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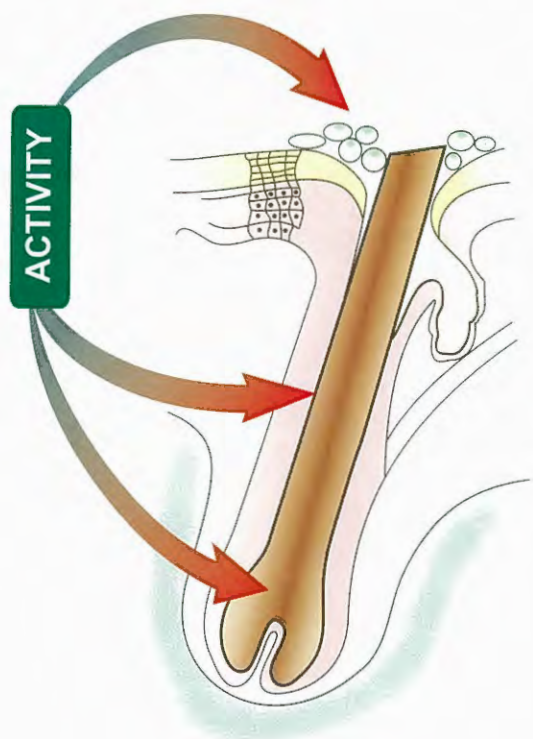
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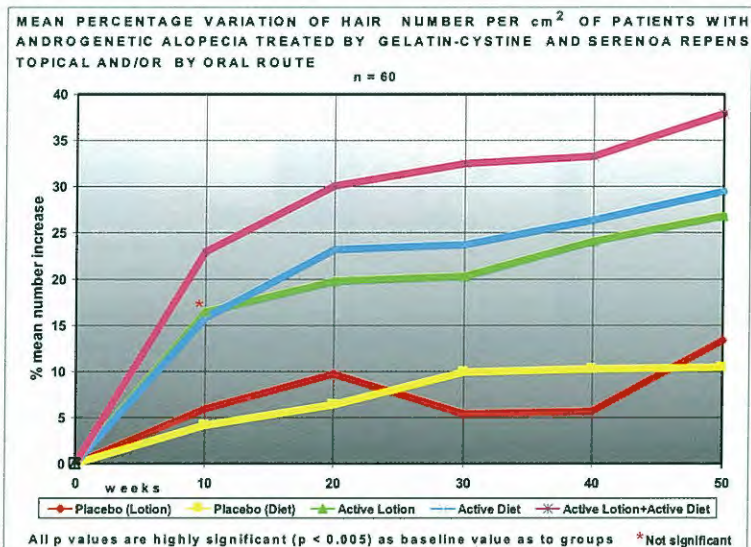
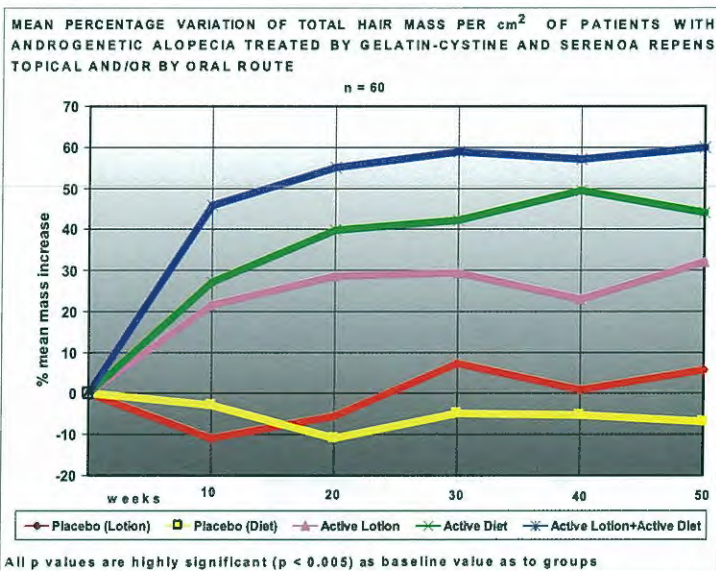
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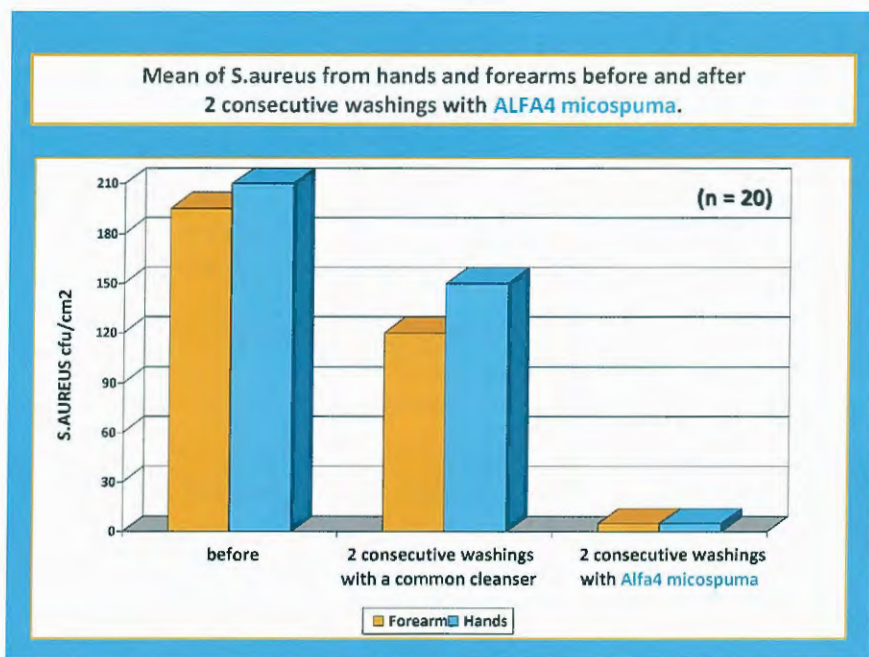
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Trimestrale di Dermatologia Cosmetologica Quarterly Review of Cosmetic Dermatology Contents

Original Laboratory Studies

- 85** Evaluation of Efficacy, Cosmetic Qualities and Tolerability of a Lotion for Hair Physiological Regrowth and Reinforcement
C. Bussoletti, M. V. Tolaini, L. Celleno
- 97** Safety of Hair Dyes Use. Toxicological Exposure
I. Biatas, J. Arct, M. Mojski
- 111** Personal Experience in the Use of Dexpanthenol for Skin Care After Chemical Peeling and Photo-Rejuvenation Procedures
N.V. Gaidash, E.A. Karassyov, V.V. Mardovtseva

Book Reviews

- 117** Tissue Engineering in Dermatology
- 120** Beginning Cosmetic Chemistry. 3rd Edition
- 123** Formulating Strategies in Cosmetic Science
- 129** The Immune System. 3rd Edition

Announcements

- XIII** The 9th ISCD World Congress: Wellness and Beauty outside in: East & West working Together

EVALUATION OF EFFICACY, COSMETIC QUALITIES AND TOLERABILITY OF A LOTION FOR HAIR PHYSIOLOGICAL REGROWTH AND REINFORCEMENT

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Received: September, 2008.

Key words: *Androgenetic alopecia; Regrowth; Thickness;*

Summary

The aspect of hair, both for men and women, is an important element in characterizing the physical appearance of a person, contributing to criteria of beauty and youth imposed by modern society. Today many principals, both pharmaceutical and cosmetic, are available, functional for hygiene and keeping healthy hair ; in particular the fastest growing sector is the one that works on prevention and treatment of hair loss, one of the most common imperfections of the Western population, both male and female. There are many forms of alopecia, most of wich are acquired, while the few congenital forms are related to rare syndromes. The most common form of alopecia is androgenetic (it represents about 70% of total cases).

The described study assessed the efficacy and tolerability of a cosmetic lotion for physiological regrowth and increased thickness of hair.

Given the results of the study, we can say that this lotion showed a good cosmetic efficacy in facilitating the physiological regrowth of hair and promote the increase in the thickness

Riassunto

L'aspetto della capigliatura, sia per gli uomini che per le donne, è un elemento importante nel caratterizzare la fisicità della persona, contribuendo ai criteri di bellezza e giovinezza imposti dalla società moderna. Ad oggi sono disponibili molti presidi, sia farmaceutici che cosmetici, utilizzabili per l'igiene e la conservazione in buona salute dei capelli; in particolare il settore maggiormente in

espansione è quello per la prevenzione e il trattamento della caduta dei capelli, essendo questa uno degli inestetismi più diffusi nella popolazione occidentale sia maschile che femminile.

Esistono varie forme di alopecia, la grande maggioranza delle quali sono acquisite, mentre le poche forme congenite sono legate a sindromi rare. La forma di alopecia più diffusa, (rappresenta il 70% circa del totale dei casi) è quella androgenetica. Il trattamento dell'alopecia androgenetica prevede, secondo gli stadi, l'uso di farmaci specifici (minoxidil, finasteride etc.) che solitamente vengono affiancati a trattamenti cosmetici più o meno efficaci tra i quali il paziente si trova a scegliere, spesso spinto da pubblicità e informazioni non sempre corrette.

Lo studio che descriviamo ha valutato l'efficacia e la tollerabilità di una lozione cosmetica per la ricrescita fisiologica e per l'aumento dello spessore dei capelli.

Sulla base dei risultati ottenuti nel corso dello studio è possibile affermare che questa lozione ha dimostrato una buona efficacia cosmetica nel coadiuvare la ricrescita fisiologica dei capelli e favorire l'aumento dello spessore.

INTRODUCTION

The aspect of hair, both for men and women, is an important element in characterizing the physical appearance of a person, contributing to criteria of beauty and youth imposed by modern society.

Since ancient times, a lot of products for hair health and wellness were formulated, and cosmetic industry in last years improved in this field with increasingly specialized and diversified products to answer to specific needs of the consumer.

Today many principals, both pharmaceutical and cosmetic, are available, functional for hygiene and keeping healthy hair; in particular the fastest growing sector is the one that works on prevention and treatment of hair loss, one of the most common imperfections of the Western population, both male and female.

There are many forms of alopecia, most of which are acquired, while the few congenital forms are related to rare syndromes. The most common form of alopecia is androgenetic (it represents about 70% of total cases). It develops from puberty, and it causes a diffuse hair loss with different phenotype in the two sexes – see Hamilton and Ludwig classification in Fig. 1 and it recognizes a hormonal cause as well as a genetic predisposition.

More rare forms of alopecia are the alopecia areata, the scarring alopecia, the telogen effluvium, the alopecia caused by drugs, nutritional deficiencies, surgical stress, endocrine, infectious, autoimmune diseases.

MATERIALS AND METHODS

Product In Study

The described study assessed the efficacy and tolerability of a cosmetic lotion for physiological regrowth and increased thickness of hair*.

* Trade name: *Crescina Forte*, formulated by *Labo Cosprophar AG* - Switzerland.

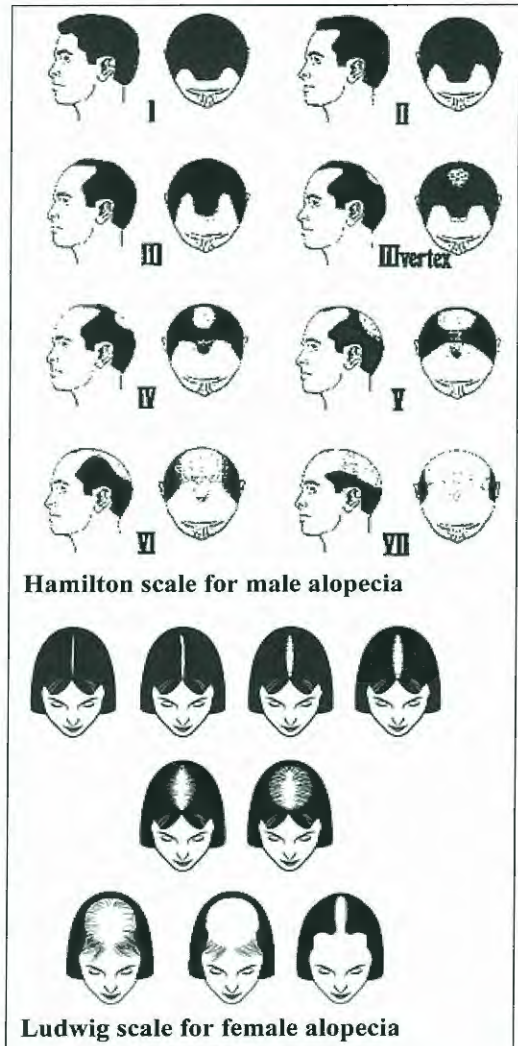


Fig. 1

EXPERIMENTAL DESIGN

This product has been tested on subjects of both sexes aged between 35 and 60 years, suffering from androgenetic alopecia of the second degree of Hamilton scale, and of the first and second degree of Ludwig scale for women. The exami-

ned subjects had not skin diseases of the scalp, allergies or skin reactivity that could interfere with test results.

The cosmetic activity of the product has been evaluated:

- with the technique of phototrichogramma, performed at time of inclusion, after 60 and 90 days of treatment;
- with pull-test, performed at time of inclusion in the study, after 30, 60 and 90 days of treatment;
- with the measurement of the diameter of the hair shaft, performed on 10 hair cut during phototrichogramma, performed at time of inclusion, and after 90 days of treatment;
- with a subjective evaluation of volunteers participating in the experimental study, who have expressed their opinion in relation to the following statements:
 - The product promotes new hair regrowth
 - The product induces an increase in the thickness of hair
 - The product induces a reduction of hair loss
 - The product induces a faster regrowth of hair
 - The product strengthens hair.

Cosmetic qualities have been tested:

- with a subjective evaluation of volunteers participating in the experimental study, who have expressed their opinion, after 30, 60, 90 days of treatment, in relation to the following statements:
 - The product has a pleasant smell
 - The product is easy to apply
 - The product does not grease the hair
 - The product does not weigh the hair
 - The product makes hair soft
 - The product makes the hair easy to comb.

Cutaneous tolerability has been tested:

- with dermatologic control at time of start, after 30, 60, e 90 days of treatment;
- with subjective evaluation of volunteers participating in the experimental study, who have

reported any side effects in a daily diary provided at time of inclusion.

This study was performed in single blind, the experimental conditions adopted (skin test area, amount of product applied, frequency and duration of application) have reproduced the normal conditions of use of the real treatment, and the opinion of volunteers was considered because it could reflect the view of potential consumers.

In the 10 days before the start of the study, volunteers have used a delicate shampoo without specific activity ; this shampoo has been used 2-3 times a week to wash the hair and scalp.

In this period the volunteers have not used other products to wash their hair and scalp (shampoo, lotions etc)

The same delicate shampoo was used during the 90 days of the study.

The lotion was applied in the amount of 3,5 ml, drop by drop, on sparse areas of the scalp, in the evening every other day for 90 consecutive days, without washing the hair after application of the product.

Concerned volunteers did not apply any other cosmetic product on hair and scalp, and they have not changed their hygiene habits and were not exposed to the sun or UVA rays during the period of treatment.

RESULTS

With regard to cosmetic activity of the lotion, results obtained after 90 days with the technique of phototrichogramma showed that this product induces an increase of 2,61% of the total number of hair, an increase of 9,32% in the number of hair in the *anagen* phase (the growth phase of hair), with 6,75% increase in the percentage of hair at this stage, and a decrease of 8,54% in the number of hairs in telogen phase, (the stage of hair loss), corresponding to a reduction of 11,11% as a percentage of hair in telogen phase (see graphs 1, 2, 3, 4, 5).

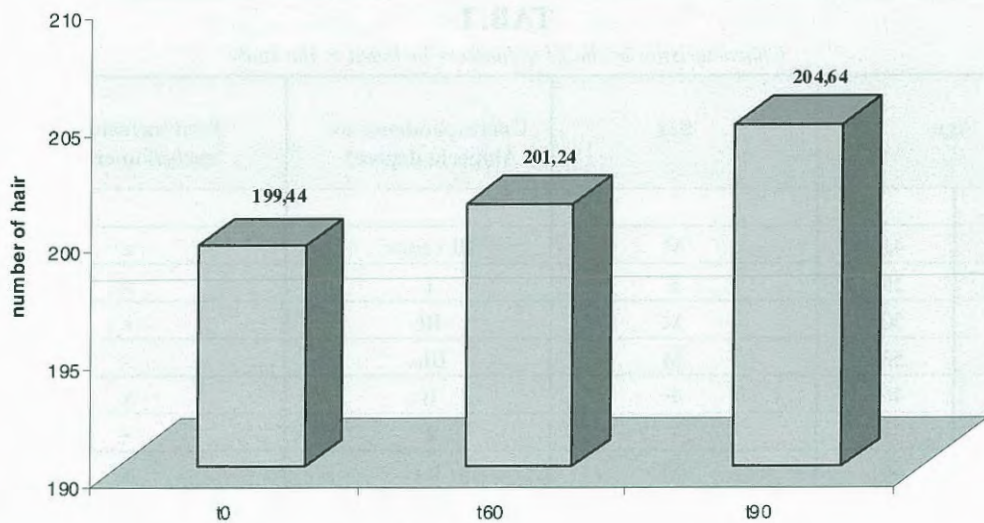
EXPERIMENTAL PROCEDURE

TAB. I

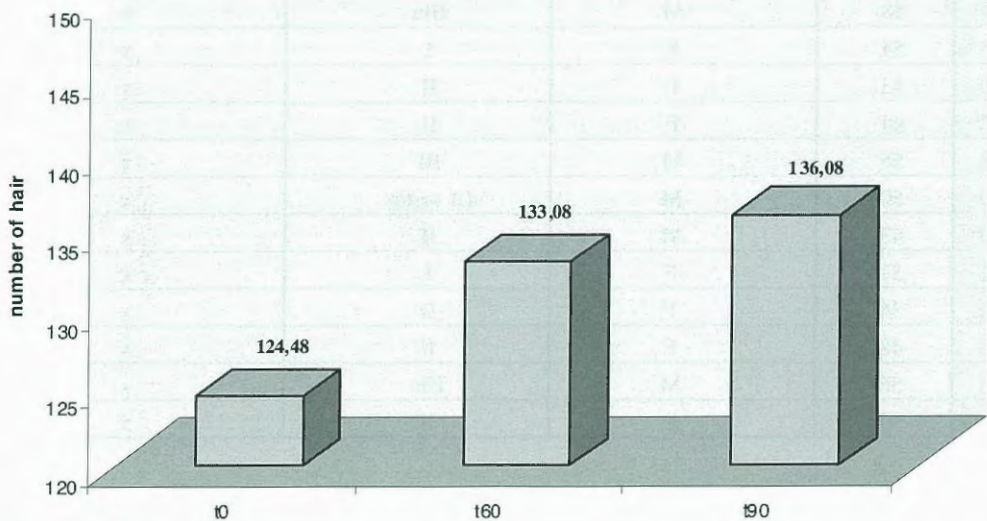
Characteristics of the 25 volunteers included in the study

Age		Sex	Correspondence to Alopecia degree*	Trial inclusion and exclusion criteria
N.				
1	41	M	III vertex	x
2	39	F	I	x
3	50	M	III	x
4	53	M	IIIa	x
5	46	F	II	x
6	39	F	I	x
7	56	M	IIa	x
8	50	M	III	x
9	36	M	II	x
10	58	F	II	x
11	45	M	III vertex	x
12	37	F	I	x
13	41	M	IIa	x
14	58	M	IIIa	x
15	54	F	I	x
16	42	F	II	x
17	44	F	II	x
18	56	M	III	x
19	50	M	III vertex	x
20	43	M	II	x
21	37	F	I	x
22	36	F	II	x
23	48	F	II	x
24	56	M	IIIa	x
25	59	F	II	x

