, suetellaria root, Chinese rhubarb. The herbs were boiled in a special apparratus made of glass for 30 minutes.

After being cold, the supernatant was separated, preserved in a sterilized bottle and keep in a refrigerator (4°C).

The procedure of the cosmetic treatment were as follows:

1. Cleanse the face routinely with cucumber clean cream
2. Remove the pus of the pustule and comedones with a special needle.
3. The decoction was applied to the affected area twice daily
4. Cold facial mask was applied.

The procedure was repeated once week. After the procedure, the decoction was applied locally, twice daily course, 3 months in average.

Result: Cure (lesions completely clear): 69 cases (22.7%)

Excellent ($\geq 70\%$ lesions clear): 117 cases (35.0%)

Good ($\geq 70\%$ lesions clear): 140 cases (41.9%)

Poor ($< 40\%$ lesions clear): 8 cases (2.4%)

Total effective rate: 97.6%

No adverse reaction was found.

Finally, the probable machanism of the treatment was discussed.

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HAIR LOSS AND SKIN AGEING

PHOTOPROTECTION BY SUNSCREENS IN SKIN AGEING

B. Guarneri

Dept. Dermatology, University of Messina, Italy

Although the long-waved UV-A rays (longer than 320 nm) are responsible for the photoageing of the skin, the majority of unwanted acute and long-term effects are induced by the UV-B-rays (280-320nm). Moreover IR radiation can exacerbate UV-induced photoaging.

It increases the degree of elastosis and the GAG content in the dermis.

Moreover the peroxidation of cellular lipids in the skin produces direct skin-aging changes and increases UV-induced skin carcinogenesis.

Well formulated topical sunscreens may reduce the incidence of acute and chronic damage to the skin induced by ultraviolet radiation (UVR) without giving any signs or symptoms of toxicity.

Furthermore both topical and natural anti-oxidants such as polyphenols from green tea, carotenoids and betaglucan seem to enhance the repair of chronic UV damage. The role of topical and oral sunscreens will be discussed.

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HAIR LOSS AND SKIN AGEING

HURDLE TECHNOLOGY: A NEW APPROACH COSMETIC PRESERVATION

Jon J. Kabara

Technology Exchange Inc. - 405 W. Wachter Road - Galena, IL 61036

Consumer- and environment-friendly products made without preservatives are possible, but this may require modification of current formulations and packaging. Opportunities exist for innovative formulators who want to look beyond current technologies and apply the new principles of preservation to the development of novel preservative-free and self-preserving cosmetic products.

The various principle factors which can lead self-preserving products are recognized as "hurdles". Hurdle technology combines various preservative factors (hurdles) that the microorganism needs to overcome in order to grow or even survive. Some of these factors may be water activity, pH, special lipids, surfactants, antioxidants (phenols), aroma chemicals, chelators and packaging. These hurdle, preservative factors alone or in combination, have static and even cidal effects on microorganisms. While our discussion will detail some hurdle factors, many other specific individual ingredients remain to be identified. I hope this survey will be a platform and stimulus for future discoveries.

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HAIR LOSS AND SKIN AGEING

ROLE OF JALURONIC ACID AND VITAMIN C IN PHOTOAGEING

A. Di Pietro - U. Giaroli

Dept of Dermatology, Marchesi Hospital - Inzago, Milano - Italy

The skin is an organ in which aging changes are easily observed. The degree of change varies between individuals and on the different areas, and can be distinguish in intrinsic or chronologic ageing and extrinsic or photoageing. Generally in intrinsic ageing, collagen in the dermis is lost, occur reduction of cellular activity and skin thinning.

Conversely, photoaged skin results thickened and characterized by wrinkles, roughness, tangled degraded elastic fibers and mottled dyspigmentation.

Both photoaging and intrinsic ageing occur especially in facial skin resulting in wrinkling, but the ageing changes are also in depending of life-style, such as the amount of sunlight time exposure and quality and quantity of skin-care used. In order to influence the collagen content of the dermis for ameliorating the wrinkling appearance of the facial skin, different active compounds are used, topically applied by cosmetic emulsions or by subdermal injection.

Recently the more often used substances are

A) Ascorbic acid, which appears to exert a transcriptional or translation control of collagen synthesis and shows promise as a broad-spectrum photoprotectant.

B) The biological response modifier Betaglucan, which seems able to stimulate the skin own defence mechanism, enhancing the macrophage-mediated phagocytosis and the production of cytolytic and cytostatic factors.

C) Jaluronic acid for its ability to retains large amounts of water into intercellular space, to make jelly matrix, to protect cell structure, hold cell and defend against external pollutants and bacterial infection.

This presentation will highlight work done to evaluate "in vitro" and "in vivo" the efficacy of topical Betaglucan, Vitamin C and Jaluronic acid in ameliorating clinical features of photoaged skin.