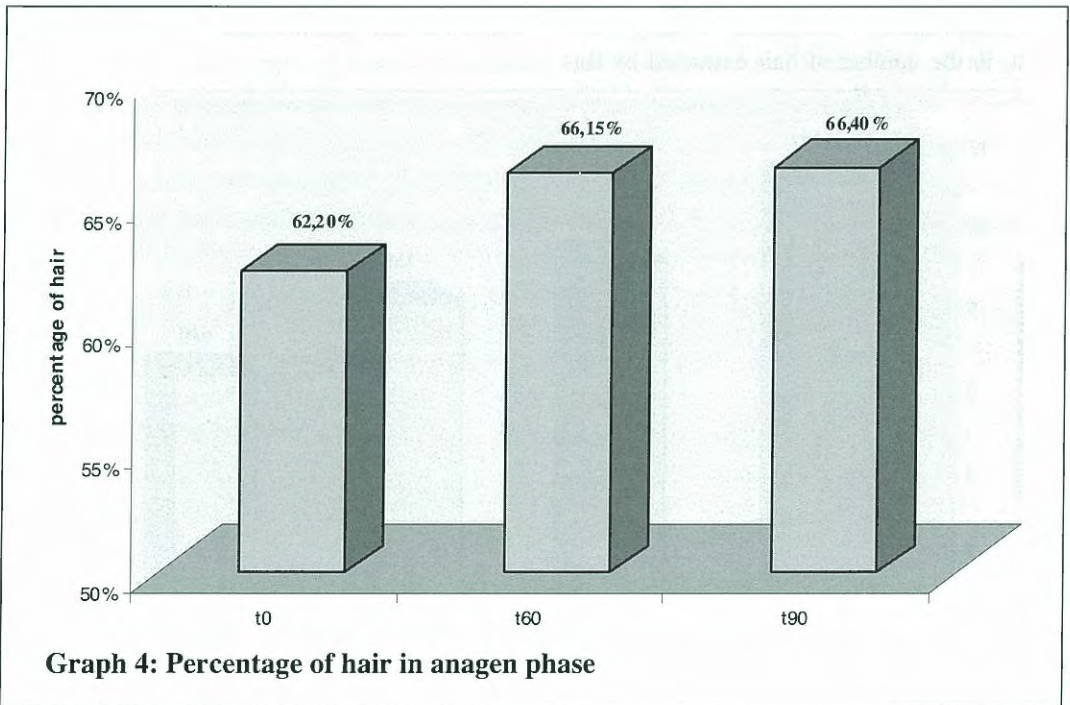
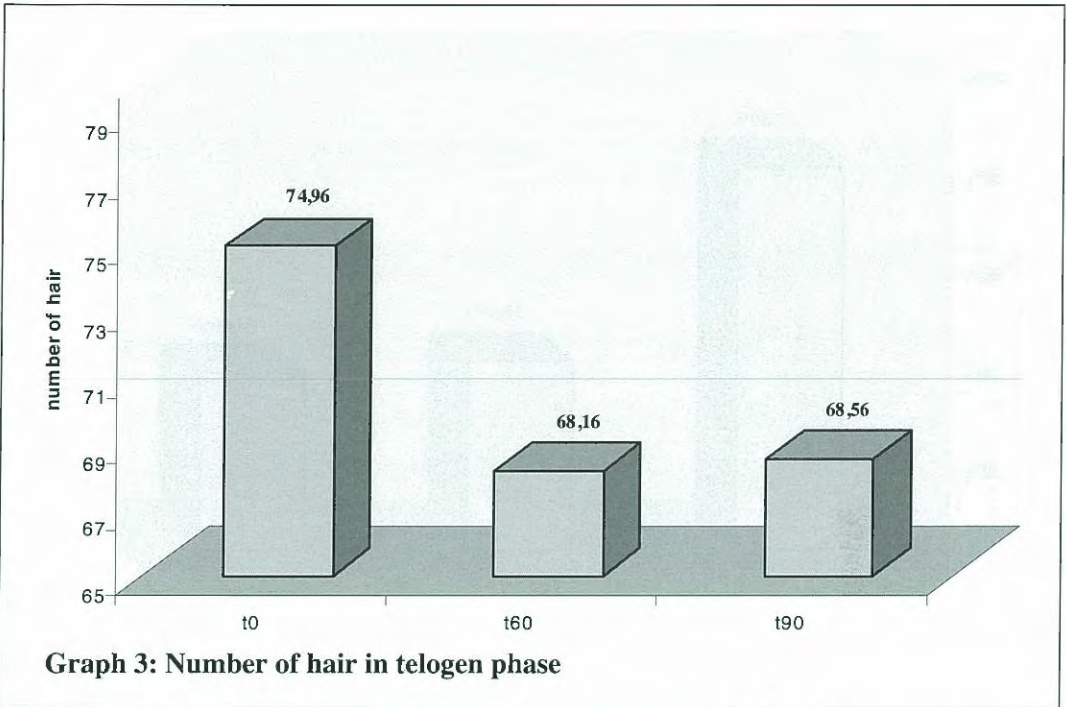
*Legend: /=no x=yes*** according to Hamilton scale for men and Ludwig scale for women*

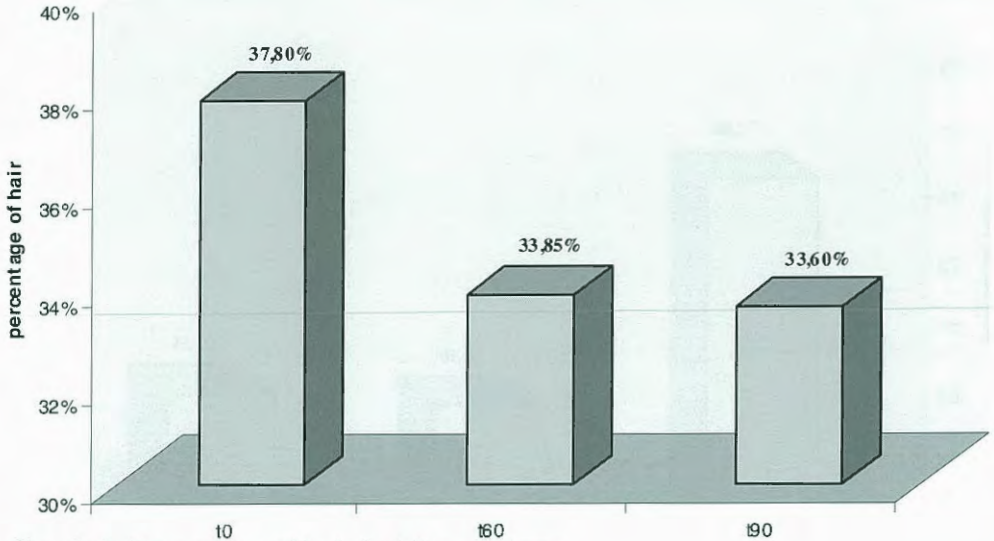


Graph 1: Complexive number of hair



Graph 2: Number of hair in anagen phase



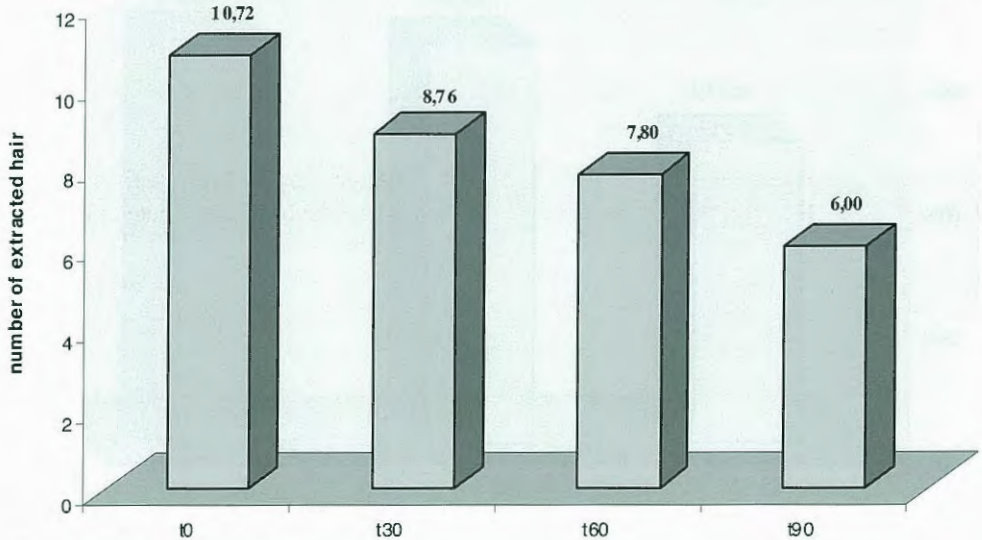


Graph 5: Percentage of hair in telogen phase

The pull-test showed that the lotion induces a decrease of 18,28% after 30 days, of 27,24% after 60 days and of 44,03% after 90 days of treatment, in the number of hair extracted by this

technique, indicating an increase in resistance to the levy in pulling the hair.

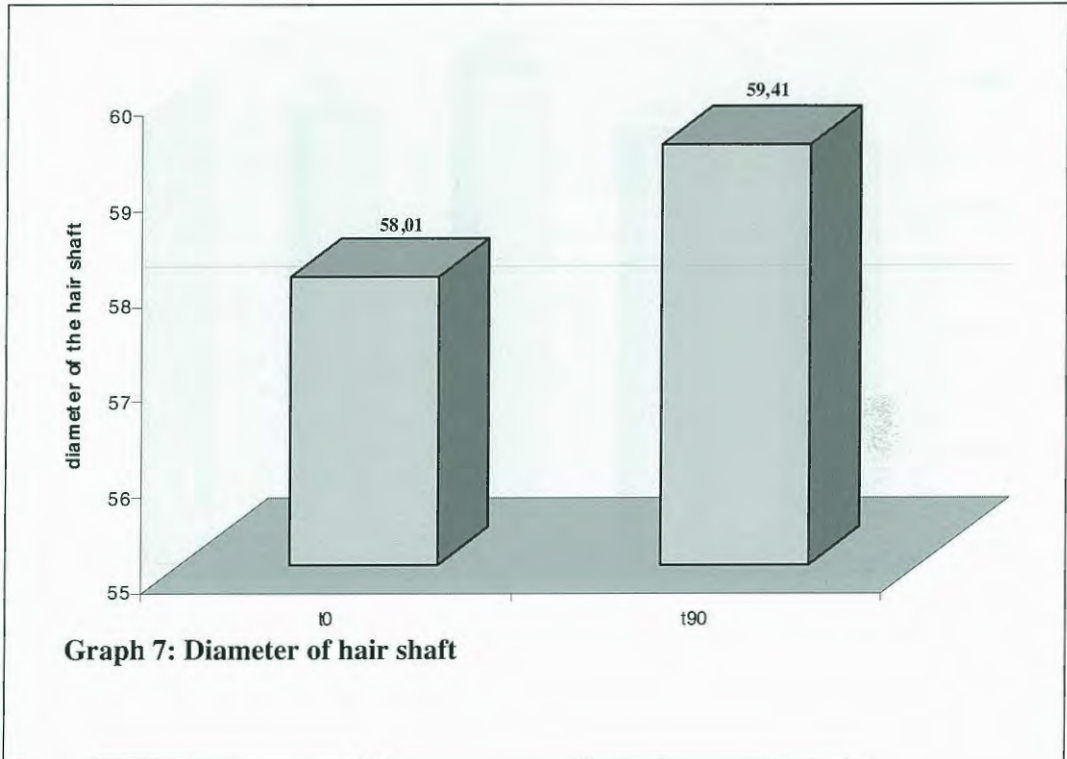
The results are visible in the following graph 6.



Graph 6: Number of extracted hair

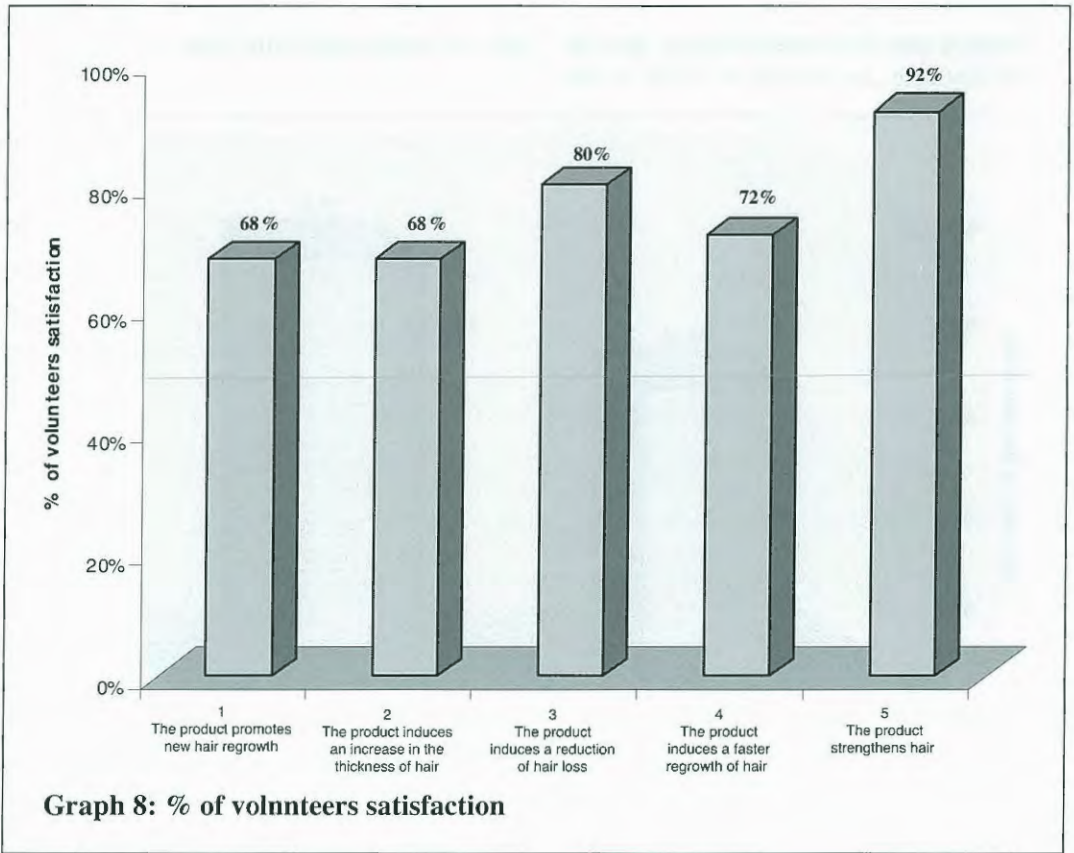
The measurement of the diameter of the hair shaft showed that the product induces, after 90 days of treatment, an increase of 2,41% of the

diameter of hair shaft. The results, expressed in mm, are represented in the following graph 7.



In relation to subjective evaluation of cosmetic activity, after 90 days of treatment, the 68% of volunteers reported that the product promotes the regrowth of new hair and the same percentage reported an increase in the thickness of hair. 80% of the volunteers said that the lotion

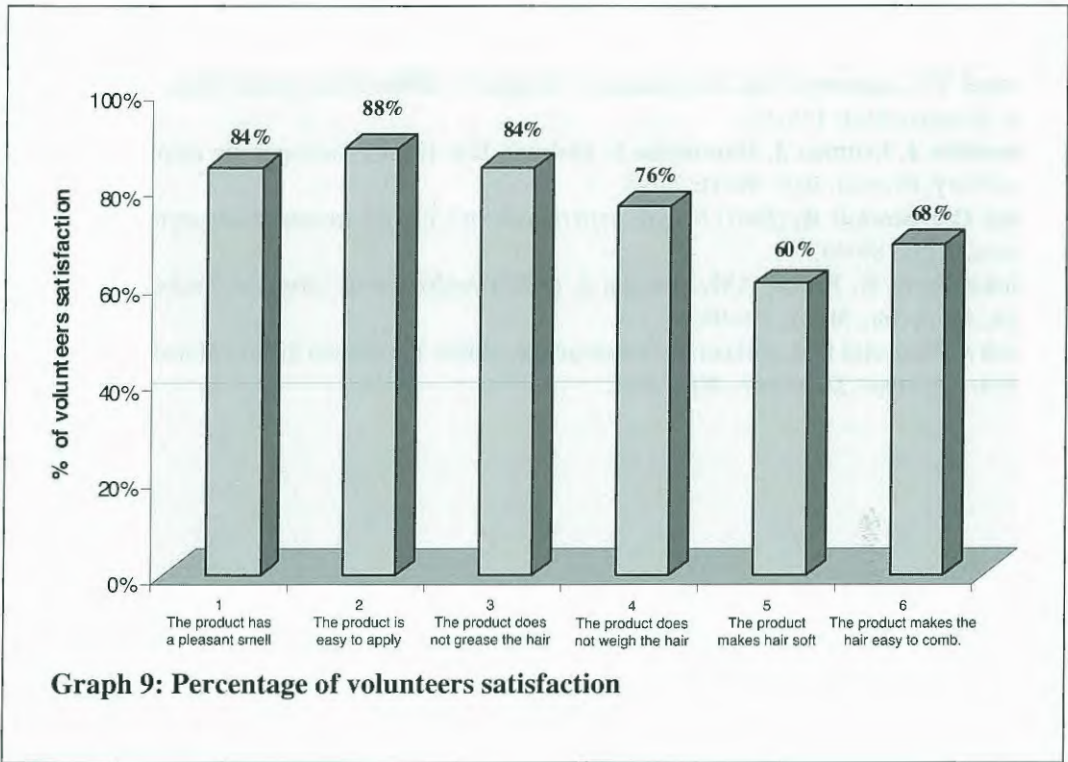
induces a reduction of hair loss, and 72% of them said that it induces a faster hair regrowing. At last, 92% of subjects said that the lotion strengthens the hair. For each parameter, the percentage of satisfied volunteers is represented in following graph 8.



About the lotion cosmetic qualities, after 90 days of treatment, 84% of volunteers expressed satisfaction about the pleasantness of smell, 88% about ease in application, 84% about the fact that the product does not grease the hair, 76% about that it does not weigh. Furthermore, 60% of subjects reported that the product makes hair soft, 68% that it makes the

hair easy to comb. About each assertion, the percentage of satisfied volunteers is represented in following graph 9.

Regarding the cutaneous tolerability of the lotion, there was no skin reaction due to the product concerned at dermatologic control of the specialist, and no volunteer reported the appearance of side effects during the trial.



CONCLUSIONS

Given the results of the study, we can say that this cosmetic lotion showed a good cosmetic efficacy in facilitating the physiological regrowth of hair and promote the increase in the thickness. Indeed, at the end of the study, it was noted an increase of the diameter of hair shaft, while the results of phototrichogramma showed an increase in the number of hair in anagen phase (+9,32%), and a decrease in the number of hair in telogen phase (-8,54%), indicating a good activity of this product. This activity was confirmed by the results of pull-test, that showed an increase of resistance to the levy in pulling the hair.

The volunteers' opinion about the cosmetic effi-

cacy confirmed this results; in particular the lotion was appreciated because it promotes new hair regrowth (reported by 68% of subjects), it induces an increase in the thickness of hair (reported by 68%) and it strengthens hair (reported by 92%).

Furthermore the product was appreciated for his cosmetic qualities, especially for his pleasant smell, because it is easy to apply and it does not grease the hair.

At last, under the experimental conditions adopted in this trial, on the basis of the dermatologic control and the subjective evaluation of volunteers, this cosmetic lotion showed an excellent cutaneous tolerability.

References

- 1) Sehgal VN, Aggarwal AK, Srivastava G, Rajput P. (2006) Male pattern androgenetic alopecia. *Skinmed*, **5(3)**: 128-35.
- 2) Passchier J, Erdman J, Hammiche F, Erdman RA. (2006) Androgenetic alopecia: stress of discovery. *Psychol. Rep.*, **98(1)**: 226-8.
- 3) Dinh QQ, Sinclair R. (2007) Female pattern hair loss: current treatment concepts. *Clin. Interv. Aging*, **2(2)**: 189-99.
- 4) LinksOtberg N, Finner AM, Shapiro J. (2007) Androgenetic alopecia. *Endocrinol. Metab. Clin. North Am.*, **36(2)**: 379-98.
- 5) Tosti A, Piraccini BM, Iorizzo M, Voudouris S. (2005) The natural history of androgenetic alopecia. *J. Cosmet. Dermatol.*, **4(1)**: 41-3.

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SAFETY OF HAIR DYES USE. TOXICOLOGICAL EXPOSURE

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Key words: *Hair dyes; Skin penetration; Hair dyes toxicity; Nitroaminophenol; Nitrophenylenediamine;*

Summary

In recent years hair colouring products popularity has been confronted with the safety of its use. Proposed in 2001 European Union strategy aimed to distinguish the safety dyes list has brought first results. 22 dyes have been banned to use in hair colouring products because of their non-complete toxicological dossiers. Currently, 117 dyes and their precursors are thoroughly assessed including their toxic properties and bioavailability in simulated use conditions.

With a wide-spread research, in literature more and more information on skin penetration ability of dyeing compounds appear, but these data concern particular dyes permeability without any attempts to determine the dependence between penetration ability and dye structure. That kind of relationships are of a great importance from practical site – the isolation of the compounds, which bring desired colour effects, with high affinity to hair and minimal to the skin, are crucial in the viewpoint of effective colouring at maximal safety of application.

The investigation of penetration ability of a series of semi-permanent dyes from the nitrophenylenediamines and nitroaminophenols groups was carried out. The research indicates different penetration ability depending on the molecular structure of investigated dyes. Diffusion inside the stratum corneum-like lipid liquid-crystalline structures is a limiting factor for permeation.

Riassunto

In questi ultimi anni la grande popolarità dei coloranti per capelli ed il loro frequente uso è stato valutato per determinarne la sicurezza.

La proposta di legge della Comunità Europea intesa ad evidenziare la sicurezza d'uso dei coloranti per capelli ha dato i primi risultati ponendone al bando 22 i cui dati tossicologici non sono stati ritenuti sufficienti.

Ai giorni nostri 117 coloranti con i relativi precursori sono stati classificati e controllati sotto l'aspetto tossicologico nelle normali condizioni d'uso.

Molti sono i dati presenti nella letteratura anche riguardanti la penetrabilità di questi composti in rapporto alla loro struttura chimica.

Questo tipo di relazione risulterebbe molto importante soprattutto per determinarne la massima affinità nei confronti della struttura dei capelli con la minima affinità nei confronti della cute.

La conoscenza più approfondita del loro comportamento darebbe la possibilità di determinare l'affinità che il colorante possiede nei confronti della cheratina dei capelli contribuendo anche alla loro massima sicurezza d'uso durante l'applicazione.

Con questo studio si è voluto determinare il grado di penetrabilità di una serie di coloranti semi permanenti appartenenti al gruppo delle nitrofenilenediamine e dei nitroaminofenoli.

E' stato così dimostrato come la penetrazione attraverso la barriera cutanea dipenda in modo significativo dalla struttura chimica dei coloranti.

INTRODUCTION

In recent years the cosmetics consumers' health safety assurance is one of the most often considered problem in circles of consumers' organisations, science centres and also cosmetic manufacturers'.

In agreement with European Union legislative bodies cosmetic cannot be harmful for consumers. This attitude had begun thoroughly research in safety application of preservatives, UV filters, fragrances and others, for which literature reports shows even minimal usage adverse effects probability. In this field, a special place is taken by hair dyes used in hair colouring products.

Hair dyes and its precursors are a group of cosmetics ingredients with a various chemical structures. The presence of chromophore groups in a dye structure (or in case of oxidative dyeing - in structure of pigment synthesized during colouring process) is a basic parameter, which determines its hair colouring products usage. In case of the specific structure, a part of hair dyes could possess toxic properties.

HAIR DYES SAFETY APPLICATION ASSESSMENT

In relation to a large hair dyeing popularity confronted with potentially toxic properties of colouring compounds Scientific Committee on Consumer Products – SCCP begun an insightful analysis of particular hair dyes and its precursors properties (SCCNFP/0553/01). The scheme of proposed strategy is presented in Figure 1.

According to incorporated hair dyes safety assessment strategy the fully responsiveness for products safety is transferred to dyes and cosmetics manufacturers. After consideration of the dyeing mixture application specificity, the results insufficiency from the toxicity research

for particular substances has been stated (especially results carried out with *in vitro* methods, or these with the extrapolation from oral tests into skin application). With the SCCP opinion the toxicological analysis carried out with simulated use conditions is necessary; the time of application, product pH, used vehiculum (applied dyeing compounds and its precursors mixture) should be taken into account (SCCP/0959/05).

The necessity to consider the substance bioavailability and also possible metabolic transformations after skin application (dependently on the road of application metabolism could be different) had been recommended in the assessment of Margin of Safety (MOS).

In agreement with the schedule of hair dyes safety assessment strategy at July 2006 SCCP notify the list of 22 substances, which use in hair colouring products is banned since December 1st 2006. The list contains compounds for which any toxicological data had not been submitted (IP/06/1047). The ban for substances with indeterminate toxicological profiles is significant: the ban for something which is not known (not that which is harmful) is the beginning of the brand new approach for the problem of consumers' health safety

The dossier for 117 substances had been submitted to SCCP by the cosmetic industry. After thoroughly analysis its will be used to the positive list of safety hair dyes generation. Up to now SCCP publicize opinion on 47 (from the group of 117) substances, further will be successively determined (4).

Additionally SCCP notify the opinion on hair dyes possible mutagenesis/carcinogenesis (SCCP/0930/05, SCCNFP/0797/04), recommends the standard protocols to assess above mentioned hair dyes toxicity (SCCNFP/0720/03, final), and also publicize a memorandum about its sensitising potential (8).

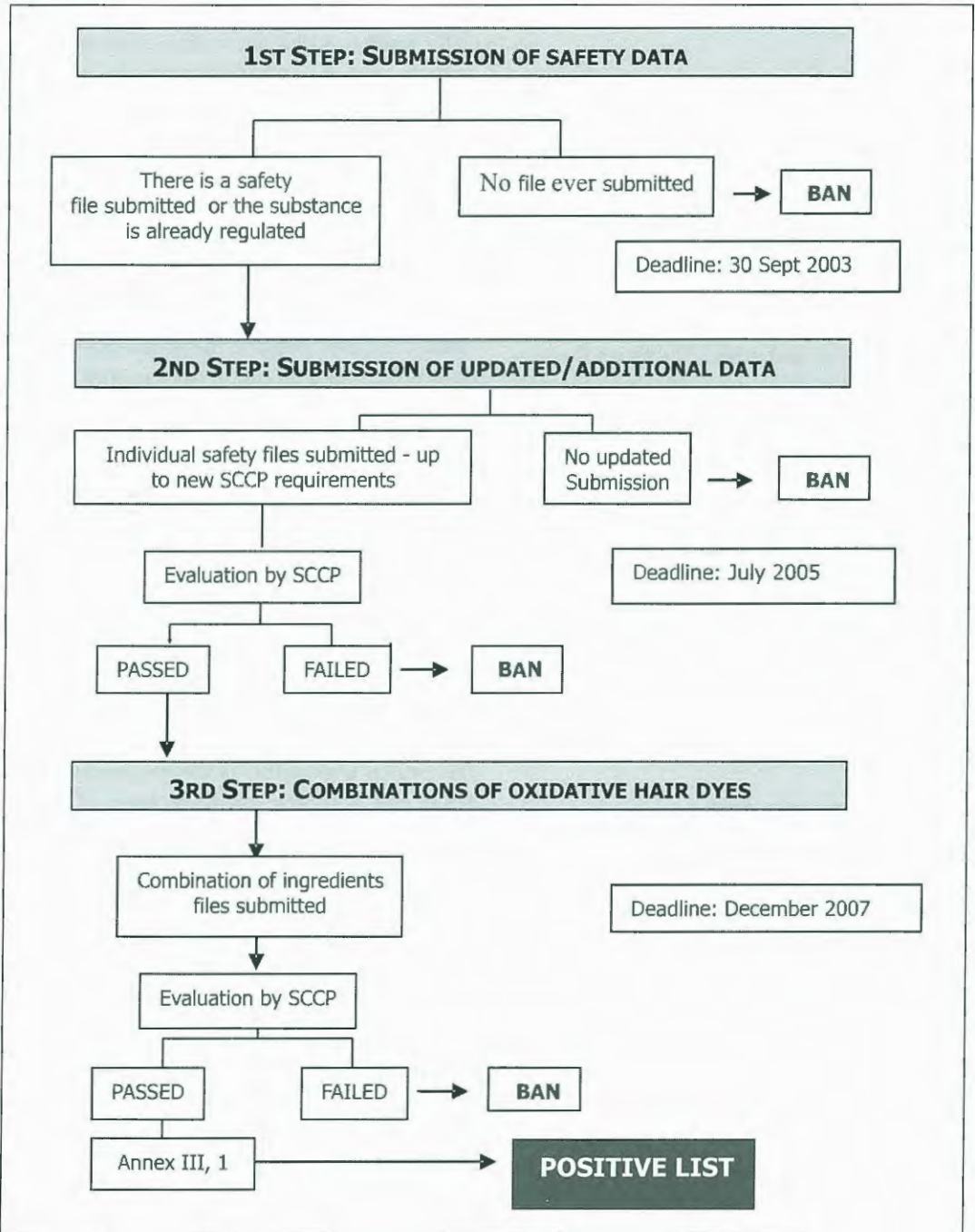


Fig. 1 Hair dyes safety assessment strategy (SCCNFP/0553/01).

Such a multidirectional and a wide range research have not been conducted, yet. Currently the hair dyes and its precursors are the most completely analysed group of cosmetic ingredients.

HAIR DYES AND ITS PRECURSORS BIOAVAILABILITY

The fundamental for hair dyes safety assessment is its bioavailability in the simulated use conditions. If substance, after skin application, does not have transdermal penetration ability, is in condition of typical hair colouring product application biologically unavailable. In such conditions, the potential toxic effects of its use cannot be observed.

The hair dyeing conditions are unique, the description of exposure during colouring process is presented below:

- Relatively short term of application (typically hair dyeing mixture is applied for 30-40 minutes)
- Hair provides a large surface area and competes with scalp for dyestuff absorption
- The cosmetic components could influence on dyes and its precursors penetration ability
- Substantial shade-related variations in applied dose
- Colouring products are mixtures of dyeing substances with different skin penetration ability, applied simultaneously

Additionally exposure specificity depends on the dyeing method, in case of oxidative products:

- Alkaline pH = 9-10 swollen the hair (allows for colour precursors penetration into the hair)
- Cosmetic ingredients (besides colouring substances) could be responsible for dyeing mixture application adverse effects (especially in relation to sensitising potential; for example: alkalines, hydrogen peroxide)
- The reactions running in dyeing mixture,

during the dyeing process, cause the decrease in the amount of colour precursors – the substrates reacts each other, and the coloured pigments, responsible for colour effects after treatment, are synthesized – the amount of pigments and its chemical structures depends on the structures of used substrates and the reactions kinetics (SCCP/0941/05).

The compounds of oxidative hair colouring products are additionally analysed. Particular precursors and colour modifiers are tested alone, and also in mixtures typically used in market products. The oxidative reaction products are identified, its dermal penetration ability is estimated and its potentially toxic properties are also determined (SCCNFP/0808/04, SCCP/0941/05, SCCP/1004/06).

First data on hair dyes skin penetration comes from 70-ties last century. The urine discoloration where found for women who dyed hair. Since that moment hair dyes and its precursors transdermal penetration had been investigated *in vivo*, e.g. on human volunteers (where ¹⁴C radio labelled dyes and its metabolites where identified in urine and other systemic fluids); or with *in vitro* methods, with model membranes or human, mammalian skin application.

CHEMICAL STRUCTURE AND THE PENETRATION ABILITY

Higher understanding in the field of the skin penetration allows predicting substance penetration ability and the determination of physicochemical parameters, which decide about it.

From the viewpoint of penetration through lipid liquid-crystalline structures of *stratum corneum*, transport is a complex process with several steps involved. The physicochemical processes taking parts in penetration process are as follows: compound partition between donor vehicle and a membrane (*stratum corneum*), next - the diffu-

sion inside the membrane. The final step is another partition between lipid membrane and hydrophilic receptor system (living layers of the skin).

The lipophilicity of a substance is the most often parameter used to predict permeation ability of a compounds in biological systems. It is usually expressed as a partition coefficient in octanol-water system ($\log P_{o/w}$) and describes substance affinity to each phase.

Lipophilicity is a determinant of compound partition between donor vehicle and a membrane (*stratum corneum*), and also decides about partition to more hydrophilic receptor system (living layers of the skin).

The permeation from lipophilicity dependence is parabolic, although the exceptions from this principle are known. Mostly increase in compound organic phase affinity cause increase in penetration ability, but up to some limit level. When molecule becomes too hydrophobic, its penetration to water phase comes slower and slower, and as an effect: the transport through membrane (*stratum corneum*) into receptor system (living layers of the skin) is hindered (Zatz, 1991; Guy and Hadgraft, 1993; Roberts et al., 1995; Pliška et al., 1996; Mälkiä et al., 2004).

The penetration rate is determinates by the of diffusion processes inside a membrane (*stratum corneum*). The diffusion of molecule is connected with its size, electrostatic properties and ability to form intermolecular bonds (mainly H-bonds) (Pugh et al., 1996; du Plessis et al., 2001; du Plessis et al., 2002; Abraham et al., 2002; Geinoz et al., 2002).

Low penetration ability for charged, and also large sizes substances had been widely notified. It is regarded, as the compounds with molecular weight above 3kDa are too large to penetrate the *stratum corneum* and stays on its surface. In case of smaller molecules this aspect seems to be not significant, because even compounds with mini-

mal size distinctions could shows penetration differences (Guy and Hadgraft, 1993).

In this case the ability to interact with the membrane structures (*stratum corneum*) is a parameter, which could have a major impact on penetration ability.

Liquid-crystalline bilayers structures of the lipid membranes possess a number of centres with H-bonding capacity. For compounds able to interact like that, as a result of strong H-bond interactions, there is a high probability of the diffusion inside the membrane limitation (Pugh et al., 1996; du Plessis et al., 2001; Plessis et al., 2002; Abraham et al., 2002; Geinoz et al., 2002; Mälkiä et al., 2004).

Hair dyes and its precursors penetration ability.

The data submitted SCCP includes, for particular substances used in dyeing mixtures, an information on hair dyes skin penetration ability. The penetration studies results for 47 hair dyes, performed in typical conditions of application (in accordance with SCCP guidelines), shows that only a small percent of applied doses permeate the horny layer (the presented information from SCCP given opinions concerns only the dyes examined up to now since the strategy incorporation). Less than 5% of applied doses were bioavailable both in oxidative and in semi-permanent (without hydrogen peroxide) conditions for most of analysed compounds (more than 95%). It has to be stated that a part of given results have not been used for Margin of Safety (MOS) calculations. The further research is needed for a part of hair dyes (4).

The aim of the current hair dyes safety assessment strategy is to distinguish the list of safety dyes. The ban for usage of some compounds is possible, and as a result the limitation in range of colours offered to consumers could be observed.

TAB. I*Investigated hair dyes safety*

INCI name	SCCP opinion	SCCP document
4-nitro-o-phenylenediamine (3a)	The use as an oxidative hair dye substance at a maximum concentration (C _{max}) of 0.5% in the finished cosmetic product (after mixing with hydrogen peroxide) does not pose a risk to the health of the consumer, apart from its sensitising potential. Studies on genotoxicity/mutagenicity in finished hair dye formulations should be undertaken*	(SCCP/0980/06)
HC Red 1 (2a)	The use in semi-permanent hair dye formulation at C _{max} = 1.0% does not pose a risk to the health of the consumer, apart from its sensitising property.	(SCCP/0981/06)
N,N'-bis (2-hydroxyethyl)-2-nitro-p-phenylenediamine (1c)	The information submitted is inadequate to assess the safe use of the substance, the following information is required: - chemical characterization - percutaneous absorption in an oxidative environment. - data on the genotoxicity/mutagenicity*	(SCCNFP/0781/04)
HC Blue 2 (1d)	Itself in semi-permanent hair dye formulations at C _{max} = 2.8% in the finished cosmetic product does not pose a risk to the health of the consumer, apart from its sensitising potential. It is comprised of both a secondary and a tertiary amino group, and thus is prone to nitrosation**.	(SCCP/1035/06)
4-amino-3-nitrophenol (2a)	Extreme sensitiser. Insufficient information to assess the safe use of the substance, the following information is required: - an in vitro percutaneous absorption study should be performed*. - an additional mutagenicity/genotoxicity test should be performed* in order to exclude a gene mutation potential.	(SCCP/1059/06)
3-nitro-p-hydroxyethylaminophenol (4b)	The use itself as an oxidative hair dye substance at C _{max} = 3.0% in the finished cosmetic product (after mixing with hydrogen peroxide) or as an ingredient in semi-permanent hair colouring products at C _{max} = 1.85% does not pose a risk to the health of the consumer, apart from its sensitising potential. It is a secondary amine, and thus is prone to nitrosation**.	(SCCP/1036/06)

*performed following the relevant SCCNFP/SCCP opinions and in accordance with its Notes of Guidance.

** It should not be used in combination with nitrosating substances. The nitrosamine content should be < 50ppb.

Nitrophenylenediamines and nitroaminophenols penetration ability.

The analysis of particular substances used in hair colouring properties is unquestionably proper; but the dyes penetration ability with its physico-chemical properties correlation seems to have practical meaning.

The penetration ability of several direct dyes used in hair dyeing had been investigated, as a model nitrophenylenediamine and nitroaminophenol derivatives were chosen. This group of compounds has been used in hair colouring products for a long time, due to its wide range of colours, low price, high stability and good keratin affinity. Table I shows current SCCP opinions on a few of analysed dyes.

Investigated dyes structures are presented in Figure 2, the dyes names are given according to INCI nomenclature. (For a better observed dependencies examination, additionally the penetration ability of few analogues, not used as a hair dyes, had been studied; for those structures there are no INCI name in Figure 2).

The penetration ability analysis for selected dyes were carried out in model system: in side-by-side cells with liquid-crystalline lipid membranes. The lipids mixture corresponds to *stratum corneum* composition (ingredients by INCI name: Hydrogenated Lecithin, Cholesterol, Ceramide 3, Ceramide 2, Palmitic Acid, Oleic Acid).

Model system had been used previously for the estimation of penetration ability of biologically active agents, cosmetic ingredients, ect. It is well enough described in literature (Matsuzaki et al., 1993; Arct et al., 2002).

Dyes penetration ability was expressed as penetration coefficient – K_p [cm/h]. The results for nitrophenylenediamines are presented in Figure 3, for nitroaminophenols in Figure 4. Dyes on both graphs are placed in order with the lipophilicity

(expressed as partition coefficient in octanol-water system – $\log P_{o/w}$) decrease.

No correlation between penetration ability and lipophilicity of investigated compounds has been observed. The diffusive properties could have a major impact on its penetration ability. There are H-bond donors and acceptors present in analysed dyes structures. Attendance of these groups in dyes structures influence on its vehiculum-membrane partition coefficients and also cause its strong interactions with membrane liquid-crystalline structures, resulting in the decrease in diffusion ability.

The decrease in penetration ability with the N-hydroxyethyl substitution in nitrophenylenediamines structures has been observed. The effect is related to the increase in molecular size (the incorporation of some spatial obstacle cause worsening of the diffusion capacity inside the membrane), and also with the changes in membrane interactions ability (H-bonding). A sum of these effects is the reason of decrease in penetration ability.

A special interest has been put forward to those investigated dyes that exhibit intramolecular H-bonding capacity. Some differences in penetration have been observed for isomeric structures of nitrophenylenediamines (1a and 3a). The dye with strong intramolecular H-bonding capacity is able to limit the membrane interactions, and as that penetrates slightly more effectively.

Similar can be considered for isomeric nitroaminophenols (4a and 5a). The possibility to interact intramolecularly with higher bonding energy; additionally the “free” (not involved in intramolecular bonding) hydroxyl group occurrence (which interacts with membrane) in 4a structure cause its lower penetration ability, resulted from the diffusion limitations.