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CUTANEOUS SIDE-EFFECTS OF SYSTEMIC CHEMOTHERAPY: AN EMERGING PROBLEM

S. Mancuso, S. Greggì, R. Giannice, P.A. Margariti, M.G. Salerno, G. Scambia and A. De Dilectis
Dept. Obstetric and Gynecology, Catholic University of Sacred Heart, Rome, Italy

Local cutaneous complications are generally due to accidental extravasation of drugs, while systemic toxicity may be caused by: i) a direct toxic effect, ii) hypersensitivity reactions and iii) dissemination of inflammatory response mediators by necrotic cells. Alopecia is the most common cutaneous systemic effect of antitumoral chemotherapy. Other lesions are maculopapular eruptions, cutaneous plaques, bullae, hyperpigmentation, folliculitis and nail dystrophy (red and brown transverse lines, Mees' strips, Beau-Reil lines and onycholysis). Dermatological side effects rarely represent the dose-limiting toxicity of antitumoral drugs. Nevertheless, some of these agents, even when used at standard dose, may cause severe cutaneous effects requiring treatment modification.

The introduction into clinical practice of new drugs and innovative treatment strategies with implementation of effective hematological support have changed the toxic profile of chemotherapy with non-hematological side-effects being the most common dose-limiting toxicity.

In particular, dermatological toxicity involves the patient body image, with a peculiar influence on the patient's quality of life. Therefore, cutaneous side-effects increasingly involve the oncology clinical practice and require a multidisciplinary team for an adequate treatment. Controlled clinical trials are worthwhile to explore effective means of prevention and therapy.

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EFFICIENCY STUDY OF A MOISTURIZING CREAM

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This is a study on a moisturizing cream* based on glycerin (8%) and Hydrosmyl (5%) in association with mannitol, arginine, serine, PCA, to recreate the function of skin NMF. This study was undertaken during the period running from 3/12/97 to 12/12/97 by the Ruijin Dermatological centre of Shanghai. The purpose of this study was the evaluation of the efficiency of the cream using instrumental (comeometer) measures on the forearm.

30 women volunteers aged 45 to 55, with dry skin type (less than 75 as measured by the comeometer) were asked to apply 8mg of the cream on their randomly chosen forearm on a 4cm² area (=2mg/cm²), nothing being applied on their other arm.

Evaluation of the cutaneous hydration by comeometer was performed on the internal face of the forearm before applying the cream at T0, 1 hour after application (T1) and 24 hours after application (T24). The treated forearm was randomly chosen, the other arm being measured as control at the same time.

Results being:

treated side: T0: 42.7 +/- 6.4 T1: 60.6 +/- 8.4 T24: 56.9 +/- 8.3

control side: T0: 44.3 +/- 6.1 T1: 44.5 +/- 6.4 T24: 45.1 +/- 5.5

The results showed a statistically increase ($p < 0.0001$) in water content one hour and 24 hours after a single application of the moisturizing cream. Skin hydration is increased by +41.5% after 1 hour and +31.5% after 24 hours compared to control site which demonstrates an excellent moisturizing effect of the cream tested.

**Thermal S, Laboratoires Vichy*

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TOLERANCE AND COSMETIC QUALITIES STUDY OF A MOISTURIZING CREAM

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This is a study on a moisturizing cream* based on glycerin (8%) and Hydrosmyl (5%) in association with mannitol, arginine, serine, PCA, to recreate the function of skin NMF. This study was undertaken during the period running from 3/12/97 to 12/12/97 by the Ruijin Dermatological centre of Shanghai. The purpose of the study was the evaluation of the tolerance and cosmetic qualities of the cream. 51 women volunteers age from 20 to 40 with sensitive skin applied the moisturizing cream on their face, twice a day for 4 weeks.

Cutaneous tolerance evaluated by the dermatologist on day 28, was based on clinical scores given by the dermatologist and users' self-evaluation on day 0 and 28. Cosmetic qualities were assessed by volunteers filling in a questionnaire at day 28.

Conclusion: the clinical scores show an decrease in skin dryness in all cases, a decrease in skin erythema in 39.2% and an improvement of skin suppleness and softness in respectively 100% and 98% of testers. The evaluation results also show the cream's excellent tolerance. Self-evaluation from volunteers demonstrate that the cream tested not only has excellent moisturizing qualities and skin tolerance but also meet with high satisfaction for its cosmetic qualities.

**Thermal S, Laboratoires Vichy*

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MICROFINE ZINC OXIDE IS A SUPERIOR SUNSCREEN INGREDIENT TO TITANIUM DIOXIDE

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New awareness of the importance of UVA in the generation of skin cancer and photoaging of skin has focused on the need for effective UVA protection in sunscreens. Zinc oxide and titanium dioxide have emerged as preferred sunscreen ingredients. They are chemically stable, safe and cost effective. New technology allows these compounds to be manufactured as submicroscopic particles (<200nm) that renders them transparent in cosmetic formulations. Moreover such small particles predominantly attenuate ultraviolet light by absorption rather than scattering. Since these particles do not penetrate the stratum corneum and are essentially insoluble, there is less concern about toxicity, sensitivity, and irritation when compared to organic sunscreens. This work is designed to compare ZnO and TiO₂ as microfine particulates and emphasize differences in cosmetic acceptance (whitening), UV protection, and photoreactivity.