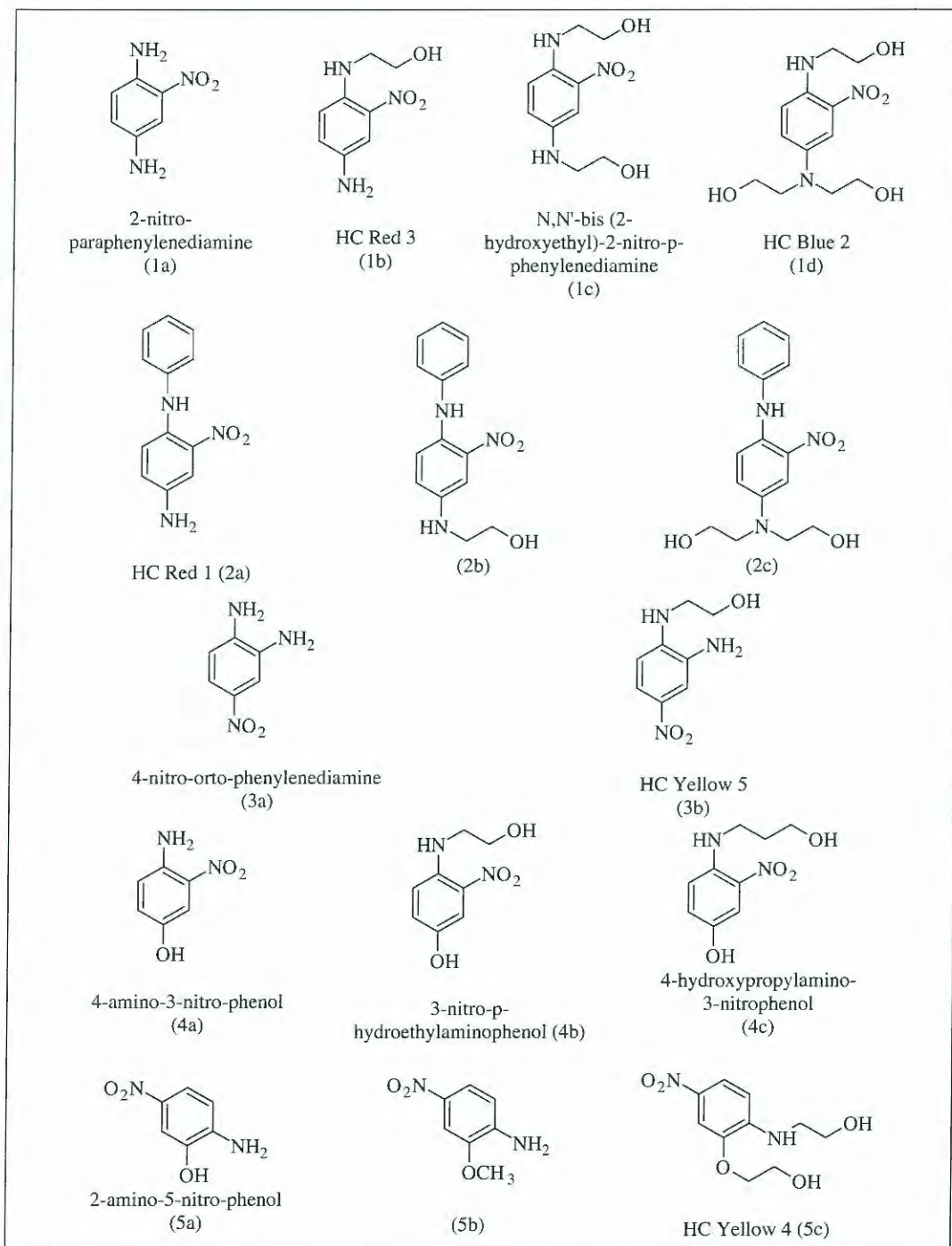


Fig. 2 Investigated hair dyes structures.

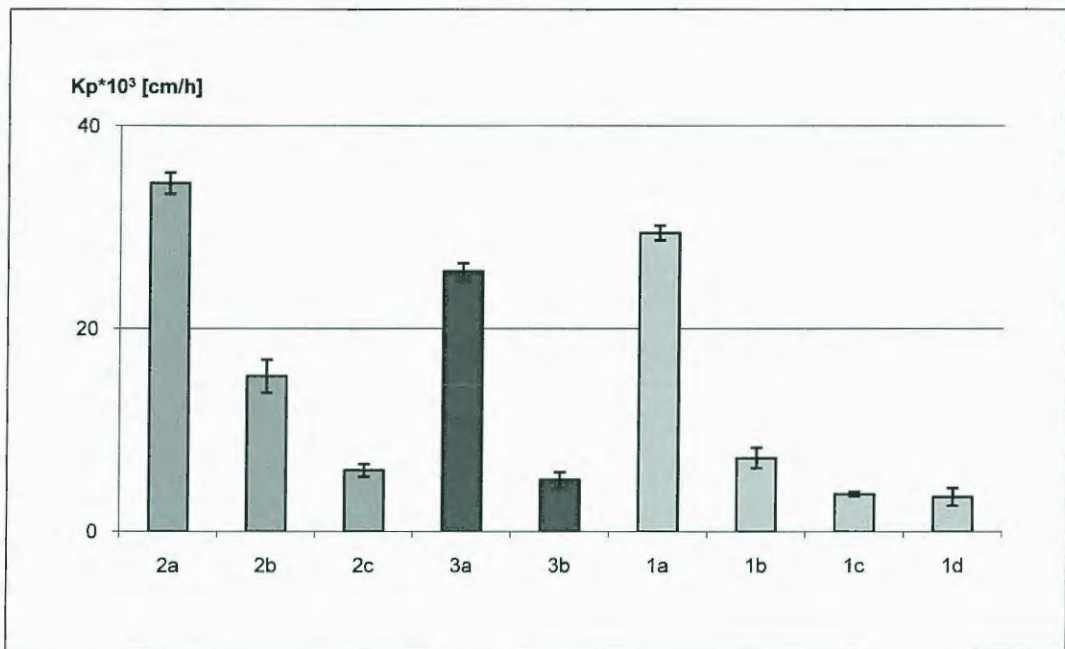


Fig. 3 Penetration of investigated nitrophenylenediamines from buffer solution (pH = 7,4).

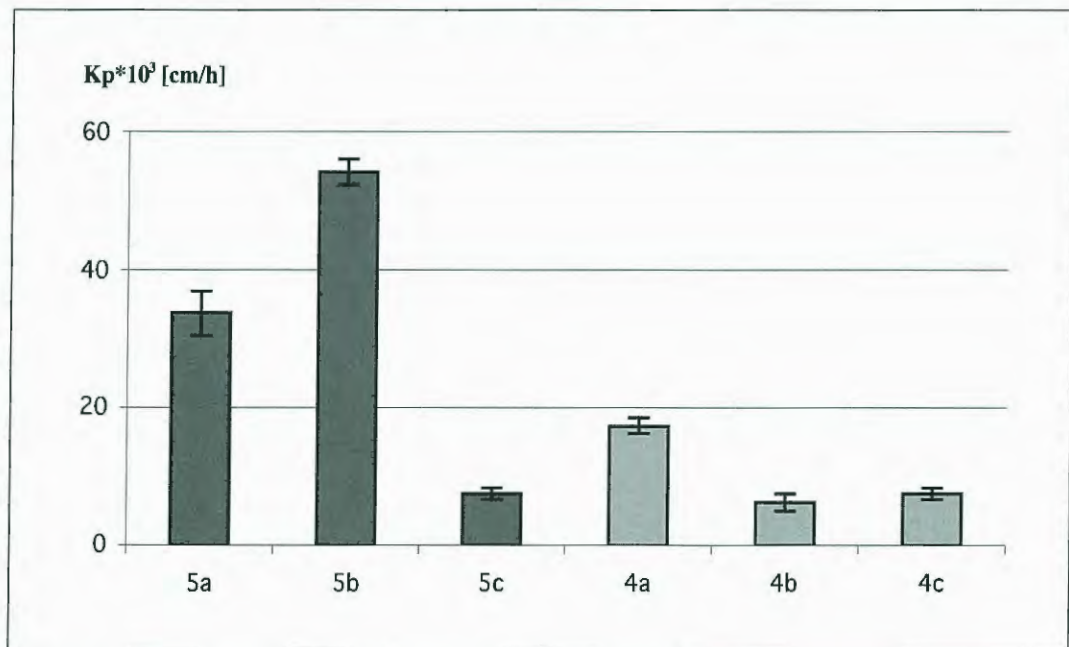


Fig. 4 Penetration of investigated nitroaminophenols from buffer solution (pH = 7,4).

The results of presented studies showed, that the permeation of nitrophenylenediamines and nitroaminophenols used as hair dyes through the epidermal barriers depends significantly on their chemical structure. The introduction of substituents capable to form H-bondings can limit the permeation ability dramatically, even in case of lipophilic structures.

A further study are necessary, to distinguish the parameters which determinates hair dyes penetration ability (Quantitative-structure activity relationships), also further penetration analysis will allow to determine dependencies more precisely.

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References

- 1) SCCNFP/0553/01: Assessment strategies for hair dyes. Adopted during the 22nd plenary meeting of 17 December 2002, available at:
<http://pharmacos.eudra.org/F3/cosmetic/doc/HairDyestrategyInternet.pdf>
- 2) SCCP/0959/05: Review of the SCCNFP opinion on Hair Dye Strategy in the light of additional information, Adopted by the SCCP during the 8th plenary meeting of 20 June 2006, available at:
http://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_068.pdf
- 3) IP/06/1047: Commission bans 22 hair dye substances to increase consumer safety, available at:
<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1047&format=HTML&aged=0&language=EN&guiLanguage=en>
- 4) Scientific Committee on Consumer Products opinions on hair dyes, available at:
http://ec.europa.eu/health/ph_risk/committees/04_sccp/sccp_opinions_en.htm
- 5) SCCP/0930/05: Opinion on personal use of hair dyes and cancer risk, adopted during the 5th plenary meeting of 20 September 2005, available at: http://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_001.pdf#search=%22SCCP%2F0930%2F5%3A%20%22
- 6) SCCNFP/0797/04: Opinion concerning use of permanent hair dyes and bladder cancer. Updated 2004, adopted by the SCCP on 23 April 2004 by means of the written procedure, available at:
http://ec.europa.eu/health/ph_risk/committees/sccp/documents/out272_en.pdf
- 7) SCCNFP/0720/03, final: Updated recommended strategy for testing hair dyes for their potential genotoxicity/mutagenicity/carcinogenicity, Adopted by the SCCNFP during the 24th plenary meeting of 24-25 June 2003, available at:
http://ec.europa.eu/health/ph_risk/committees/sccp/documents/out224_en.pdf
- 8) Memorandum on hair dyes substances and their skin sensitising properties, Adopted by the SCCP during the 10th plenary of 19 December 2006, available at:
http://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_s_05.pdf
- 9) SCCP/0941/05: Opinion on Exposure to reactants and reaction products of oxidative hair dye Formulations, Adopted by the SCCP during the 6th plenary of 13 December 2005, available at:
http://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_032.pdf
- 10) SCCP/1004/06: Skin penetration of oxidative hair dyes formed by the coupling of precursors and couplers under simulated conditions of hair dyeing. Update of the Annex to the Opinion on Exposure to reactants and reaction products of oxidative hair dye formulations (doc. n° SCCP/0941/05), Adopted by the SCCP during the 8th plenary of 20 June, available at:
http://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_067.pdf2006
- 11) SCCNFP/0808/04: Opinion concerning ring study on reaction products from typical combinations of hair colouring ingredients, adopted by the SCCNFP on 23 April 2004 by means of the written procedure, available at: http://ec.europa.eu/health/ph_risk/committees/sccp/documents/out271_en.pdf
- 12) SCCNFP/0750/03: Opinion concerning basic criteria for the *in vitro* assessment of dermal absorption of cosmetic ingredients, updated October 2003 Adopted by the SCCNFP during the 25th plenary meeting of 20 October 2003, available at: http://ec.europa.eu/health/ph_risk/committees/sccp/documents/out231_en.pdf

- 13) Zatz JL. (1993) Scratching the surface: Rationale and approaches to skin permeation. In: Zatz JL, ed. Skin permeation, Fundamentals and application. Wheaton, IL: Allured Publishing Corp.; p. 11-31.
- 14) Guy RH, Hadgraft J. (1993) Percutaneous Penetration Enhancement, Transdermal Drug Delivery: Developmental Issues and Research Initiatives, Marcel Dekker, New York.
- 15) Roberts MS, Pugh WJ, Hadgraft J, Watkinson AC. (1995) Epidermal permeability-penetrant structure relationships:1. An analysis of methods of predicting penetration of monofunctional solutes from aqueous solutions. *Int. J. Pharmaceutics*, **126**: 219-233.
- 16) Pliška V, Testa B, van de Waterbeemd H. (1996) Lipophilicity in Drug Action and Toxicology vol. 4, 1 ed., WCH, Weinheim.
- 17) Mälkiä A, Murtomäki L, Urtti A, Kontturi K. (2004) Drug permeation in biomembranes *In vitro* and *in silico* prediction and influence of physicochemical properties. *Europ. J. Pharm. Sci.*, **23**: 13-47.
- 18) Pugh WJ, Roberts MS, Hadgraft J. (1996) Epidermal permeability penetrant structure relationships 3. The effect of hydrogen bonding interactions and molecular size on diffusion across the *stratum corneum*. *Int. J. Pharmaceutics*, **138**: 149-165.
- 19) Plessis du J, Pugh WJ, Judefeind A, Hadgraft J. (2001) The effect of hydrogen bonding on diffusion across model membranes consideration of the number of H-bonding groups. *Europ. J. Pharm. Sci.*, **13**: 135-141.
- 20) Plessis du J, Pugh WJ, Judefeind A, Hadgraft J. (2002) Physico-chemical determinants of dermal drug delivery: effects of the number and substitution pattern of polar groups. *Europ. J. Pharm. Sci.*, **16**: 107-112.
- 21) Abraham MH, Ibrahim A, Zissimos AM, Zhao YH, Comer J, Reynolds DP. (2002) Application of hydrogen bonding calculations in property based drug design, *www.drugdiscoverytoday.com*, vol. 7, No. 20.
- 22) Geinoz S, Rey S, Boss G., Bunge AL, Guy RH, Carrupt P-A, Reist M, Testa B. (2002) Quantitative Structure-Permeation Relationships for Solute Transport across Silicone Membranes. *Pharmaceutical Research*, Vol. 19, No. 11: 1622-1629.
- 23) SCCP/0980/06: Opinion on 4-nitro-o-phenylenediamine Colipa N° B24, The SCCP adopted this opinion at its 10th plenary on 19 December 2006, available at: http://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_093.pdf
- 24) SCCP/0981/06: Opinion on HC Red N° 1 Colipa N° B48, Adopted by the SCCP during the 9th plenary meeting of 10 October 2006, available at: http://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_072.pdf
- 25) SCCNFP/0781/04: Opinion of SCCNFP concerning N,N'-BIS-(2-hydroxyethyl)-2-nitro-p-phenylenediamine Colipa n° B34, adopted by the SCCNFP on 23 April 2004 by means of the written procedure, available at: http://ec.europa.eu/health/ph_risk/committees/sccp/documents/out257_en.pdf
- 26) SCCP/1035/06: Opinion on HC Blue N°2 Colipa N° B37, The SCCP adopted this opinion during its 10th plenary of 19 December 2006, available at: http://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_084.pdf
- 27) SCCP/1059/06: Opinion on 4-amino -3-nitrophenol Colipa n° B51, The SCCP adopted this opinion at its 11th plenary on 21 March 2007, available at:

http://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_094.pdf

- 28) SCCP/1036/06: Opinion on 3-nitro-p-hydroxyethylaminophenol Colipa N° B54, The SCCP adopted this opinion during its 10th plenary of 19 December 2006, available at: http://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_083.pdf
- 29) Matsuzaki K, Imaoka T, Asano M, Miyajima K. (1993) Development of a model membrane system using *stratum corneum* lipids for estimation of drug skin permeability. *Chem. Pharm. Bull.*, **41** (3): 575-579.
- 30) Arct J, Chełkowska M, Kasiura K, Pietrzykowski P. (2002) The fatty acids as penetration enhancers of amino acids by ion pairing. *Int. J. Cos. Sci.*, vol. **24** (6): 313-322.

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PERSONAL EXPERIENCE IN THE USE OF DEXPANTHENOL FOR SKIN CARE AFTER CHEMICAL PEELING AND PHOTO-REJUVENATION PROCEDURES

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Summary

The importance of skin care after skin rejuvenation procedures, including chemical peels, cannot be overestimated. It is aimed at lessening irritation and possible inflammation reactions, as well as enhancement of healing and photo protection.

Topical dexpanthenol has been traditionally used to improve healing properties of the skin. We have chosen this pharmaceutical agent for skin care of our patients, undergoing various skin rejuvenation procedures. Our personal experience demonstrates definite advantages of such post-procedure therapy.

Riassunto

L'importanza dei trattamenti cosmetici da effettuarsi dopo le procedure adottate per ringiovanire la cute non possono essere sovrastimate. E' pertanto importante controllare e ridurre quanto più possibile i fenomeni irritativi provocati da tali trattamenti nei confronti della cute, oltre che incrementarne l'attività fotoprotettiva e le relative capacità autoriparative.

Il trattamento topico con il dipantenolo viene utilizzato da diversi anni per stimolare le proprietà riparative della cute.

L'uso di questo ingrediente farmaceutico, utilizzato su nostri pazienti dopo diverse procedure di ringiovanimento quali la fototerapia e l'uso dei peeling chimici sembra dare buoni risultati e vantaggi terapeutici evidenti.

INTRODUCTION

Aesthetic medicine of today offers a number of techniques for skin rejuvenation and prevention of skin aging. The majority of such methods are based on removal (ablation) of superficial layers of the skin. Among those, laser therapy, including photo-rejuvenation as well as chemical peelings, are most widely used [1; 3].

Chemical skin peeling procedures are also very popular among patients and are highly demanded at aesthetic dermatological clinics. Use of peelings allows to treat quite a number of cosmetic skin problems due to removal of superficial skin layers. However, by doing so, we also destroy the natural skin protection system. Therefore, providing adequate UV protection and post-procedure rehabilitation must be the mainstay of patients' care at cosmetic dermatology unit.

Aging of skin is an inevitable process, which is accelerated by certain genetic factors, life style and a number of extrinsic factors. Among environmental factors, UV radiation has been proven to produce the most damaging effect on the skin structures. The stratospheric ozone layer partly prevents the UVB (280-320 nm) spectrum from damaging the skin. Epidermis blocks approximately 70% of UVB radiation that reaches the earth, with eventually 10% of it penetrating the skin to the level of basal keratinocytes and triggering negative biochemical reactions as well as sun burns. UVA radiation spectrum (320-380 nm) is not blocked by ozone layer and up to 30% of those rays are able to penetrate the skin and cause free radicals formation, damage of collagen and elastin fibres, alteration of their synthesis, with consequent increase of skin photoaging signs, such as early wrinkles, pigmentation, skin reddening, elastosis, etc.

By removing during peeling procedures superficial skin layers, which naturally play the role of cutaneous mechanical barrier, we increase the

risk of adverse effects of UV radiation. Appropriate dealing with such complications of cosmetic procedures is of utmost importance. On the other hand, we should not forget that there are certain intrinsic mechanisms of self-protection and regeneration, which start immediately after the acute skin damage, as it happens in wound healing process. As a result of this process we observe stimulation of collagen synthesis with subsequent clinical improvement of skin texture and wrinkles decrease.

In general, consequences of skin damage depend considerably on its depth. Use of acids for superficial and medium peeling usually results in skin dehydration due to its massive evaporation. Procedures, causing the damage of basal layer of the epidermis, usually produce postinflammatory pigmentation (most commonly in predisposed individuals) due to pigment incontinence and/or increased melanogenesis.