At microfine sizes TiO₂ scatters more visible light than ZnO and appears whiter. ZnO can be more easily camouflaged than TiO₂ making it more cosmetically acceptable. ZnO absorbs UV light from at least 250 to 380 nm and then tapers off into the visible. In contrast microfine TiO₂ affords little or no protection above 350 nm. Metal oxides may produce free radicals on their surface when irradiated which if absorbed might damage skin; TiO₂ is more photoreactive than ZnO. Relative photoreactivity of ZnO and TiO₂ was tested by measuring oxidation of isopropanol following UV irradiation. In this assay, TiO₂ was more than tenfold more reactive than ZnO. Coating ZnO with dimethicone rendered it non reactive. ZnO is superior to TiO₂ in 1) cosmetic acceptability, 2) UVA1 protection, and 3) photoreactivity.

Dr. Pinnell is a consultant for sunSmart and SkinCeuticals. This work was sponsored by sunSmart, Inc.

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INDUCTION OF HEAT SHOCK PROTEIN SYNTHESIS IN HUMAN SKIN FIBROBLASTS IN RESPONSE TO OXIDATIVE STRESS. REGULATION BY A NATURAL ANTIOXIDANT FROM ROSEMARY EXTRACT

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It is increasingly evident that free radicals play a key role in determining the general appearance of the skin, which, as a highly differentiated and certainly complex organizational structure, is particularly vulnerable to free radical damage. It also has been demonstrated that UV light irradiation leads to a considerable decrease in the concentration of antioxidants naturally present in the skin. It has been recently demonstrated that mammalian cells respond to a wide variety of adverse conditions by inducing the synthesis of a number of *stress proteins* (HSP). HSPs may function as molecular chaperones to facilitate protein folding, processing and trafficking, and the findings that (i) inhibition of antioxidant defense increases susceptibility to killing by heat shock; (ii) HSP confers resistance to oxidative stress; (iii) induction of HSP70 protein were inhibited by antioxidant compounds such as flavonoids, suggest a correlation between oxidative stress, antioxidants and HSP70 induction. The interesting finding of this study was the marked correlation between induction of HSP70 and oxidative stress in primary cultures with normal skin fibroblasts. We found that HSP70 induction promoted by exposition to H₂O₂ is significantly reduced when cell cultures were preincubated with an exogenous natural antioxidant derived from hydrophilic extract of rosemary leaves.

Our results point to a possible involvement of redox mechanisms in the heat shock signal transduction pathway which may play an important regulatory role on the genetic mechanisms of tolerance to oxidative stress. Thus, exogenous supplementation of an antioxidant hydrophilic extract from rosemary could have cosmetic benefits, in that may represent an efficient tool to mitigate the consequences of free radical-induced aging of the skin.

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COMPUTERIZED ASSESSMENT OF HORMONE REPLACEMENT THERAPY INDUCED SKIN CHANGES IN POSTMENOPAUSAL WOMEN

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In a prospective study we investigated 51 postmenopausal women seeking treatment for symptomatic menopause. All patients received transdermal estradiol (50 µg 17 β estradiol daily for 24 weeks). After 12 weeks of treatment 10 mg daily of dydrogesterone were added. Before and during both regimens Hydration, pH and Sebum concentration were assayed on face and body skin by a fully computerized and standardized assisted methodology (3C-System-Dermotech Aprilia-Italy). Plasma hormone and lipid concentrations were assayed baseline and at 12 and 24 weeks of treatment. All patients exhibited after estradiol alone a significant reduction of pH from 7.2 to 6.0 ($p<0.01$) and from 8.1 to 7.5 ($p<0.05$) respectively at face and body skin level. Further addition of progestin failed to affect this improvement.

Only on face estradiol treatment produced a significant reduction of hydration ($p<0.01$) while at body level this parameter was not affected. Face and body sebum concentration significantly increased after estrogen alone from 130 to 160 µg/cm² ($p<0.01$) and from 45 to 100 µg/cm² ($p<0.001$) respectively. Progesterone addition didn't modified these parameters.

It is concluded that estrogen transdermal substitution over 12 and 24 weeks alone or progestin combined may ameliorate skin properties and protection in postmenopausal women and that a computerized assisted methodology available on 3C-System is of usefulness for a rapid and detailed assessment of skin health status.

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SKIN RESURFACING: A REVOLUTIONARY APPROACH TO AGE REVERSAL

Dr. Caridad Ponce-Luna

The Aesthetic Dermatology Centre, Quezon City, Philippines

This presentation focuses on the mechanism of action, procedure and effects of Skin Resurfacing, an apparently simple yet highly effective procedure on the reversal of the ageing process, specifically the reduction of lines and wrinkles.

Filipino men and women aged between 35 and 70 are the subject-patients in a six-month period of once-a-week sessions. Skin Resurfacing is distinguished from dermabrasion and facelifting in that it is nonsurgical and noninvasive. The procedure is also totally safe, with a low risk of infection, giving patients fast recovery time and dramatically visible results.

Furthermore, it is relevant to the continuing research on rejuvenation and can be complementary to the latest products to reverse skin ageing.

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THE CAROTENOIDS' USE AS NUTRICEUTICALS

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Oxidative stress is defined as a molecular alteration generated by oxidant molecules.

This oxidative damage can occur by direct chemical oxidation, or it can involve a more insidious chain reaction involving molecules that are oxidatively reactive due to the presence of a single unpaired electron: the free radicals.

Since free radicals are essentially caused by light UV and by environmental oxidants the free radical-induced oxidative damage is always present.

Moreover the state of oxidative stress is characterized by both reversible and irreversible cell damage and can, with time and sufficient severity, lead to cell death.

Biological systems are protected from the threat of oxidative assault by a diversity of mechanisms designed to suppress pernicious oxidative pathways.

Among these mechanisms there are the antioxidant systems represented by carotenoids.

Carotenoids such as beta carotene and lycopene were used by our team to prevent the photosensitized damage and to modify the immune response to the light of 40 volunteers women affected by different pathologies.

The continuative use of these carotenoids taken orally for a three months period has shown remarkable results and has raised hopes about their use as "nutriceuticals".

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EPIDERMAL PROFILE MODIFICATIONS FOLLOWING ACUTE CHANGES ON EPIDERMAL WATER CONTENT

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INTRODUCTION: Skin profile analysis is a main target of cosmetic dermatology. However the high costs involved and the different method's practicability and applicability are important limiting factors justifying the insufficiency of scientifically data on the field. Some of the published papers are frequently controversial and contradictory. In the present paper the authors assess the amplitude profile variables assessed by light transmission optometry obtained in vivo, following the acute desiccation and rehydration of epidermal surface.

MATERIAL AND METHODS: Tests were performed in the volar aspect of healthy human volunteers (n=20) forearms in which skin-replicas were obtained. Basal condition replicas were obtained and evaluation sites exposed to contact with a non-sensitising organic mixture to ensure epidermal dryness (10 min.). An occlusive patch was then applied for 24H and a new replica obtained and compared with previous skin prints. Profile analysis was performed by a light transmission method (Skin Visiometer SV400 from C+K electronic, GmbH-Germany). The referenced 2D amplitude variables RA, RZ and RT were obtained for profile quantification. Also, specially designed software pack allowed to obtain a 3-D description for each replica, helping to visualise and to confirm the obtained results regarding the observed profile changes. Descriptive statistics, variance analysis and paired t-student test were used and $p < 0.05$ adopted.

RESULTS AND CONCLUSIONS: The obtained results proved to be reproducible and the quantitative analysis reliable, demonstrating that in the present experimental conditions, epidermal desiccation involve reduction of the profile variables chosen to describe skin profile, while post-occlusive re-hydration, is revealed by recovering (positive effect) of the same variable values.

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USEFULNESS OF THE KINETICAL DESCRIPTION OF TRANS-EPIDERMAL WATER LOSS

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INTRODUCTION: The evaluation of trans-epidermal water loss is one of the methods most frequently used in studies involving skin water dynamics. However, TEWL does not provide a direct measurement of epidermal barrier function must be taken into account in order to achieve a rigorous interpretation of the results. Since the TEWL process is reasonably compliant with Fick's first law of diffusion the authors centred this work in the development of a two compartments mathematical model capable of quantitatively describe cutaneous water mass balance over time.

METHODS: the theoretical basis for the proposed model was tested with data collected from different protocols using TEWL as a main indicator of the cutaneous alterations induced. Those, involved either external inputs or intrinsic changes on the cutaneous pathways capable of changing the whole water balance across the skin.

RESULTS: TEWL curve profiles, were thoroughly described in a quantitative fashion using a mathematical model. Direct parameters were calculated, such as kinetic rate constants (k_{hydr} and k_{evap}) and half-life times ($t_{1/2 \text{ hydr}}$ and $t_{1/2 \text{ evap}}$) chosen to describe the hydration and the evaporation processes. Secondary parameters such as time to reach the maximum and an area under the curve derived parameter, the *dynamic water mass* (DWM), were also calculated, providing additional data particularly useful for comparative purposes.

CONCLUSION: This modelling conceptualisation seems to render valuable insights in to the kinetic description of the main processes involved in the net evaporation and water distribution within the complex human skin hydration process. The numerical parameters obtained are reliable indicators for many situations, providing valuable parameterised information for characterising and comparing results.

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QUANTITATIVE ASSESSMENT OF THE IN VIVO EPIDERMAL "BARRIER FUNCTION"

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INTRODUCTION: Trans-epidermal water loss is an important indicator of the epidermal barrier function although not providing a direct measurement of the barrier itself. For this reason, some attempts have been made to extract more information from the in vivo TEWL measurements. Dynamical assessments such as the Sorption-desorption test, the Moisture Accumulation Test and the Plastic Occlusion Stress Test (POST) are illustrative examples providing useful ways to obtain information both on the epidermal hygroscopicity and water holding capacity. However, these methodologies were designed to approach specific problems, often under a pathological frame, and cannot be directly applied to other study perspectives. The present work illustrates a practical methodology for the quantitative assessment of epidermal barrier function which can be applied to any comparative study involving in vivo TEWL measurements.