Here we summarize the well-known consequences of skin ablative techniques, widely used in cosmetic dermatology:

- skin reddening and prolonged healing process
- increased risk of dyschromia
- possibility of infection and/or scarring at the site of wound surface
- pain

Therefore, patients' care after such procedures must be aimed at minimizing all such consequences, leading to patients' discomfort [4].

Needless to say that development in 2000 of non-invasive skin rejuvenation methods, such as photo-rejuvenation with IPL apparatus (ESC Medical, USA) [2] offered new perspectives for both medical practitioners and patients. This and similar laser equipment generate beams of 500-1200 nm spectrum (i.e. yellow-green and infrared), which are maximally absorbed by hemoglobin, melanin and water (both in extracellular dermal matrix and within skin vessels). Skin "warming" effect stimulates inflammation, simi-

lar to that of wound healing and, consequently, activates skin fibroblasts which produce endogenic procollagen type I in increased quantities. Even with this relatively safe medical procedure skin inflammation causes discomfort to the patient.

DEXPANTHENOL IN SKIN CARE

Post-procedure skin care in these settings can become either rewarding or frustrating. A lot depends on the clinical picture and topical therapeutic agent selected for skin care. We would like to share our experience in using dexpanthenol for skin care after chemical peeling and photo-rejuvenation therapy. Topical use of dexpanthenol for skin disorders is well known: it has been recommended for scar or skin transplants treatment, as therapeutic option for burn injuries and different dermatoses [5; 6]. We personally observed good results prescribing topical preparations containing dexpanthenol after extensive laser depilation and laser therapy of hyperpigmentation.

Topical dexpanthenol acts like a moisturizer and reduces transepidermal water loss. Activation of fibroblast proliferation, such as caused by dexpanthenol, accelerates skin regeneration. Improvement of skin re-epithelization in wound healing has also been demonstrated for dexpanthenol. Dexpanthenol has been shown to have an anti-inflammatory effect on experimental ultraviolet-induced erythema [6].

In the current study we evaluated the effect of topical dexpanthenol on the following clinically observed consequences and/or complaints in 50 patients after chemical peelings and another 50 patients, who underwent photorejuvenation procedures:

- local skin irritation and erythema
- mild burning (rarely – pain, pruritus) sensations

We applied 2,5% dexpanthenol-containing skin lotion immediately after procedure and for 3 consecutive days at 3-4 h intervals several times per day. The results are summarized in figures 1-3.

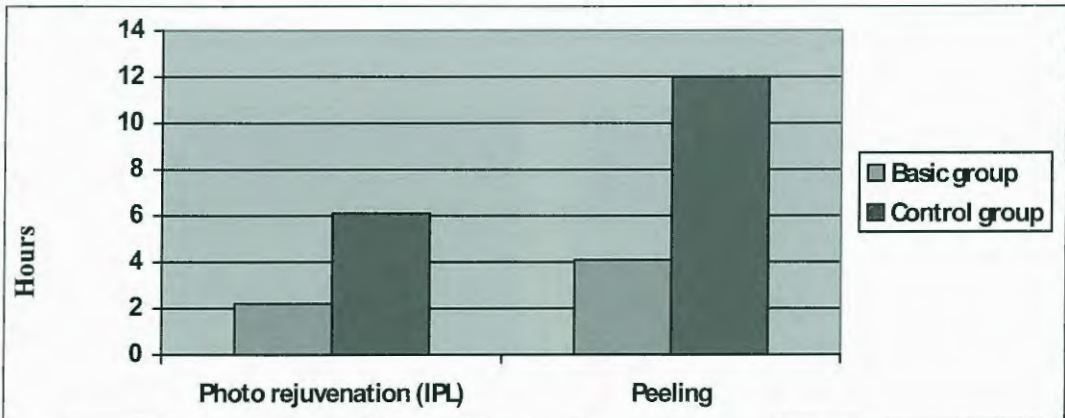


Fig. 1 Persistence of skin irritation and erythema in dexpanthenol treated skin (group I, n=50) and controls (group II, n=10), ($P < 0,001$).

We did not observe any pigmentary changes in patients using dexpanthenol lotion after aforementioned procedures. However, 4 out of 20 patients (10%) in both control groups developed local hyperpigmentation that persisted for two months following the procedures and required medical correction. Below, we present the SIAscopic images of regenerating skin after fractional photothermolysis in patients who applied topical dexpanthenol and those who did not. Even if pigmentary changes are more readily visualized on colored photographs, we can clearly see the better preserved skin structure following regeneration in treated skin.

As can be readily assessed, topical application of

2, 5% dexpanthenol lotion after skin rejuvenation cosmetic procedures results in better skin regeneration and provides additional protection against UV radiation, thus decreasing risk of post-procedural hyperpigmentation. Persistence of local erythema and skin irritation (itch/pain) can be considerably reduced by prescribing this topical preparation. It is usually well tolerated and there is minimal risk of skin sensitization. Therefore, we strongly recommend dexpanthenol-containing formulations for topical use in post-procedural skin care in patients undergoing chemical peeling or other skin rejuvenation procedure.

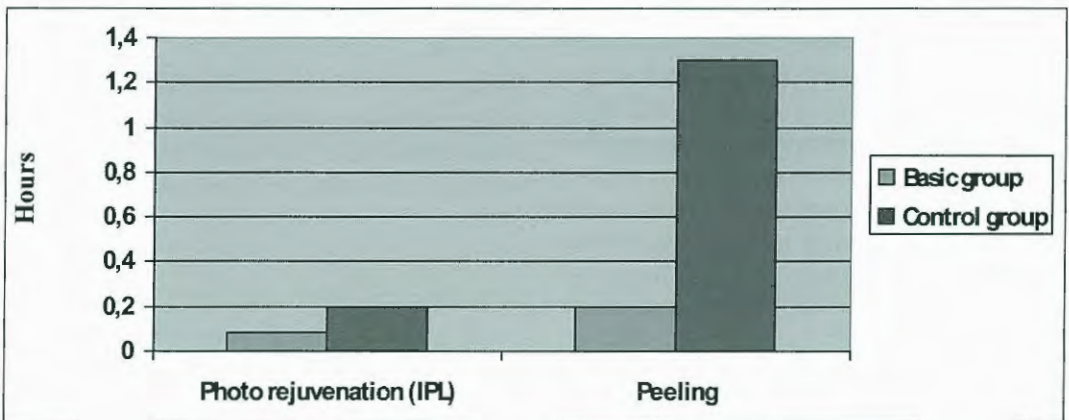


Fig. 2 Persistence of burning sensation in dexpanthenol treated skin (group I, n=50) and controls (group II, n=10). ($P<0,001$).

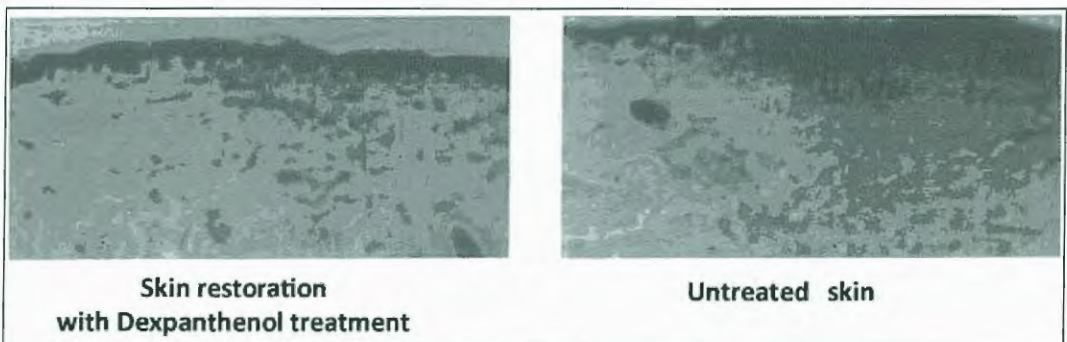


Fig. 3 SIAscopic images of dexpanthenol-treated and untreated skin.

References

- 1) Capro BG, Grevelink JM. (2000) Profile of lasers for the treatment of benign pigmented lesions-Part I. *Cosmetic Dermatology*; **13**: 14-9.
- 2) Capro BG, Grevelink JM, Grevelink SV. (1999) Laser treatment of pigmented lesions in children. *Semin. Cutan. Med. Surg.*, **18**: 233-43.
- 3) Lou WW, Quintana AT, Geronemus RG, Grossman MC. (2000) Prospective study of hair reduction by diode laser (800 nm) with long-term follow-up. *Dermatol. Surg.*, **26**: 428-32.
- 4) Klavuhn KG. (2000) Epidermal protection: A comparative analysis of sapphire contact and cryogen spray cooling. *Laser Hair Removal Technical Note No1, Coherent Medical, Santa Clara, CA*.
- 5) Biro K, Thaci D, Ochsendoff FR. et al. (2003) Efficacy of dexpanthenol in skin protection against irritation: a double-blind, placebo-controlled study. *Contact Dermatitis*, **49(2)**: 80-4.
- 6) Ebner F, Heller A, Rippke F, Tausch I. (2002) Topical use of dexpanthenol in skin disorders. *Am J Clin Dermatol.*, **3(6)**: 427-33.

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Tissue engineering and the skin three-dimensional structure is a rapidly growing area of scientific interest. Therefore, not only knowledge of its three-dimensional structure but also possible changes of conformation and variability over time of all the proteins and other compounds involved are important to further understand the function of the skin and other organs.

Many macromolecules, in fact, can be considered as molecular machines, and their basic movements contribute substantially to the skin function. An increasing amount of such conformational change is being explored nowadays. In summary, molecular dynamic simulations permit a better understanding of the tissue-engineering processes at the molecular and macromolecular level and are helpful tool to explore the dynamics, the structure, the conformations, and thus the function of proteins and other biomolecules. Moreover, the use of stem cells as the basic material for skin engineering has the potential to improve clinical outcomes both in wound healing and in gene therapy for cutaneous and systemic diseases. At this purpose, studies of tissue-engineered skin have shown that epidermal stem cells may provide a superior source of multipotent stem cells for tissue engineering. In addition, it is likely that tissue-engineered skin of the future will comprise a more complex reconstruction of both the epidermal and dermal components, along with the addition of stem cells from other relevant tissue lineages. Such a construct should allow the skin to fulfill its many normal functions: barrier formation, pigmentary defense against UV irradiation, thermoregulation, as well as mechanical and aesthetic functions.

Furthermore, improving tissue-engineered skin and stem cell-targeted cutaneous gene transfer will be important for successful gene therapy.

Tissue Engineering in Dermatology is the topic of the editorial preface of this book divided in seven chapters representing the state of the art techniques and knowledge in this innovative field of research.

Stem Cells and Tissue-Engineered Skin is focused on **chapter 1**, where the importance and limitations of epidermal stem cell isolation are reported and the advantages of using multipotent stem cells sources by the reprogramming somatic cells are also discussed.

Thus, neural crest stem cells or mesenchymal as well as bone marrow stem cells, represent a multipotent population with potential use in tissue-engineering. Therefore, sources of pluripotent cells with potential application in this field become abundant and may potentially be used for applications for both epidermal and dermal portions of tissue-engineered skin. However, there is still much work to be done to obtain a long-lasting and cosmetically acceptable stem cells for these purposes.

Despite their self-renewal and multipotency more work is needed, in fact, to define markers for effective isolation of epidermal stem cells.

To date, for example, we appear to have found techniques for enriching populations of keratinocytes for early progenitors, but not at the single-cell level. Furthermore, improving tissue-engineered skin and stem cell-targeted cutaneous gene transfer, will be important for successful gene therapy. Cell-based therapies can now be seen in routine medical care and especially for wound management of the skin. But overall, it is important to have a safe and effective means for enhancing the wound healing process. Moreover, processing of cells and their delivery systems need to be easy, as does the verification of consistency of both the cells and the final product. For example, fetal skin represents the ideal paradigm of all tissue repair due to its inherent ability to repair through regeneration rather than scar.

This is the topic discussed in **chapter 2: Whole –Cell Bioprocessing of Human Fetal Cells for Tissue Engineering of Skin.**

One of the major challenge for assuring that more patients will benefit from tissue engineering in the future is the optimization of the choice of cell type as well as their isolation, proliferation and clinical use.

Assessment of cell proliferation and cell viability has become the key technology to determine the *in vitro* cytotoxicity of a biomaterial. To mimic *in vivo* conditions, employment of three-dimensional cell cultures is becoming increasingly popular. Nonetheless, detection and quantification of cellular effects in three-dimensional culture is a problem.

Therefore, monolayers remain the first choice of evaluation of biocompatibility and cytotoxicity. In addition, the general opinion is that cytotoxicity tests *in vitro* will be more convincing when performed with cells that are homologous with the human tissue concerned. In accordance, appropriate cells lines for the use in cytotoxicity and tolerance tests concerning the skin would be human dermal fibroblasts and human epidermal keratinocytes, as they take an active part in the immune response, inflammatory processes and wound healing. This topic is focused on **chapter 3: Evaluation of Biocompatibility and Cytotoxicity Using Keratinocyte and Fibroblast Cultures.**

Today, surgical grafting of split-thickness autologous skin is the biological dressing representing the mainstay for treatment of full-thickness burns and is often used to treat chronic wounds of all kinds. The lack of success in chronic wounds is secondary to infection, inadequate blood supply and other pathobiological abnormalities of the wound. In burns, autografts can become limiting when the total body surface involvement is greater than 50%, secondary to lack of available donor skin. Therefore, there is a great need for a cost-effective, user-friendly, tissue-engineering construct (TEC) that can provide successful treatments to both acute and chronic wounds in a wider repertoire of patients. One approach to this challenge is to create a substitute for skin *in vitro* that can integrate into the engraftment site *in vivo*. An alternative is to engineer a biocompatible, resorbable matrix that can recruit the proper, native tissue cells to the injured site and induce them to heal the wound without scarring. Many are, however, the challenges for designing a successful TEC for wound repair. First of all the cellular matrix and the bioactive molecular components, but also the long governmental approval and the scale-up process, distribution of the products, and its shelf-life and bio-preservation.

Despite these challenges, the field of tissue engineering is certainly moving forward quickly. This is the topic of **chapter 4: Tissue Engineering for Cutaneous Wounds: Selecting the Proper Time and Space for Growth Factors, Cells and the Extracellular Matrix.**

Since the first application of cultured human keratinocytes, about 25 years ago, for the treatment of extensive third-degree burns, enormous progress has been made in the production and clinical use of skin substitutes to treat wounds of various nature. At this purpose, medical science has vastly improved on new means and methods, greatly increasing the survival for severely burned patients. More than 20 products are commercially available, some of them do not contain any living cells, other include living cells of allogeneic or autologous origin, and are often referred to as cellular therapy or tissue-engineered products.

However, there is evidence that the presence of living autologous dermal cells increases the efficacy of skin substitutes. Therefore, in the near future a combination of factors could be integrated or added, to skin substitutes to provide important improvements in the speed and quality of wound healing. This topic is reported on **chapter 5**, *Skin Substitutes and Wound Healing*.

On **chapter 6**, *In vitro Irritation Models and Immune Reactions*, are described the current *in vitro* skin irritation models and the biomarkers used to assess the degree of irritancy of a potential irritant. Four models, as keratinocyte and fibroblast culture, epidermal equivalents, skin equivalents, and freshly isolated skin, are described together with biomarkers, such as IL-1-, IL-6, IL-8, PGE2, SALP, HSP70 and kinases reported along with changes in metabolic activity also. The major limitation in extending *in vitro* models is that no immunocompetent skin or epidermal equivalent is commercially available and very few are in development.

The last **chapter 7**: *Melanocytes: from Morphology to Application*, is dedicated to the regulation existing between keratinocytes, melanocytes and the surrounding stroma.

The development of melanoma is thought to arise from disrupted melanocyte homeostasis. Melanocyte proliferation is primarily under the control of keratinocytes. At this purpose, the cell-cell contacts with keratinocytes are known to be important for the maintenance of melanocyte homeostasis. The cadherins are a family of all surface glycoproteins which mediate and regulate this homeostasis maintaining the skin architecture. E-cadherin is expressed on melanocytes, keratinocytes and Langerhans cells of the epidermis, while N-cadherin is expressed on dermal fibroblasts and endothelial cells. This differential cadherin expression is exploited in melanoma, where melanocytes undergo an E-to N-cadherin class switch, allowing melanocytes to escape keratinocyte control as well as promoting binding to dermal fibroblasts and endothelial cells.

Not only are melanoma cells free of keratinocyte control over proliferation under this conditions, but interactions with fibroblasts and endothelial cells, allow melanoma cells to invade and survive in the dermis.

The importance of this cadherin class/switch is supported by experiments showing that re-expression of E-cadherin in human melanoma cells restored keratinocyte coupling and inhibited invasive potential.

This interesting topic represents the final and right end for this interesting book reporting an up-dated overview of the more new aspects of tissue engineering.

Thus, the publication will of interest not only for Dermatologists and Wound Care Specialists, but also Cosmetic Chemists and people involved in marketing willing to enter all the aspect connecting with Tissue Engineering and related products.

P. Morganti
Editor-in-Chief

Beginning Cosmetic Chemistry. 3rd Edition

by R. Schueller and P. Romanowski

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Cosmetics, including toiletries, are closely connected with and are essential to daily life.

Cosmetic science, as a fast moving area, includes a variety of scientific disciplines: chemistry, pharmacology and physical chemistry, as well as dermatology biochemistry, physiology, microbiology, engineering, analytical chemistry, fragrance chemistry, color science, and psychology.

Rapid changes in the worldwide regulatory contents, and increasing demanding of consumers asking for multifunctional cosmetics having additional benefits, meet formulating chemists to develop products of high quality always more active and responding to the specific consumer needs.

This book by IV sections and 54 chapters, updates many information, from Chemistry to the Regulatory context of cosmetics, to give new ideas and force the cosmetic formulator to think differently about his products.

Welcome to the Industry: Terms Tools and Tips is the topic of **Section I** introducing by 6 chapters the solid knowledge the cosmetic formulator has to have for the right product development.

Beyond basic cosmetic science, formulators must be aware of how marketing decisions, cost constraints, manufacturing conditions, and aesthetics concerns, such as appearance and odour, can impact product development. Firstly learning from trade literature and peers, the cosmetic chemist identifies raw materials with the desired functionalities and combine these materials in the proper ratios to yield an acceptable finished product that performs as intended and remains stable learning. Substantiating the product performance claims and evaluating its real capability to moisture, for example, the skin, understanding the regulatory role the product has, thus to be perfectly known from the formulator.

Certain claims may cause a product to be considered a drug, even if the product is marketed as if it is a cosmetic. Thus, in EU market a fragrance marketed with certain *aromatherapy* claims, such as assertions that the scent will help the consumer sleep or quit smoking, meets the definition of a drug because of its intended use.

In conclusion, cosmetic scientists must be skilled in many areas related to product development including, formulation claims support, packaging, process engineering and regulatory issues. However, suppliers may assist formulators by fulfilling requests for raw material samples test data and various forms of technical support including new ideas and financial and business information. For all these reasons many successful new products have been developed as a result of a partnership between a cosmetic company who had an idea or concept and a vendor who had the technology equipment or raw materials that helped make the concept a reality.

Basic Cosmetic Science is discussed on **Section II** by 14 chapters.

Personal Care products are designed to satisfy the consumer needs. Thus, some of their ingredients perform specific physical functions, such as skin cleansing or hair conditioning. Others play more subjective roles in helping the product achieve consumer satisfaction, such as fragrance because of psychological effect it can have. Therefore, *aromascience* is born describing the temporary effects on emotions or physical performance delivered through the olfactory system. Some evidence suggests, in fact, that some fragrance directly affect human behaviour, such as promoting relaxation or reducing stress.

At this purpose, new type of cosmetic products are appearing on the market based on a new concept of the relationship existing between body and mind. Investigators of the Harvard Cutaneous Biology Research Center, showed the content point between Langerhans cells, the skin and nerve cells, confirming the mind and body are connected to one another in skin.