MATERIAL AND METHODS: Twelve healthy volunteers (both sexes, mean age: 22) were submitted to a 24 H POST test. The occlusion was achieved by proper occlusive material applied in the volar aspect of the human forearm. TEWL recordings (Tewameter TM210, CK Electronics, Germany) were obtained, from patch removal to full stabilisation of the variable. TEWL curves were then modulated using a bi-compartmental mathematical model developed by the authors, which allowed to quantitatively characterise each individual "barrier function".

DISCUSSION AND CONCLUSION: Epidermal barrier function can be quantitatively described by the model applied to the post-occlusive TEWL curve profiles. The calculated kinetic parameters (k_{hydr} and k_{evap}) and half-life times ($t_{1/2,hydr}$ and $t_{1/2,evap}$) proved to be sensitive enough to characterise each individual and even to detect functional changes reported by the patients although absent in clinical terms.

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SAFETY AND EFFICACY OF A LAMELLAR PHOSPHATIDILCHOLINE EMULSION TO TREAT MILD-TO-MODERATE INFLAMMATORY ACNE

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BACKGROUND: The phosphatidylcholine emulsion linoleic acid-rich is able to break down the horny layers, to reduce excess lipids and to decrease the squalene content of acne-affected skin. α -bisabolol and farnesol have a well know anti-irritant activity.

OBJECTIVE: This study compared the efficacy and safety, together with the anti-irritant and the sebum balance activity of a new phospholipidic emulsion linoleic acid-rich containing α -bisabolol and farnesol, and its vehicle in patients with mild to moderate acne vulgaris.

METHODS: In this 16 week, double-blind study efficacy was evaluated by objective lesion counts and the dermatologist' global evaluation; the anti-irritant activity was verified controlling the reduced skin redness provoked by Sodium lauryl sulfat (SLS) and/or castor oil and measuring TEWL; the sebum balance activity was controlled by 3C System® method. Patients evaluated acceptance and safety.

RESULTS: The efficacy of this treatment in 60 patients study was statistically significantly more effective than the vehicle. The best results were obtained for the irritation scores and for the sebum production, going back to normal value just at the first week of treatment. The safety and patient acceptance was excellent.

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ESSENTIAL FATTY ACIDS FOR THE EPIDERMAL BARRIER HOMEOSTASIS: STABILITY AND SAFETY

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As is known natural fats and oils contain many different fatty acids, both saturated and unsaturated. Although the human body is able to synthesise most saturated (SFA) and mono unsaturated fatty acids (MUFA), the polyunsaturated fatty acids (PUFA) such as linoleic and alpha linoleic acid, must be provided from the diet. Therefore these acids and their derivatives are generally known as the essential fatty acids. (EFA). One important role of linoleic acid in skin is the maintenance of the epidermal water barrier and water flux across the skin.

The mechanism by which linoleic acid can modulate epidermal water flux seems to be due to the incorporation of linoleic acid in ceramides.

These lipids provide a tight lamellar structure within the stratum corneum, the integrity of which is dependent upon the lipid pool within the body. Variation in the composition and proportion of these key species can lead to either deterioration, normalization or acceleration of barrier repair.

This depends to a great degree upon the lipid diet.

Currently, there is reasonable evidence that increasing dietary levels of unsaturated fatty acids can reduce the incidence and death from coronary heart disease and may reduce the severity of several skin conditions and immune diseases.

For all these reasons all the oils rich in PUFA may be used both in topical care products, or in diet supplements. Research in this area may lead to novel cosmeceuticals or nutraceuticals for barrier function enhancement and control.

Some recent data will be discussed.

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TRANSDERMAL DELIVERY COSMETIC SYSTEM: NEW STUDIES TO IMPROVE A CONTROLLED DELIVERY

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BACKGROUND: Transdermal Delivery Cosmetic System (TDCS) is a new controlled delivery system, which was developed recently for use in the cosmetic field.

As is known the available transdermal drug systems are result of sophisticated procedures, where technology prevails over a well-know pharmacological component. This account for the technological development of the transdermal system over such a short time. Such development progressed through three generations aimed at improving delivery and absorption, at reducing the patch size and at making it easier to use. The latest patch generation such as TDCS has the same polymeric matrix which controls both delivery and adhesiveness. In addition it contain a special vehicle which enhances the absorption of the active components used by carrying them into the deepest cutaneous layers.

OBJECTIVE: In this study was evaluated the possibility to modify our vehicle by using a special kind of soybean phosphatidylcholine and/or montmorillonite, in order to obtain a more controlled delivery and absorption through the skin of antioxidants (vitamin C, Vitamin E and polyphenols) or immunostimulant compounds (Betaglukan, α -bisabolol) usefull as anti-aging or to protect the skin from UV damage.

METHODS: Different kinds of vehicle have been chemically characterized for bioavailability and absorption properties.

The protective and immunesuppression activity induced by UV exposure was also controlled "in vivo" by 3C System. Finally in healthy volunteers an erythema was set with Sodium-lauryl sulfat and skin redness and TEWL was measured.

RESULTS AND COMMENT: The montmorillonite and soybean phosphatidylcholine have demonstrated to be very usefull to better control the delivery of selected clinical compounds by improving also the antioxidant and immuno-stimulant properties.

What is important to highlight is the role developed by the different kinds of vehicles to improve the skin barrier function.

This TDCS technology seems to open new and exciting cosmetic means capable of treating the UV-stressed and aged skin.

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THE MECHANISMS OF ACTION OF RETINOIDS IN THE TREATMENT OF PHOTOAGED SKIN

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Topical all trans retinoic acid was proved to be effective in the treatment of photoaged skin, reversing some of the apparent clinical and histological changes of damaged epidermis and dermis.

The aim of the study was to examine in vitro effects of various retinoids [all transRA, 9cisRA, 13cisRA, and arotinoid Ro40-8757] on proliferation of transformed keratinocytes lines, normal dermal fibroblasts and vascular endothelial cells on the expression of collagen type α I, α 1III and elastin genes in fibroblast culture. We also studied the effect of the mediators present in the conditioned media derived from retinoid treated keratinocytes on fibroblasts function, and the influence of retinoids on several cytokine expression in keratinocytes (TGF β , IL 1 TNF α).

Cell proliferation was measured using two methods: assesment of [3H] thymidine uptake and direct cell counting. Analysis of ECM gene expression was performed using Northern blot hybridization. For the expression of cytokines derived from retinoid- treated keratinocytes we performed both ELISA (R&D Systme) and Notrthern blot analysis.

All retinoids at concentrations (10^{-5} M) inhibited proliferation of fibroblasts, endothelial cells and A431, decreased the amounts of specific mRNA for collagen type I and III in fibroblasts and stimulated the expression of elastin mRNA. At lower concentrations (10^{-8} M), the retinoids stimulated proliferation of endothelial cells and had no effect on tumor cell growth. Conditioned media from retinoid treated keratinocyte cultures stimulated both fibroblasts proliferation and expression of collagen type I and III mRNAs. In conditioned media from retinoid-treated keratinocytes. TGF β 1 protein was detected, whereas TNF α 1 and IL-1 β were not found.

The results suggest that epidermis-derived factors mediate some of the retinoid effects on connective tissue, cell proliferation and ECM metabolism.

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A RARE CASE OF A BASOCELLULAR CARCINOMA IN THE HEAD, WITH OSSEOUS AND MENINGEAL INVOLVEMENT

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The basocellular carcinoma can be defined as "malignant tumor composed by epithelial and anessial elements, characterized by an extremely slow evolution and by a purely local malignancy". It can settle in any site of the tegument, endowing the superior two thirds of the face.

The early diagnosis is fundamental to guarantee a good prognosis, but we should remember that the histologic type and the clinic stadium largely affect the evolution of the illness itself.

The treatment can be surgical or radiotherapeutic, according to the histological type to the clinic stadium and to other factors including the general health conditions and the age of the patient.

The surgical treatment entails a large and radical excision (in order to avoid relapses) and can be associated - whenever it is deemed necessary (which means in the cases in which the surgeon gets evidence of the clinic positivity of the concerned lymphonodules) - to a local-regional lymphonodular emptying operation.

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CUTANEOUS SARCOIDOSIS IN A CHILD

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C. S., female, 4 years old. Approximately seven months ago the patient noticed the appearance, in the left parotidean region, of an irregular oval-shaped dark-red nodular lesion.

This lesion has been constantly growing, going from 2 centimetres up to 4-5 centimetres in length and 2-3 centimetres in width.

Clinically we noticed that this lesion, firm to touch, presented a micronodularity on its surface and along its borders.

Moreover, at the time of our observation, the lesion had grown so much as to involve the left auricular lobus also. The lesion was asymptomatic.

An ecographic examination carried out two weeks before showed a non pathologic cystic lesion in the omolateral parotidean region.

Blood tests did not show any pathologic abnormality.

All rheumatic tests and the lymphocytic subpopulations were normal.

The histologic examination of a cutaneous and subcutaneous biopsy revealed a chronic granulomatous phlogistic process with giant cells. This finding confirmed our clinic suspicion of cutaneous sarcoidosis. Radiologic and ecografic examinations carried out in order to verify whether there were other pathological organic localizations of the disease were all negative.

The therapy carried out with 3 triamcinolone acetonide (diluted 1:4) subcutaneous infiltrations led to a complete resolution of the lesion.

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NEONATAL TINEA CAPITIS

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T. S., male, 45 days old. Approximately one month ago his parents noticed some, partially surrounded by crusts and pustules, erythematous papular lesions, bilaterally localized in the frontal and parietal regions.

Treated locally from the beginning with corticosteroids and/or antibiotics, these lesions did not showed any particular improvement. In fact the cutaneous aspect had notably worsened with the appearance of a bleeding ulcerative granulomatous nodular lesion of the scalp.

At the time of the examination the patient was in good health.

However besides the aforementioned granulomatous lesion he presented numerous partly crusted erythematous pustular lesions spread all over the frontal and parietal regions, the eyebrows and the eyelids. Other similar lesions were starting to appear on the cheeks and the chin.

A culture carried out on the pustular specimen showed a great development of *Tricophyton Mentagrophytes*. The patient healed completely after 2 months of specific antimycotic therapy.

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ROLE OF THE CUTANEOUS LIGANDS IN POSITIVE PATCH-TEST REACTIONS TO METALS

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OBJECTIVE: To evaluate the role exerted by different cutaneous ligands, patients positive to NiSO₄ or to Thimerosal (Th) were re-patch tested to the metals mixed to different physiological aminoacids.