These findings explained by Ozawa and Quereleux clarify the existence of a bidirectional regulatory mechanism between the nervous system and the immune system in skin. Thus, scientists from Shisheido and L'Oréal were able to demonstrate that prolonged anxiety and tension promote the secretion of adrenocorticotrophic hormone (ACTA) from the anterior pituitary gland which promotes the secretion of cortisol, leading to a reduction of immunological functions of Langerhans cells and rough skin. This, in turn led to the "NICE" concept in which our Nervous, Immune, Cutaneous and Endocrine system all work together to internally activate our skin physiology via the secretion of *homeostasin*.

Products like this *mind-body* skin care that contains elements to improve the homeostasin secretion balance should stimulate the mind-body connection from the outside, augmented by fragrance that might have favourable effects on mind.

In this way "cosmetic products should affect the quality of life and our health, being a dynamic state of complete physical, mental, spiritual and social-wellbeing", according with the definition of World Health Organization.

For all these reasons cosmetic product does play an important role in human life having a great social value also. Therefore, clarification of the exact mechanisms of action cosmetic products have and the establishment of universal objective, reproducible and quantifiable testing methods are essential for the further advancement of research in Cosmetic Dermatology area.

Naturally, cosmetic chemists have to understand the world of knowledge necessary to formulate the right products for the skin and its annexes. Thus the biology of hair, the new directions on skin researches, are reported together with the surfactant area, necessary to make and understand the emulsions in the correct way, or the preservative and fragrance chemistry necessary to better formulate *clinically correct cosmetics*.

However, one of the essential qualities required of a successful cosmetic chemist is the ability to accurately and efficiently record data necessary to retrieve information and document ideas. Apparently insignificant changes in processing temperatures or order addition of raw materials can drastically alter the outcome of the final product.

This is why, what it is done in the lab, even a germ of a new idea, should be always written/recorded in a notebook. In this way is beginning **Section III** reporting *Product Development*: from Beaker to Bottle by 24 chapters.

Proper preparation is one of the secrets of producing successful personal care products, by using the

information contained within the lab formula. Once cosmetic chemist is familiar with a formula's ingredients, he has to review the manufacturing procedure, reviewing all the lab instructions before batching. The lab notebook and production procedure is important not only in reproducing the preparation, but also in situations involving potentially patentable technology.

In conclusion, preparing laboratory batches of personal care products is a significant part of a cosmetic chemist's job. Thus, when creating a new products, he/she should be aware of a host of issues, including chemical raw materials, packaging components, test methods, manufacturing concerns, sensory evaluation techniques, patents, regulatory issues and hazardous waste requirements, consumer expectations, and market trends. Moreover it is to underline the importance of fragrance chemistry in personal care knowledge of the structure of bases and the chemical nature of aroma chemicals allows intelligent conclusions to be drawn concerning the fate of fragrance materials in unfinished products. In reality, fragrance often is the most chemically complicated component of the formulation, and understanding its technical aspects is essential for the creation of an acceptable product. More often fragrance is, in fact, the key sensory attribute of the personal care products. However, all the aspects of formulating products for skin and hair care are reported and discussed in this Section, where emerging technologies of cosmetic science such as nanotechnologies are focused together with the efficacy studies necessary for all the cosmetic formulations to be sold.

Evaluating and testing raw materials and finished products are the topics reported in **Section IV** together with Regulatory Compliance and Claims Support. Therefore, types of tests with which the cosmetic formulator should be familiar to successfully develop, maintain and manufacture the products, are focused by other 10 chapters.

The cosmetic chemist needs to be aware of how such tests relate to both product development and to quality assurance of raw materials and finished products. And these tests fill into two general categories: *physiochemical tests*, which involve the measurement of some physical or chemical property of a chemical raw material or finished cosmetic product, and performance tests which are designed to measure how well the product functions in some capacity. In both cases, the objective is to better understand and predict the behaviour of the materials involved in order to ultimately produce a final product of high and consistent quality.

Moreover, it should be necessary to evaluate both *in vitro* and *in vivo*, in dermatological departments, the final product, and to control its efficacy in humans.

Finally, it must also comply with any relevant regulatory considerations.

In conclusion this interesting book reaches the aim to represent a key stone to help the cosmetic chemist in its every day work, and being full of new interesting ideas, it is helpful to marketing managers and to all scientists interested to Cosmetic Dermatology also.

Cosmetic Science is continuously evolving and the new innovative products seem capable to influence the quality of life by the recovered mind-body connection.

The nature of connection between mind and body only now is beginning to be discovered in terms of physics and chemistry by scientists expert in Cosmetic Dermatology.

Next step is to identify how these connections may be extensively measured and connected with the quality of life.

P. Morganti
Editor-in-Chief

Formulating Strategies in Cosmetic Science

by A.C Kozlowski

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Cosmetics are becoming of more importance in daily life and cosmetic science is constantly evolving worldwide. Therefore chemists, and all people involved in cosmetic manufacturing, have a need to keep up to date with the available technology in order to respond to the new market needs. Since cosmetics are often used on a daily basis over long periods of time, efficacy and safety without side effects is of paramount importance.

This new book organized by XV sections divided in 71 different chapters, give to formulators all the technical information necessary to expand their knowledge on the science and art of personal care, from raw materials to regulations.

In addition to their principal ingredients (oil and water), cosmetics contain many substances which provide a source of nitrogen and carbon for micro-organisms. It is therefore, necessary to add preservatives for their long-term protection. This is the topic of **Section I** (7 chapters) focused on *Preservatives*.

Preservative efficacy testing is, in fact, part of the safety testing of every cosmetic product. Although preservative efficacy testing is performed to determine whether the product preservative system can kill micro-organisms fast enough to pass test criteria, there is little published information on how to determine whether a preservative system has a satisfactory margin as safety to insure adequate preservation.

Thus a comparison of Test Methods has reported to determine the risk factor and, therefore, the preservation safety factor for the use of different preservatives for cosmetic and drug products. Another interesting discussion is reported about the significance and the use of natural preservation. The consumer's perception that natural raw material are better tolerated than non-naturally occurring ones in cosmetic applications, follows the philosophy that human body should be more adapted to natural occurring compounds.

However preserving agents, natural or not, have to be judged very carefully because of their toxicological risks. Identifying the right preserving agents synthesized in the lab or derived from nature is a complex task. Efficacy and safety have to be the first priority because microbiological contamination of cosmetic products can pose substantial threat to the consumer's health. It is the art of the researcher to identify adequate structures in nature or build them from natural building blocks.

The emulsion technology is discussed in **Session II: Emulsions** (12 chapters).

Despite the fact emulsions are found in almost every category of cosmetic products the preparations of stable, cosmetically elegant emulsions remains one of the most daunting tasks undertaken by the cosmetic chemist.

A dispense system of two mutually-insoluble liquids is called emulsification. A key component of every emulsion is the emulsifier compound and the thicker or more properly, a thicker system that is employed. However, developing a successful formulation in today's competitive care industry present many challenges.

First of all, it must fulfil the expectations of consumers with respect to performance as well as aesthetics.

On the other hand, it have to meet a number or physical stability criteria including the ability to withstand various aging conditions such as high temperature, freeze-thaw cycling and vibration. Finally, the safety of the ingredients used must be assured to avoid any skin irritation or adverse effects on contact with the skin.

For this reason, we must be constantly thinking about usefulness in doing research on cosmetics, in manufacturing and marketing them.

Thus, both safety and usefulness have come to be seen so important. And with the development of new raw materials and pharmaceutical agents using life science based biotechnology techniques, new materials from fine chemicals and that of new preparations incorporating them, functional cosmetics, with a high degree of usefulness are now being developed.

Nanoemulsions are, in fact, becoming increasingly popular as vehicles for the controlled delivery and optimized dispersion of active ingredients. Therefore, nanoemulsions based on glycerol fatty esters are useful in cosmetics and dermatological fields, in particular for moisturizing skin and mucous membranes, as well as for treating hair, and in the ophthalmological field as eye lotion.

In conclusion, formulations containing nanoparticles offer many benefits from preventing the scattering of visible light in sunscreen formulations, to enhancing skin feel and delivery.

Moreover the type of oil used may be responsible for the overall characteristics, for example, of a multiple W/O/W emulsions system, as well as for the release conditions of the active principle from the internal phase, and for the permeability characteristics of the layer. This is because the oil phase in this emulsion is the main constituent of the membrane between the internal and external phases, and it may influence the release pattern and stability of the system. Thus mixture of oils may be used to modulate the transfer rate of active compounds across the oil membrane, and to improve the stability of the formulation.

Section III is entirely dedicated to *Sunscreen* (5 chapters).

Sunlight is a part of our every day life, but we cannot efface or ignore its cumulative effects, manifested as skin aging and skin cancer of the exposed skin. To prevent or ameliorate these light-induced reactions, effective sunscreens and photoprotective measures are essential. Thus, the use of sun-protective topical preparations containing approved chemicals are recommended. These chemical agents formulated in the form of solutions (sprayable or not) gels, creams, or ointments absorb or filter out 95% or more of UVB radiation and prevent or minimize the deleterious effects on human skin caused by excessive exposure to UVB and UVA radiation.

However, although UVB rays cause sunburn, the UVA rays cause long term damage such as wrinkles and some types of skin cancer. UVA "accounts, in fact, for more than 80% of the damage that occurs to the skin in terms of aging, DNA damage and ultimately skin cancers". Therefore, the necessity and the ability of the ingredient to protect against UVA rays while remaining photostable gives it the potential to provide products with full-spectrum protection.

In conclusion, with global warming ever-increasing the penetration of the sun, the emergence of sun-

care innovation is not only beneficial but vital.

Section IV, Hair Care, talks by 5 chapters (26th to 30th) about the importance of the hair care market. Hair cleansing cosmetics consist of shampoo and rinse-off conditioner which remove dirt from the scalp and hair, and keep it in a clean condition. Most conditioning shampoos depend on deposition of a polymer-surfactant coacerve to confer good wet-combing and manageability. The optimization of this system, crucially depending on the molecular characteristics of the polymer and surfactant used, presents a challenge to the formulator, offering lots of opportunity for individual creativity also.

Unlike any other cosmetic product form applied to the body, hair care products have to meet specific needs for specific consumers. Hair has to smell fresh and clean. What delivers the *fresh and clean message* is the fragrance. Thus fragrance is essential in hair care products.

Therefore the necessity of a close cooperation between marketing, product development, R&D and the fragrance house. The fragrance chemist should be on the team early on. Nowadays shampoos are not just for removing dirt from hair and scalp, but may prevent damage to the hair during washing. At this purpose aminoacids have the potential to exert a variety of functions in hair care preparations. Thus, for example, arginine confers a most feel to hair and prevents color loss during the shampooing process. Several aminoacides such as phenylalamine and histidine seem to increase the tensile strength of hair in a dry state, reinforcing its structure by ionic and hydrogen bonds.

Cosmetic formulations are clearly complicated made up of many different types of ingredients that interact with each other so the availability of innovative raw materials is important to formulate highly effective personal care products.

Section V is focused on *Raw Materials* by 4 chapters (31st to 34th).

Ingredients proving care benefits in personal care products for skin and hair are, in fact, becoming increasingly important. Consequently, the main conditions to be considered when using and selecting the raw materials are: (1) excellent functions matching usage purpose; (2) good safety; (3) excellent oxidation stability, and (4) constant quality such as lack of smell.

When optimum use is made of care ingredients, the positive effects on skin and hair can actively support the marketing claims of finished products. Therefore, the right selection of a raw material to best complement the function of a formulation will surely aid a formulator in optimizing the finished formula, to obtain the estimated result.

Chapters 35 and 36 constitute the **Section VI: Underarm**.

The major components of body odour are products, as lower fatty acids, decomposed from a mixture of sweat and lipid broken down by the normal bacterial flora of the skin.

Cosmetics for preventing body odour contain antiperspirant and antibacterial agents for reduction of the number of normal skin bacteria as effective agents. Thus, there is high per capita use of antiperspirant in the industrialized world and the market continues to evolve, for the population growth also. For these reasons, in today's increasingly competitive personal care market, formulators of underarm products need technologies that can help them deliver novel and aesthetically pleasing product form to consumers - while at the same time satisfying manufacturing needs for easy formulating and cost efficiency.

Skin Care is the topic of **Section VII** (7 chapters: 37th to 43rd).

The functioning of the skin and its mechanisms are upset by changes in the environment, and aging. It is the purpose of skin care cosmetics to keep the skin functioning properly and its mechanisms

working well. This is why skin care is one of the most market segments for the personal care business.

Of course, skin care cosmetics must be designed to be excellent in terms of safety, stability, texture and usability based on through research and understanding of the skin physiology.

However, in today's global personal care marketplace, consumers have specialized needs based on function as well as fashion. Thus, ingredients that combine multiple benefits offer potential for differentiated solutions while making formulation simple and more cost-effective.

Among the innovating skin care products entered recently in the cosmetic use there is, for example, cream in powder form, based on the specific combination of two families of ingredients: treated pigments and thickeners. In particular, silicone or Silone surface treatments provide hydrophobic properties to powders, limiting their absorption capacity of liquid while giving an improved soft feeling with an interesting new texture.

The formulation of personal care products places the chemist in a position of having to deal with some sophisticated and challenging physical chemistry.

Polymer/Physical Chemistry is reported on **Section VIII** (10 chapters: 44th to 52nd).

Physical Chemistry is, in fact, the study of the properties of materials and the changes in those properties. The understanding of physical chemistry is, therefore, essential in designing, manufacturing and ensuring the stability of cosmetics. It is to remember that cosmetics, as one thing, is a mixture of ingredients in both the soluble and insoluble states.

The nature of the interaction among all these ingredients provide a cosmetically elegant product but it is also a key for its safeness and efficacy, as an example, we may report some problems regarding the hair care, formulation.

Consumers demand cleansing, viscosity, foam, antistat, wet and long-term conditioning, to obtain multi-functional benefits from the use of different hair care products. The use of different kind of surfactants and/or polymers solves many of these problems, first of all the stability of the emulsions. Therefore, one of the main focus of cosmetic science is the association colloids and disperse colloids. Thus, the interaction of polymer and surfactant having opposite ionic charges is utilized, for example, in conditioning shampoos and it results in the formulation of a complex concentrate that separates upon dilution of the shampoo composition and during the rinsing stage shampooing.

It is generally accepted, in fact, that most real polymers, as many silicon compounds possess several action groups along the chain and these are adsorbed as trains where the interaction between polymer and surface is high, and as loops as tails where the interaction between the polymer and solvent is high. However coacervate formation depends upon a number of parameters such as molecular weight, concentration, ionic strength of the solution, change density of the interactive components, pH and temperature.

Naturally, the lowering of surface tension, necessary to mix together ingredients with different surface tension such as oil and water is the base of almost all the cosmetic formulations. Thus the use of surfactant compounds, active at interfacial surfaces. The function a surfactant brings to a formulation is, in fact, the reason one choose the particular surfactant. It will address the properties surfactants provide normally conditioning, wetting, detergency and emulsification, depending upon their chemical structure. On the other side lipids and silicones can act as complementary ingredients in finished formulations to improve emolliency, gloss and lubricity, ameliorating the spreading and emollient characteristic also.

It is important to underline as silicones, synthetic polymers made from quartz, a natural form of crystalline silicon dioxide, are capable to provide easy application of natural oils giving them a pleasant aesthetics without a greasy or oily feel, thus bettering their sensory profiles

Section IX, *Formulating Tips* (chapter 53rd) **Section X, *Specials*** (chapters 54th and 55th), **Section XI, *Sensory*** (chapters 56th, 57th, 58th and 59th), and **Section XII, *Delivery***, (60th), represent in my opinion the key of lecture of the book and are therefore interesting topics for chemists and physicians interested to *Cosmetic Dermatology*.

According to my friend Johann W. Wiechers, cosmetic chemists connected with dermatologists should formulate for efficacy. Therefore it should be necessary to develop a process and *in vitro*, *in ex vivo* and *in vivo* methodologies, assuring that the efficacy of an active or more active ingredients are transformed to an effective cosmetic product.

Thus, it should be known “the necessary criteria for ingredients in cosmetic formulations that help to optimize the delivery of the active ingredient into the skin”.

At this purpose a guideline strategy is reported on chapter 53, based on theoretical considerations and practical experience of Wiechers.

As my personal consideration, taking into account the advancement of science in skin physiology and in delivery system of the active principles, I believe that cosmetic products support/restore biological functions, without the necessity to consider them medical products. As I wrote elsewhere, “the advancements of the science have repined the possibility that new products, normally functional cosmetics or cosmeceuticals, could be used in the treatment of minor skin disorders or mild skin abnormalities, and recognized as products that show an activity on physiological functions different from that of medical devices and medicinal products. It is foreseen the potential for functional cosmetics to be a new class of compounds regulated probably under the same cosmetic legislation with eventual additional requirements of safety and efficacy” (*Clinics in Dermatology*, **26**: 392-397, 2008).

This will be one of the most important topic discussed this year on the occasion of the 9th World Congress of the International Society of Cosmetic Dermatology, (October 21-23, 2009 www.congress2009.iscd.it).

It's time to officially recognize the mechanism of action of cosmetic products, trying to identify the borderlines and especially the parts overlapping among Cosmetics, Medical Devices and Drugs Regulations.

A part the different regulations and differently from drugs, how the costumer perceives the cosmetic product is what drives its sales also. But with personal care products, the relationship that links the sensory properties of products to both consumer acceptance and consumer perceived benefits are thought to be more difficult to *get at*. This is because personal care products are marketed with *glamour language* that promises *beauty* and *youth* and consumers do not have very concrete language to describe the products or the effect of the products. Linking product sensory attribute documentation, through descriptive analysis panels, with consumer exploration through one-on-one interviews, provides clear direction to product development, necessary to satisfy consumers' needs.

Thus, a part the study *in vitro* and *in vivo* to demonstrate the efficacy and safeness of a cosmetic product, the relationship between rheological properties and sensory attributes have to be investigated also. This is why the necessity to build a direct link between sensory and emulsion structure, and possibly to ingredients and processing condition.

Bringing the biological efficacy methods and sensory studies allows exploration of technical innovation to enhance the product development process. However, biological studies and chemical trials are essential, but for understanding consumer behavior it is essential that consumers have to be used to provide their perceptions really correlated with their preferences. Therefore consumer based sensory description has to be also in a strategic approach to product development.

Knowledge of neonatal skin is essential to formulate safe and effective products for infant skin. Because of the difference in the body mass/surface area ratio between infants and adults, infants, in fact, receive longer doses on a weight-to-weight basis.

Greater caution has to be exercised with the formulation and production of cosmetics to be used on children to avoid toxic reactions. Extreme caution needs to be exercised in the selection of ingredients and vehicle used, as well as diligent safety testing programs must be established by companies in the development of quality personal care products for infant skin.

This important topic is discussed on **Section XIII: Infant Care Products** (5 chapters: 61st to 65th).

The last two sections regarding respectively *Green Chemistry* (**Section XIV**) and *Regulations* (**Section XV**) are focused respectively by four and two chapters: from 66th to 71st chapter.

Green or sustainable chemistry is based on the use of natural ingredients upon renewable resources. The ability to formulate totally *green* products remain to-day a challenge to formulators because in many instances the demands of consumers can only be met by incorporating some concentrations of materials that themselves are not green.

This is why there is a great debate worldwide on this topic.

The discussion is until now *open* and in my opinion it should be important, first of all, to define carefully the meaning of the so called *natural cosmetics* and *natural ingredients*, defining also concentration and limit of natural ingredients used for the final formulation.

However, in accordance with what often declared by my friends Anthony Dweck and Kerl Lintner: it is really important if a cosmetic should be defined natural or chemical, but it has to be surely efficacious and safe for human health.

At this purpose, new regulations known by the acronimous REACH (Registration, Evaluation and Authorization of Chemicals) will create a single system for both existing and new chemicals. It applies to all *synthetic* and *natural* substance used in all products including cosmetics. Thus, before being allowed on the market, raw materials (natural or chemical) must be tested for safety and, although there are differences in registration status between the various countries, one could argue that the safety of cosmetic ingredients is generally not an issue, otherwise the ingredients should not even be on the market.