METHODS: Group I: 15 Th positive subjects who previously reacted to ethylmercury chloride (EtHgCl), were tested with aq solutions containing cysteine + EtHgCl (m.r.3:1). Group II: 15 NiSO₄ 0.1 M positive patients were tested to aq solutions containing cysteine + NiSO₄ 0.1 M (m.r. 1:1, 2:1, 3:1 and, 6:1). Group III: 15 NiSO₄ 0.1 M positive patients were tested to aq solutions containing NiSO₄ 0.1 M + serine (m.r. 1:1, 1:3). Group IV: 15 NiCl₂ 0.1 M positive patients were repatch-tested to aq solutions containing NiCl₂ 0.1 M + cysteine (m.r.1:3) Group V: 15 NiCl₂ 0.1 M positive patients were tested to aq solutions containing NiCl₂ 0.1 M + serine (m.r. 1:3). Patch tests in Al Test on Leucotest were read at 48 h.

RESULTS: Group I: cysteine abolished the positive reactions to EtHgCl in all the tested subjects. Group II: cysteine enhanced in a dose dependent way the NiSO₄ positive reactions. Group III: serine reduced the positive reactions to NiSO₄ 0.1 M in 10 subjects, abolished in 4 and, had no effect in the remaining 1. Group IV: cysteine enhanced the reactions to NiCl₂ 0.1 M in all the tested subjects. Group V: serine enhanced the positive reactions to NiCl₂ 0.1 M in 12 subjects and had no effect in the remaining 3.

CONCLUSIONS: Individual cutaneous ligands, interacting with specific chemical forms of transition metals, may influence the formation of different complexes with different harmful effects.

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PROPOSING A NEW INJECTION METHOD: MICROTHERAPY

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We propose the opportunity of making microinjections just into the epidermis, till papillary derma, through a new disposable and easy to use device called S.I.T.® (Skin Injection Therapy).

The new injection method, for which we suggest the name *Microtherapy*, is less invasive and much more superficial in comparison with common subcutaneous intradermal injections.

These are the advantages of doing Microtherapy with S.I.T.:

- **it does not break capillary vessels so ecchymosis do not appear;**
- **it does not touch dolorific nerve fibres and so the patient does not feel any pain during the injection;**
- **it does not alter connective fibres so do not appear any scar into the derma;**
- **it avoids traumatic inflammatory process so the injected drug acts better.**

Being able to inject substances into cutaneous tissue without giving traumas opens new therapeutic chances. As an example, it would be very interesting a dermic stimulation in order to clash the skin ageing processes, either the face or the body's one.

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DERMATOCOSMETICS: SCIENTIFIC DEVELOPMENTS AND FUTURE CHANCES

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Recent research data discovered and accumulated on various fields of experimental dermatology have changed the face of modern cosmetology and have opened new roads for future developments. In particular, electron microscopy has visualized the ultrastructure of skin and cytochemical and biochemical studies have analyzed its constituents. The mechanisms of epidermal growth and differentiation became better known, to be subject for the action of various working agents in dermatocosmetics. Traditional remedies for skin care and beautification have been enriched with fluid regulators, targeted towards dehydration and delipidization, regulators of keratinization such as retinoids and fruit acids, promoters of differentiation such as vitamin D analogues and ceramides, topical antioxidants and free radical scavengers such as vitamins C and E. Biological photoprotectants (urocanic acid, betacarotinoids) and various other tissue constituents (aminoacids, collagen, elastin derivatives, minerals etc.) have been included in routine preparations. Interaction of skin with its environment has become a major target for research in order to avoid cutaneous damage and premature aging caused by environmental UV- radiation. Together with UVB also UVA was shown to cause DNA injury, single strand breaks and cross-links, also leading to stimulation of dermal collagenase and cytokine release. Therefore, potent sunscreens and anti-aging agents were incorporated into modern cosmetic remedies, and further research for photoprotection is still a matter for ongoing research. In fact, dermatocosmetics may be seen today as cutaneous chemopreventors rather than nutritives or simple beautifiers. In future, molecular biological techniques will seemingly further fertilize and enrich the scientific basis of dermatocosmetics. New technology will even enable to introduce and utilize cytokine regulators and/or antisense techniques for the cosmetic approach.

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PIGMENTED SPOTS (SOLAR LENTIGINES) IN JAPANESE WOMEN AND WHITENING COSMETICS

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INTRODUCTION: Most of the middle-aged and elderly Japanese women worry about the pigmented spots on the face, such as solar / senile lentigines and chloasma. They prefer to use the whitening cosmetics, which are the whitening agents the consumer can use safely and get through the cosmetic stores in Japan. But we, dermatologists, little know about the details. We examined how they are aware of their own solar lentigines and how they cope with the trouble.

METHODS: By means of questionnaire we investigated 627 adult female outpatients visited to our hospital last year.