With REACH legislation coming into force in Europe, a substantial portion of the raw materials currently available to the cosmetic formulator will be eliminated. This is the future big challenge for producers and formulators of cosmetic products.

This interesting book represents a helpful tool to win this challenge thanks to all the precious updated news reported on ingredients, raw materials and techniques useful to produce innovative cosmetic products, and to understand the constantly evolving consumer preferences.

P. Morganti
Editor-in-Chief

The Immune System. 3rd Edition

by Peter Parham

2009. 352 pages + 238 full-color illustration, Soft Cover

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This book, aimed at student who are coming to immunology for the first time, is of course of interest of Cosmetic Chemists, Marketing people, Scientists involved in Cosmetic Dermatology expert in other scientific fields also, but not involved in immune diseases.

Many are, in fact, the ingredients used to formulate cosmetic products and some of them may result in an inflammatory skin reaction of immune system origin also.

But what's the role of the immune system?

Immunology is the study of the physiological mechanisms that humans and other animals use to defend their bodies from invasion by other organisms. Thus, the main purpose of the immune system is to protect the human body from the infectious disease. The protective functions of the immune system depend on recognition events that distinguish molecular components of infectious agents from those of the human body. Besides infectious agents, humans come into daily contact with numerous other molecules that are equally foreign but do not threaten health. Many of these molecules derive from the plants and animals that we eat or are present in the environments where we live, work and play. But other molecules content into drugs or cosmetics are applied, for example, to the skin directly from ourselves. For most people for most of time, contact with these molecules stimulate neither inflammation nor adaptive immunity.

In some circumstances, however, certain kinds of innocuous molecule stimulate an adaptive immune response and the development of immunological memory in predisposed humans.

On subsequent exposures to the antigen the immune memory produces inflammations and tissue damage that is at best an irritation, and worst a threat to life. The person falls ill, as though fighting off an infection when no infection exists.

The over-reactions of the immune system to harmless environmental antigens are called either *hypersensitivity reactions* or *allergic reactions*. The environmental antigens that cause these reactions are termed allergens and they induce a state of *hypersensitivity* or *allergy*, i.e. altered reactivity. Unfortunately, the antigens that provoke these over-reactions continue to rise, especially in developed countries. For all these reasons the cosmetic formulator has to carefully select all the ingredients and raw materials used, controlling in advance by the scientific international literature all the ingredients known as allergens, eliminating them from the formulation.

Just to explain the significance of immunology in a short right way, the book is organized in 16 chapters.

The first ten chapters describe the cells and molecules of the immune system and how they work

together in providing defences against invading microorganisms.

Elements of Immune System and their Roles in Defence are focused on **chapter 1st**.

To restrict the nature, size, and location of microbial infestation, animals have evolved a series of defences which humans still use today. The skin and contiguous mucous membranes provide physical and chemical barriers that confine microorganisms to the external surfaces of the body. In responding to infection, the innate immune system starts with innate immune mechanisms, that are fast and effective. Four are the key elements of innate immunity: proteins such as *mannose-binding lectin* that noncovalently bind to the surface of pathogens; *proteins* such as complement that bind covalently to pathogens surfaces, forming *ligands for receptors* on phagocytes; *phagocytes cells* that engulf and kill pathogens; and *cytotoxic cells* that kill virus-infected cells. Vertebrates such as humans, have evolved an additional adaptive *immunity*, which are brought into play when innate immunity fails to stop an infection.

The mechanisms of this immunity are ones that improve *pathogen recognition* rather than pathogen destruction. They involve the *T and B lymphocytes*, which collectively have the ability to recognize the vast array of potential pathogens, and are initiated in specialized lymphoid tissue such as *lymph nodes* and *spleen*.

Adaptive immunity is an evolving process within a persons lifetime, in which each infection changes the marketing of that individuals lymphocyte population.

Innate Immunity is focused on **chapter 2nd**.

Any pathogen that succeeds in penetrating an epithelial surface is immediately faced by the effector cells and molecules of the innate immune response. The response provides a variety of defences that work immediately a pathogen is first confronted or soon after.

Inhibiting a pathogens progress in colonizing tissue and spreading infection are the *protease inhibitors*, blood-clotting cascade, and *kinin reactions*. *Complement* provides a general means to tag almost any component at a microbial surface; more specific receptors bind common chemical aspects of microbial macromolecules that are not past of human body. As well as helping resident macrophages to phagocytose pathogens, these interactions induce the macrophages to pour out inflammatory cytokines that *summon* neutrophils and NK cells to the side of infection.

Interaction between these cells, and with resident *macrophages* and dendritic cells, produce natural activation and *cytokine secretion* that heightens the state of inflammation in the infected tissue.

Adaptive immunity, is the body's third line of defence, being bought into play after physical barriers have been breached and the innate immune response has failed.

Principles of Adaptive Immunity is the topic reported on **chapter 3rd**, where the context of the principles that distinguish adaptive *immunity* from innate *immunity* is discussed.

As seen previously, the mechanism unique to adaptive immunity due to the lymphocytes are ones that improve pathogen recognition rather than pathogen destruction. Somatic gene rearrangement and somatic mutation in the genes for antigen receptors provide lymphocyte population with a set of highly diverse antigen receptors immunoglobulins on B lymphocytes, and T-cell receptors on T lymphocytes. One way or difference between B and T cells is the type of antigens they recognize. Whereas the immunoglobulin receptors of B bind whole molecules and intact pathogens, T-cell receptors recognize only short peptide antigens that are bound to major histo-compatibility complex molecules or cell surfaces. A second major difference is that all B cells can have distinctive functions.

Failures to develop a successful adaptive response can arise from inherited deficiencies in the immune system or from the pathogens ability to escape, avoid, or subvert the immune response. Another category of failure of adaptive immunity is the chronic disease caused by a misdirected response.

Allergy is the consequence of a strong response to a harmless substance, whereas autoimmune disease is caused when the destructive potential of the immune system is directed at one of more of the body's own tissues.

Antibodies are very variable proteins and each antibody is highly specific for its corresponding antigen, that is, it can bind to only one antigen or a very small number of different antigens. However, the immune system has the potential to make antibodies against many millions of different substances paralleling the many different foreign antigens that a person is likely to be exposed to during their lifetime.

This is the topic of **chapter 4th**, *Antibody Structure and the Generation of B-Cell Diversity*.

Antibodies however, diverse in their antigen-binding specificities, can be made by an individual in a quantity as high as 10^{16} . They, as secreted form of proteins known more generally as immunoglobulins, are produced by lymphocytes and can be divided into five different effector classes- IgM, IgG, IgD, IgA, and IgE - that have different functions in the immune response.

Antibodies, as the single effector function of the β lymphocytes of the immune system, are glycoproteins built from a basic unit of four polypeptide chains. This unit consists of two identical heavy chains (H chains) and two smaller, light chains (L chains), which are assembled into a structure that looks like the letter V. Each chain has a V region that contributes to the antigen-binding side and a C region that, in the heavy chain, determines the antibody isotype and its specialized effector function.

Differences in the heavy-chain C regions define the five different classes of immunoglobulins.

Within an antibody molecule, the V regions that bind antigen are physically separated from the C region that interacts with effector molecules and cells of the immune system, such as complement, phagocytes, and other leukocytes. The individual diversity of antibodies is due in part to inherited variation that is encoded in the genome, and in part to non-inherited diversity that develops in B during an individual's lifetime.

Like B cells, T lymphocytes or T cells recognize and bind antigen through highly variable antigen-specific receptors.

This topic is focused on **chapter 5th**, *Antigen Recognition by T lymphocytes*.

As previously written, the antigens recognized by T cells are quite distinct from those recognized by immunoglobulins. The ligand for a T-cell receptor is, in fact, not simply a peptide antigen but the combination on a cell surface of peptide and glycoproteins called MHC. It is composed of two different polypeptide chains and has one antigen-binding site. Like immunoglobulins each chain has a variable region, which binds antigen, and a constant region. Thus, differences between immunoglobulins and T-cell receptors reflect the fact that T-cell receptor is used only as a membrane-bound receptor, whereas immunoglobulins are also used as secreted effector molecules.

The B cells of the human immune system have the capacity to make globulins specific for almost every nuance of chemical structure, which gives each person the potential to make antibodies against all the infections microorganisms that could be possibly be encountered in a lifetime.

B lymphocytes are highly specialized cells whose sole function is to recognize foreign antigens by means of cell-surface immunoglobulins and then to differentiate into plasma cells that secrete anti-

bodies of the same antigen specificity.

The body does not, however, stockpile all the B cells needed to do this. Fuelling this system are stem cells in the bone marrow, which generate more than sixty billion new B cells every day for our life. The development of B cells from bone marrow stem cells through to antibody-producing plasma cells is the subject of **chapter 6th: The Development of B Lymphocytes**.

The B-cell response to any antigen is highly specific and immunoglobulin diversity is a result of the unusual arrangement and mode of expression of the immunoglobulin genes.

In B-cell progenitors the immunoglobulin genes are in the form of arrays of different gene segments that can be rearranged in many different combinations. This rearrangement occurs in bone marrow and is independent of a B-cell encounter with specific antigen and follows a specific program.

However, whereas B cells rearrange their immunoglobulin genes while remaining in the bone marrow, the precursors of T cells have to leave the bone marrow and enter another primary lymphoid organ—the thymus—before they rearrange T-cell receptor genes.

A major function of the thymus is to ensure that a person's native T cells bear T-cell receptors that recognize peptides in the context of the particular MHC class I and class II isoforms expressed by that person. This is the theme of **chapter 7th: The Development of T Lymphocytes**.

In the thymus three functionally distinct types of T cell develop from a common progenitor that comes from the bone marrow. One type of T cell expresses $\gamma : \delta$ receptors and is not restricted to the recognition of peptide antigens presented by MHC molecules. The other two types of T cell express $\alpha : \beta$ receptors and are distinguished by the co-receptors that they express—CD4 or CD8 and the class of MHC molecule to which their receptors are restricted.

Whereas the bone marrow is continually turning over the B-cell repertoire during the whole of a person's lifetime, the thymus works principally during youth, when it serves to accumulate a repertoire of T cells that can then be used throughout life.

T cells developed in the thymus circulate in the blood and the lymphatic system, passing through secondary lymphoid tissues where they can meet and be activated by their specific antigen. Pathogens and their antigen are brought from infected sites to the T-cell areas of the secondary lymphoid tissues in the draining lymph and by dendritic cells, which are uniquely proficient in the uptake and processing of antigens for presentation to naive T cells.

Interaction of antigen on the dendritic cell surface with the T-cell receptor activates the T-cell which then undergoes clonal expansion and differentiation into effector T cells. This process of *T-cell activation* is the first stage of a primary adaptive immune response, reported in the first part of **chapter 8th: T cell-Mediated Immunity**.

In the second part the effector T cell functions are examined where the role of regulatory T cells is also considered. Thus, effector CD8T cells are uniformly cytotoxic T cells that kill pathogen-infected cells. Effector CD4T cells comprise several different functional subtypes, but they all secrete cytokines that activate other cells of the immune system. Because the function of effector CD4T cells is principally to help other cells to achieve their effector functions, they are called *helper T cells*.

Dendritic cells, macrophages, and B cells are however, the three types of professional antigen-presenting cell. They have distinctive roles in the primary immune response.

Whereas dendritic cells present antigens to activate main T cells and drive their differentiation to effector T cells, macrophages and B cells present antigens to effector CD4T cells for them to become activated by those T cells.

Thus, the three types of effector T cell enable the human immune system to respond to different categories of infection and to different stages in the course of the same infection.

The response of B lymphocytes to infection is the secretion of antibodies. Antibodies are not in themselves toxic or destructive to pathogens; their role is to bind and link to pathogen the effector molecules or cells and destroy it.

One way in which antibodies reduce infection is by covering up the sides on a pathogen's surface that are necessary for growth or replication.

In such way antibodies *neutralize* the pathogen. This is for example the main mechanism of action of vaccines another way is to act as molecular adaptors capable to bind to pathogens with their antigen-binding arms and to phagocyte cells' receptors with their Fe regions.

Thus, organization of a pathogen, or coating it with antibody, promotes its phagocytosis.

Moreover, antibodies may bound to the surface of pathogens causing complement fixations, through the classical pathway of complement activation.

This is the topic of **chapter 9th**, *Immunity Mediated by B Cells and Antibodies*, where in the first part of the chapter the B-cell response, development and generation of antibodies are reported. In the second part, the aspects of the antibody-mediated immune response through the structural differences of adaptor functions are discussed. It is necessary to remember how the antibodies most effective at combating infection are those that are made early in an infection and bind strongly to the pathogen. And secreted antibodies are the only effector molecules produced by B cells; their principal function is as adaptor molecules that neutralize pathogens and deliver them to effector cells for destruction. Thus, during the course of an infection the effectiveness of the antibodies produced improves steadily. This experience is retained in the form of memory B cells and high affinity antibodies, which provide long-term immunity to re-infection.

Chapter 10th, *The Body's Defences Against Infection* describes in 3 parts how innate and adaptive immunity work together to battle the common types of infection. In the *first part* of the chapter the attention is turned to the immune response to pathogens, such as the common cold, that infect the human body by passing through the mucosal surface of tissues, or bronchial and gastrointestinal tracts. In the *second part* is described how a primary adaptive immune response produces immunological memory and protective immunity that lessens the impact of subsequent encounters with the same pathogen. In the *third part* are examined the minority populations of lymphocytes that form bridges between the innate immune response and the adaptive immune response by making use of adaptive immune mechanisms to contribute to innate immunity.

Innate immunity evolved before adaptive immunity.

So from their beginning the mechanisms of adaptive immunity have used and improved on those of innate immunity.

For the past 400 million years innate and adaptive immunity have been coevolving and certain features associated with adaptive immunity have been incorporated into innate immunity. The γ : δ T cells, B-1 cells, and NKT cells are lymphocytes of the innate immune response that use their rearranging genes to make receptors that in their limited and cross-reactive specificities resemble the receptors of innate immunity.

Chapters 11th, 12th and 13th are focused upon diseases that arise from inadequacies of the human immune system.

In the course of their long relationship with humans, successful pathogens have developed mechani-

sms that allow them to exploit the human body to the full microorganisms with such advantages compete successfully against other potential pathogens to exploit the resources of the human body. Thus, antigenic variation in the pathogen presents the maturation of the adaptive response and the development of useful immunological memory. By more active strategies pathogens, such as some viruses, interfere with key elements of the immune response, either to inhibit normal immune function or to recruit the response to the pathogens advantage.

The first part of **chapter 11th**: *Failure of the Body's Defences*, describes examples of different types of mechanisms of attach human body pathogens are using; in the second part the inherited deficiencies of human immune system are reported, meanwhile in the third part the host-pathogen relationship concerning the human immunodeficiency virus (HIV) pathology is explored. The best characterized gene defects affecting the immune system are those that show up in early childhood and confer exceptional vulnerability to common infections.

The most severe immunodeficiencies are due to gene defects that cause an absence of all T-cell function and thus, directly or indirectly injure B-cell function as well. This results in increased susceptibility to bacterial infection, as to defects in phagocytes function. *Inherited immunodeficiencies* are caused by a defect in one of the genes necessary for the development or function of the immune system. Depending on the gene involved, immunodeficiencies range from manageable susceptibility to particular pathogens to a general vulnerability created by the complete absence of adaptive immunity.

Immunodeficiency can also be acquired as the result of infection.

Immunodeficiency in the human population today is the human immunodeficiency virus (HIV). A feature of HIV infection that encourages its dissemination in the population is that infected individuals can live normal lives for many years without knowing they are infected.

The protective functions of the immune system depend, as described, on recognition events that distinguish molecular components of infection agents from those of the human body. Thus, the immune system provides the body with powerful defences against these molecules. However, many foreign molecules do not threaten health, meanwhile others stimulate an adaptive immune response and the development of immunological memory in predisposed members of the population. In general, such immune responses are harmless, but this is not always so, and various allergies or hypersensitivities are caused by the immune system's over-reactions to nonthreatening environmental antigens. Four types of hypersensitivity reaction are conventionally defined on the basis of the effector mechanisms that cause them. Hypersensitivity reactions of types I, II and III are triggered by antibodies, whereas type IV hypersensitivity reactions are triggered by effector T cells. In all four types of reaction, recognition of the allergen triggers an unwanted inflammatory response of varying severity and duration.

This topic is discussed on **chapter 12th**: *Over-reactions of the Immune System*.

Chapter 13th: *Disruption of Healthy Tissue by the Immune Response*, examines the autoimmune diseases, in which the immune system attacks healthy cells and causes tissue damage and loss of function. Although adaptive immunity exists only in vertebrates, and provides immunological memory, innate immune systems shape the adaptive response. As previously described in humans, when a pathogen first encounters the host, the innate immune system its breakdown is there to recognize and respond by process that inhibits microbial proliferation as well as triggers events that later control the inflammatory and adaptive response. Unfortunately, this fine orchestration of systems

defective in many patients.

Being the skin barrier the first physical element of the innate immune defence system it is a hallmark in many skin diseases. Disruption of the epidermal barrier may lead, on the other hand, to increased trans-epidermal water loss, resulting in dryness of the skin, which is associated with the development of inflammation and pruritus. On the other hand, skin barrier defects facilitate the trans-epidermal penetration of allergens and irritants, which in turn sustain the production of pro-inflammatory cytokines and chemokines by keratinocytes and other resident cells of the skin. As consequence, it may appear allergic or hypersensitivity reactions.

On the contrary, autoimmune reactions can be caused by antibodies that perturb a normal physiological function or by inflammatory T-cells that damage healthy cells or tissue at a rate that is beyond the capacity of the body to repair.

Although much is known of the effects of autoimmune disease, less is understood about the events that break *tolerance* and *cause* an autoimmune response.

However, autoimmune diseases are complicated multifactorial diseases for which no single entity can be identified as the necessary and sufficient cause of a particular disease. They arise as a consequence of unlucky combinations of genetic and environmental factors, each of which by itself is weakly correlated with disease. With a better knowledge of the mechanisms operating in human autoimmune disease, it should be possible to identify patients at early stages of disease and thus, should be easier to control the response without resorting to non-specific immunosuppression. Actually patients come, in fact, to medical attention only when the destructive effects of autoimmunity are at an advantage stage.

The final two chapters of the book illustrate how the immune system is being manipulated to improve human health by vaccination and transplantation of tissues and organs.

The topic of **chapter 14th** is: *Vaccination to Prevent Infection Disease*.

Vaccination is a procedure in which the adaptive immune system is manipulated in an antigen-specific manner to mimic infection by a particular pathogen and stimulate protective immunity against it without causing the disease itself.

Thus vaccination represents *preventive medicine*. It involves the deliberate immunization of healthy people with some form of a pathogens or its component antigens and induces a protective immunity that prevents any infection with the pathogen from causing disease.

Vaccine development has largely been a process of trial and error, one in which a knowledge of immunological mechanisms played little part and the guiding principle was for the vaccine to resemble the natural pathogen as closely as possible. Although this approach has worked for pathogens causing acute infections, it has failed to produce vaccines against pathogens that establish chronic infections and cause chronic disease.

Many human diseases involve the malfunction of a single organ or tissue that causes incapacitation or death. With transplantation, diseased tissues are replaced by healthy ones, and this can lead to improved health and longer life.

This is the topic focused on **chapter 15th**: *Transplantation of Tissues on Organs*.

For transplantation of other tissues the proof of principle come from successful transplantations between genetically identically twins.

Of the many problems focused by transplant physicians, the most challenging has been, in fact, the alloreactive immune response against ABO and HLA antigens that rejects transplanted organs. This

because of antigenic differences in the highly polymorphic HLA class I and class II molecules. Thus, in the practice of transplantation, a general principle is to avoid performed antibodies that can bind to the transplanted tissues. This is because of the impressive improvement in transplantation success over past 30 years coming principally from more effective drugs and antibodies that non-specifically suppress the T-cells of the immune system. Throughout this period the goal of transplant immunologists has been to selectively suppress the immune response to the allogenic transplant and release the transplant patient from a lifetime of immunosuppressive drugs.

Chapter 16th, *Cancer and its Interactions with the Immune System*, represents the final chapter of the book. It looks to the future and to the long felt hope for the more effective prevention and treatments of cancer through manipulation of the human immune response to malignant cells and oncogenic viruses.

Cancer, a diverse collection of life-threatening diseases that is caused by abnormal and invasive cell proliferation, accounts for about 20% of deaths in the industrialized countries. Worldwide there are some 6 million new cases of cancer each year, and half of these people will die from the disease.

Cancer can affect any tissue in the body and results from the uncontrolled growth of human cells. These *different* cells become divorced from the mechanisms that maintain tissue integrity and they gradually compete with normal cells for food and space within the human body. Every cancer is unique and dies with the person in which it arose.

Although cancer *immunotherapy* is still an emerging and experimental field, a variety of approaches show some interesting promise. Over the next 50 years the application of organ transplantation and immunotherapy will certainly give interesting results in the treatment of cancer also.

This interesting volume, covering by its 16 chapters all the aspects of human immune system, is of great interest for all people coming from other scientific experiences, such as Cosmetic Chemists, and Marketing manager of cosmetic industry who are approaching to immunology for the first time. However its lecture should help clinicians from many specialities, including Dermatologists, Allergists, Family practitioners, and Paediatricians, to reviews their knowledge on the fascinating theme of immunology. The interesting thing is for every chapter is reported the summary, useful to easily find some the opinion on a specific topic in a faster way, before beginning to read page by page all the chapter.

The final part of the book is dedicated to questions and answers, and is equipped with a specific glossary, that is of great help to any students interested to improve the knowledge of Human Immune System.

P. Morganti
Editor-in-Chief

INTERNATIONAL CONGRESS ON GLOBAL WELLNESS & BEAUTY

Title: Wellness and Beauty outside in: East & West working together

Location: CNR -Consiglio Nazionale delle Ricerche (National Research Council) - Piazza Alda Moro 7 - ROMA

Date: 21 to 23 October 2009

Organized: International Society of Cosmetic Dermatology - (ISCD) In Collaboration with: UNIPRO - FEDERSALUS

Patronage: Ministero Del Lavoro, Della Salute e Delle Politiche Sociali - Ministero Dello Sviluppo Economico
S.I.C.C.

YOU HAVE FIVE IMPORTANT REASONS TO BE PRESENT

BECAUSE

Because

in this occasion you may know the latest innovations involving WELLNESS & BEAUTY at 360°.

Because

it is the first time the globality of WELLNESS & BEAUTY will be discussed from a multidisciplinary team of scientists.

Because

many scientists coming both from Academy & Industry from East and West will define the significance of WELLNESS & BEAUTY outside in.

Because

are coming scientists & expert in:

- Cosmetic Science
- Environment & Wellbeing
- Functional food,
- Bio-textiles & Leather
- Nanoscience
- Intellectual Properties & Counterfeiting

all involved in WELLNESS & BEAUTY.

Because

Rome is an hystorical wellknow city where you may live a wonderful and exciting experience.

Look the program on our website www.congress2009.iscd.it
and come as active participant



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The Organizing Committee

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East & West working together
Rome - October 21-23, 2009

TARGET AUDIENCE

The Congress addresses both Clinical Physicians and Cosmetic Chemicals as well as policy makers and scientists with a background in Biology, Physiology, Pharmacology, Dietology, Toxicology, Intellectual Properties, physics and Chemistry involved in the development of Cosmetic Dermatology as a new science.

The meeting is also of interest to industrial and marketing experts directly and indirectly involved in the field of wellness.

DEBATE STYLE

The speakers will comment themselves to short presentations, making the outcome of their speech between 10 and 15 minutes.

Thus, several hours will be reserved for discussion to all conference participants.

This way a proficuous exchange of knowledge and know-how between the chemical, medical community as well as and technical community will be possible.

CALL FOR PAPERS/ POSTER SESSIONS

Paper covering original research reports based on new ideas aimed at future clinical of wellness based on the use of cosmetics, functional food, bio-textiles and bio-leather should be submitted. Submitted papers will undergo peer reviewing and, if accepted, will be chosen for oral or poster presentation.

Submission should be made before July 15, 2009 at least

Enter www.congress2009.iscd.it and upload your proposal following the steps submission.

The submitted file should be in Word or RTF and must fit **on one single page, including tables and figures**. The text should be single-spaced with a 12-point font italics rather than underlined words should be used all illustrations, figures, and tables should be placed within the text at appropriate points rather than at the end.

Besides the uploaded documents, please also send your submission by e-mail to: congress2009@iscd.it

All authors whose papers are not accepted for a presentation may apply for a poster presentation. Poster sessions have **to be submitted by August 18, 2009**.

SLIDE & PROGRAM

Slides center

The Powerpoint presentations should be submitted to the slide speakers room located at the 1st floor in the Slide Meeting Center.

The Powerpoint presentations should be taken to the area preferably on the day before the session or at latest 4 hours before the starting time of the session.

Variations

The scientific secretariat and the organizing secretariat have the rights to change the scientific program for technical and scientific reasons.

REGISTRATION FEE								
		up to 30.06.09	from july 1	on site				
			up to sept.15					
<input type="checkbox"/>	ISCD, Federsalus, Unipro, and SICC Members	€ 400	€ 450	€ 500				
<input type="checkbox"/>	Non Members	€ 500	€ 550	€ 600				
<input type="checkbox"/>	Accompanyng person	€ 90	€ 90	€ 90				
<input type="checkbox"/>	Exhibitor exceeding 2 badges	€ 130	€ 130	€ 130				
<input type="checkbox"/>	Beauticians	€ 80	€ 80	€ 150				
<input type="checkbox"/>	1 day registration	€ 200	€ 220	€ 250				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Participants registration fee includes</th> <th style="width: 50%;">Fee Accompanying person</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Welcome Reception and Admittance to Opening Ceremony • Admittance bag to all Sessions • Admittance to Exhibition • Conference Documentation and Abstract Book • Certificate of Attendance • Coffee - Refreshments - Brunches </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Welcome Reception and Admittance to Opening Ceremony • Admittance to Exhibition • Coffee break. </td> </tr> </tbody> </table>					Participants registration fee includes	Fee Accompanying person	<ul style="list-style-type: none"> • Welcome Reception and Admittance to Opening Ceremony • Admittance bag to all Sessions • Admittance to Exhibition • Conference Documentation and Abstract Book • Certificate of Attendance • Coffee - Refreshments - Brunches 	<ul style="list-style-type: none"> • Welcome Reception and Admittance to Opening Ceremony • Admittance to Exhibition • Coffee break.
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REGISTRATION PROCEDURE

All registrations must be made on the official registration form only (or a copy – 1 form per participant) No registration form is accepted unless accompanied by full payment (banker's draft or duplicate of the transfer order raised by the bank, in EURO only). The registration will be confirmed only after receipt of these required.

In order to avoid any confusion due to mail or bank delays, advance registrations by mail will close on.

After this date, registrations will be made on site at the Congress Welcome Desk, on October 21 2009 from 8:00 to 18:00

SATELLITE SYMPOSIUM

There will be satellite symposia planned by term in conjunction with the Congress organizing committee.

INFORMATION FOR AUTHORS

Abstracts may be presented and will be included in the abstract book, only if the registration fee for at least one of the authors have been remitted and if the abstract form as been approved.

PLACE AND DATE OF THE CONGRESS



The Congress will take place in:
CNR Consiglio Nazionale delle Ricerche (National Research Council)
P.za Aldo Moro 7 - ROMA - From 21 to 23 October 2009.



REFRESHMENT AND LUNCHES

Refreshments and lunches are included in the registration fee.

CLIMATE

Average temperature in Italy range from 10°C (minimum) to 20°C (maximum) in October/November.

DRESS

Dress will informal for all congress session.

The most suitable dress for each events will be suggested.

ENQUIRES

All scientific enquires about the Congress should be addressed to Scientific Secretariat Desk.

OFFICIAL LANGUAGE

The official language of the meeting will be English.

ATTENDANCE CERTIFICATE

The participants will collect their certificate directly from the Organizing Secretariat.
congress2009@iscd.it

BADGES AND IDENTIFICATION

Registration badges will be used during the Congress. For identification purposed and admission to the session halls, participant are request to wear their badges, which will be given to them upon registration.

Admission to the Congress site will not be allowed badge identification.

DEADLINES

Submission for oral presentation:	July 15, 2009.
Submission for poster presentation:	August 18, 2009.
Hotel Accommodation Registration:	September 1, 2009.



Università degli Studi di Pavia
Cattedra e Scuola di Specializzazione
in Chirurgia Plastica e Ricostruttiva

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Master biennale di II livello in Medicina Estetica e del Benessere

Anni accademici
2009-10, 2010-11

Un corso di alta formazione post-laurea istituito ai sensi del D.M. n. 270 del 22/10/2004 per il conseguimento del Diploma Universitario di Master in Medicina Estetica e del Benessere, titolo di studio accademico con valore legale.

Un percorso di studio intensivo teorico-pratico per formare il Medico Estetico, figura professionale destinata all'attività in studi autonomi, centri polispecialistici, centri-benessere, palestre, beauty farms e stazioni termali.

Due anni di lavoro full-time, armoniosamente articolato tra lezioni teoriche, attività pratiche e stages presso aziende di settore.

Monte ore di 1500/anno così ripartito:

- 480 h/anno di didattica frontale
- 300 h/anno di stage e tirocini pratici
- 720 h/anno di studio individuale

Scadenza domande di ammissione: 10 dicembre 2009

**Il Master Universitario biennale di II livello
in MEDICINA ESTETICA E DEL BENESSERE
dell'Università di Pavia:
un prodotto formativo nuovo e completo,
una formula organizzativa d'avanguardia,
nella lunga tradizione di un grande Ateneo.**

La Medicina Estetica consiste nell'applicazione di tutte le conoscenze del laureato in Medicina e Chirurgia finalizzate non al trattamento delle malattie ma al raggiungimento e mantenimento dello stato di salute e di benessere psicofisico. Tale obiettivo viene raggiunto sia educando il paziente/utente a gestire al meglio la propria persona sia intervenendo opportunamente con le giuste correzioni per minimizzare gli inestetismi che possono essere causa di disagio.

Per l'ormai indiscussa richiesta di mercato di tale professionalità e per il bisogno di stabilire percorsi formativi qualificati, esaurienti, seri, tali da costituire un riferimento e una garanzia per gli utenti e gli Ordini dei Medici, l'Università risponde con le competenze proprie, armoniosamente integrate con le migliori risorse provenienti dal mondo produttivo.

E' stato quindi istituito a partire dall'anno accademico 2005-2006, presso l'Università di Pavia, il MASTER BIENNALE DI II LIVELLO IN MEDICINA ESTETICA, ora giunto alla III edizione, corso di alta formazione post-laurea per il conseguimento del Diploma Universitario di Master in Medicina Estetica.

Si tratta di un percorso di studio intensivo teorico-pratico particolarmente pensato per il neolaureato in Medicina e Chirurgia, armoniosamente articolato in due anni di lavoro full-time tra lezioni teoriche, attività pratiche e stages presso aziende di settore, finalizzato alla formazione del Medico Estetico, figura professionale destinata all'attività in studi autonomi, centri polispecialistici, centri-benessere, palestre, beauty farms e stazioni termali. Una grande opportunità di formazione professionale qualificata e di rapido inserimento nel mondo del lavoro dopo la laurea in Medicina e Chirurgia.

Il monte ore è di 1500/anno articolato in 480h/anno di lezioni e seminari presso le strutture dell'Università di Pavia, 300h/anno per tirocinio pratico presso centri di Medicina Estetica, centri benessere, terme, palestre, aziende di settore appositamente convenzionati con l'Università di Pavia e 720h/anno dedicate alle attività di studio e preparazione individuale. La frequenza è obbligatoria per almeno il 75% del monte ore previsto.

Il percorso formativo è organizzato in 9 moduli principali di insegnamento che coprono tutti gli aspetti e le tematiche della Medicina Estetica e del benessere: aspetti generali della Medicina Estetica e discipline propedeutiche, dermatologia e cosmetologia, termalismo, flebolinfologia, cura della silhouette, tecniche e metodiche in Medicina Estetica, apparecchiature e tecnologie di specifico impiego in Medicina Estetica, attività motorie, terapie complementari e non convenzionali.

Per un prodotto formativo così complesso ed articolato è stato organizzato un nutrito corpo docente di ben 63 insegnanti di cui 27 docenti universitari, 18 docenti universitari di ruolo e 7 a contratto, dell'Università di Pavia, 2 di altre Università Italiane e straniere, 8 docenti provenienti da Istituti di

Ricovero e Cura a Carattere Scientifico Nazionali, 20 esperti esterni di chiara e riconosciuta fama nazionale ed internazionale nell'ambito della Medicina Estetica e 6 tutors provenienti dal mondo del lavoro e dai settori aziendale e produttivo.

E' stabilito un numero chiuso di massimo 30 iscritti, selezionati secondo una graduatoria di merito che privilegia il curriculum degli studi universitari, la giovane età ed il non possesso di alcuna specializzazione post-laurea.

Le iscrizioni sono aperte dal settembre e si chiudono alle ore 12.00 del 10 dicembre 2009. Requisiti essenziali per l'ammissione sono: la laurea in Medicina e Chirurgia, l'abilitazione all'esercizio della professione di Medico Chirurgo e l'iscrizione all'Ordine dei Medici Chirurghi.

Con il Master di Medicina Estetica l'Università di Pavia ha voluto studiare un prodotto formativo che soddisfi proprio ogni esigenza. Grazie alla rivoluzionaria formula all-inclusive, il costo di iscrizione di 6500€/anno comprende infatti la frequenza di tutti i corsi teorici e delle attività pratiche, il materiale didattico (testi scolastici, dispense, audio-video), il trasferimento alle sedi distaccate in Pavia, il lunch di lavoro giornaliero in Pavia, il trasferimento ed il soggiorno con pensione completa nelle località di tirocinio-stage fuori sede. Inoltre sono previste formule agevolate di soggiorno in Pavia per gli studenti fuori sede.

Nessun pensiero superfluo deve turbare l'apprendimento dell'arte della Medicina Estetica a Pavia. La Banca Regionale Europea mette inoltre a disposizione un comodo finanziamento a 5 anni a tasso agevolato per coprire l'intero costo d'iscrizione. Una ragione in più per non avere preoccupazioni inutili e pensare con tranquillità al proprio futuro.

Apertura iscrizioni: settembre 2009

Scadenza domande di ammissione: 10 dicembre 2009

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PRELIMINARY TOPICS

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ISP Announces Key Appointments to Personal Care Team

As the global economy improves, big things are happening at ISP

WAYNE, NJ (July 30, 2009) – ISP recently announced the appointments of several professionals within the Personal Care division, welcoming three new senior key account managers with more than thirty years of combined expertise. The appointments allow for a smooth transition of responsibilities within the senior management team, as the personal care business moves forward with an increased emphasis on technology development for key accounts and the broader personal care marketplace.

According to Kevin P. O'Brien, Sales Director of ISP Personal Care, "We are focused on growing the personal care business with a steady stream of innovative new technologies that experienced account managers can take to the marketplace", he explained. "Personal Care continues to demonstrate excellent growth despite the current global economic crisis and we are optimistic for the future with expected full-year results to be positive. Our new colleagues are certain to contribute to our continued success."

Mr. Mark Dailey joins ISP as Senior Key Account Manager for the Midwest. Prior to joining ISP, he spent eight years with National Starch and Chemical as Midwest Account Manager for their Personal Care BU. "Mark's strong background and breadth of experience will be a tremendous asset to our Midwest division," explained O'Brien.

Mr. Dailey who holds a BS in Biochemistry from the University of Illinois and an Executive MBA from the Kellogg School of Management spent the previous four years as a formulation scientist in product development with Alberto Culver and Unilever HPC. He holds two patents for developments in hair styling and conditioning systems and will be working directly with Alberto Culver on a global basis.

Mr. John Bozza, Personal Care's new Senior Key Account Manager for the Southeast joins ISP after twelve plus years as an Account Manager with the McIntyre Group LTD. Mr. Bozza managed both the Northeast and Southeast Territories while simultaneously, supporting McIntyre's sales efforts in the European and Latin American markets.

Holding a BA in Chemistry from Rutgers University and an MA in Cosmetic Science from Fairleigh Dickinson University, he spent eleven years as a product development chemist with both Rhone Poulenc and L'oreal.

Highly respected within the field, John continues to teach courses on surfactants and liquid cleaning systems in the CEC program of the SCC and periodically lectures for FDU's graduate cosmetic science program. "Throughout his career, John has demonstrated success in many areas of the Personal Care Industry. His exceptional skill set and background makes him an ideal leader and he is a welcomed addition to our Southeastern division", O'Brien said.

Also joining the PC team is **Ms. Jennifer O'Hara** as Global Key Account Manager for Johnson & Johnson Worldwide. Formerly a Key Account Manager with Presperce LLC, she also worked within the chemical products group of Rohm & Haas and in product development for Proctor & Gamble. "Jennifer is a high caliber individual who possesses the skills necessary to produce exceptional results for Personal Care" said O'Brien. Mrs. O'Hara holds a BS in Chemical Engineering from the Georgia Institute of Technology.

ISP Personal Care is also pleased to announce the promotion of **Ms Jennifer Jelinski** to Inside Sales Engineer. Ms Jelinski has been with ISP for four years and previously worked in Customer Service. Most recently, she provided sales support in North America. "Jennifer is a key member of the Personal Care team and we are absolutely thrilled to have her in this new role," explained O'Brien.

ISP Personal Care continues to maintain their commitment to service and understanding of customers' needs in a demanding market. "The economic environment is improving daily and there is a tremendous growth opportunity for Personal Care." said O'Brien. "We welcome our new team members and look forward to working with them. We have strong leadership in place and an exceptional support team that will continue to build ISP's already solid position as a major global player in the Personal Care industry."

International Specialty Products Inc. (ISP) is a leading global supplier of specialty chemicals and performance enhancing products for a wide variety of personal care, pharmaceutical, food, beverage and industrial applications. ISP produces more than 400 specialty chemicals, which it markets and sells worldwide. The company's headquarters is located in Wayne, New Jersey, USA.

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In copertina / Front cover

Tessuto biofunzionale di acetato di cellulosa con nanofibrille di chitina e luteina.

Foto al microscopio elettronico a scansione (SEM). Su gentile concessione dell'Istituto di Morfologia Umana Normale, Università Politecnica delle Marche, Ancona, Italia.

Biofunctional tissue of cellulose acetate with chitin nanofibrils and lutein.

Scanning Electron Microscopy (SEM). On kind permission of the Institute of Human Normal Morphology, Università Politecnica delle Marche, Ancona - Italy.

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References
Tuscardin L, Morganti P, Tartarini S, Valenzano L. (1976) Valutazione clinica dell'azione antiforforale e sebotatica di tensidi cationici associati allo zinco piritione, *Chron. Derm.*, 7:659-666 -2- Morganti P., (1999) Uv and Hair Weathering. *Eurocosmetics* 9: 30-32 -3- Morganti P., Morganti G., (2001) Hair and Cosmesis. *Soap & Cosmetics*, 77 (3): 26-31 -4- Sunonen R.E., Dawber P.R. and Ellis D.H. (1999) Fungal infections in the skin, hair and nails, p.120 -5- Morganti P., Fabrizi G. (1999) Safety evaluation of N-tosylarginine and ceramides of pharmaceutical grade, *J. Appl. Cosmetol.*, 17: 1-9 -6- Cassano N, Amoroso A, Vena GA (2002) Zinc nutritive and skin: an overview, *J. Appl. Cosmetol.*, 20: 183-194 -7- Frydrych A., Arct J, Kasiura K. (2004) Zinc. A critical importance element in Cosmetology, *J. Appl. Cosmetol.*, 22: 1-13 -8- COLIPA n. P81 (2002) Opinion Concerning Zinc Pyrithione, SCCNFP/0671/03/Final

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