RESULTS: So-called Japanese "white" - "average" - "black" skin color correlated with the Japanese Skin Type (JST:Sato) I-II-III respectively. 69.8% of them were conscious of solar lentigines, which were more frequently seen in darker people, and small macule type of them, like freckle, were in lighter colored. Outdoor works and sports statistically increased solar lentigines. 60.0% of them used the sunscreen cosmetics irrelevantly to solar lentigines. 37.5% used the whitening cosmetics, whereas 11.4% requested medical treatment 20.9%, 35.3%, 14.8% of the user found satisfaction in Arbutin, Kojic acid, Vitamin C and its derivatives, respectively.

CONCLUSION: 69.8% of Japanese women cared about solar lentigines, 11.4% had medical care, 37.5% used the whitening cosmetics. More than half over 30's wished medical consultation if possible. It is expected for the cosmetic companies to evaluate appropriately the efficacy and safety of the whitening agents and for dermatologist to treat solar lentigines earnestly including laser therapy.

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CLINICAL STUDIES OF COSMETIC DERMATITIS AND MUTAGENICITY OF COSMETIC PRODUCTS

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Seventy-one cases of cosmetic contact dermatitis were analysed with both clinical features, types and correlation with mutagenicity. Among 71 patients, hair dyederatitis was present in 40 of 71 cases (56.33%). In hair dye dermatitis groups, after the cure of the condition, 2 patients suffered from dermatomyositis one month or one year later, one hair dye after 7 days appear baldness and other one occurred shock presymptom in hair dye 10 min later. The Bacteriophage Induction Method (sos test) was adopted in examining 49 kinds of cosmetic products by tumor institute in our hospital, combined clinical data with their examining results were positive in 2 kinds of hair colouring agents indicating that cosmetic product is one of the enviromental pollution resources which should not be neglected. In addition, the cosmetic products with mutagenicity were liable to cause allergosis, but mutagenicity negative cosmetic products were also able to cause allergosis and the relationship between allergy and mutagenicity was unknow. So longer follow up and further study will be needed. Finally, the clinical studies of hair dye dermatitis and mutagenicity of cosmetic products in China conditions were reviewed briefly and suggested cosmetic products is able to induce varied cosmetic dermatosis, specifically, hair dye agents, should be selecting use cautiously.

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CALCIUM AND THE BARRIER

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INTRODUCTION: Extracellular calcium exerts profound effects on the proliferation and differentiation of keratinocytes in culture. Recently, studies have explored the relationship between permeability barrier homeostasis and epidermal calcium. Menon et al using ion-capture cytochemistry demonstrated a calcium gradient in the epidermis with high levels of calcium in the stratum granulosum. The epidermal calcium gradient disappears after disruption of the barrier, due to the loss of calcium from the upper epidermis.

METHODS: We performed calcium ion-capture cytochemistry using adult hairless mice.

RESULTS: Iontophoresis alters the epidermal calcium gradient. The change of the epidermal calcium gradient and appearance of transitional cells were induced after tape stripping and occlusion with a water vapor-impermeable membrane.

CONCLUSION: Iontophoresis can be used for the induction of the change of epidermal calcium gradient without disrupting the barrier. Differentiation of keratinocyte could be induced by water vapor-impermeable membrane occlusion after tape stripping that may be associated with the change of epidermal calcium gradient *in vivo*.

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ACNE VULGARIS FROM THE COSMETIC POINT OF VIEW

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Acne vulgaris is a chronic, inflammatory pilosebaceous disease commonly seen at puberty. The pathogenesis is complex but can be explained by the following mechanism: the formation of a comedo in the early stage and the consequent induction of inflammation. In comedo lesions, the inflammatory reaction leads to the appearance of rubor and the formation of a papule, pustule, induration or cyst. It is well known that cosmetics contribute to the progression of acne vulgaris. On the other hand, recently the development of cosmetics gave the new concept, indicating the possibility that the progression of acne vulgaris, especially the formation of a comedo is prevented by cosmetics. In this presentation, I would like to talk about the role of cosmetics, both there beneficial and detrimental points in the progression of acne vulgaris.

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EVALUATING THE RELATIVE SKIN IRRITATION POTENTIAL OF PERSONAL CLEANSERS

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INTRODUCTION: Mildness is an important contributor to consumer acceptance of a personal cleanser. Relative irritation potential (mildness) of such products is ideally evaluated under normal use conditions. However, such conditions may not induce a high enough level of skin effects to discriminate among products. As a result, researchers have tended to rely on short duration, exaggerated tests which reach endpoints beyond those seen under normal use conditions. The challenge of this approach is to choose test conditions which provide a reasonable level of product discrimination without sacrificing consumer relevance.

METHODS: We have developed a Forearm Controlled Application Test (FCAT) to examine, with controlled washing and rinsing, up to 8 products in a double-blinded, randomized manner. The exposure conditions used in this protocol were developed to be more relevant to normal use conditions.

RESULTS: The FCAT has been successfully used to discriminate and predict the in-use irritation potential of a wide range of personal cleansing products. The FCAT has also been used to examine factors that can impact irritant response, including water hardness and skin type.

CONCLUSIONS: The FCAT is a reproducible and consumer-relevant tool for assessing relative mildness of personal cleaners, particularly in the presence of the many independent variables that can confound the measurement of skin changes.

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