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The current events of the sun protection proposed

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HelioScreen

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Summary

- ***News within Helio-Screen Labs :***

HelioScreen Will be present at In Cosmetics 2010 Paris 13-14-15 April

- ***Patents review within sun business.***

- ***It happened under the sun….***

- ***News and gossips***

- ***File of the month***

Reference specter: A stake for Calculation of the SPF!

- To be found in next files ….

• **Reference irradiance spectrum: *(Continuation)***

• ***Study of correlation depending on irradiation spectrum.***

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Updated version

Few modifications have been performed (highlighted with *) in order to avoid misleading in comparison with original version in French.

Editorial ...

It became obvious that we will have early or late a battery of tests *in vitro* recognized for the evaluation of solar protection.

Today the level of mastery of certain tests, makes it possible right now to evaluate most of the products of the market. It is an obviousness which we check every day in our institute, if not we would not exist any more! One does not need therefore neglecting the fact that the evaluation *in vitro*, in particular that of the SPF, may prove very delicate even prone to discussion for certain products.

The laboratories which launch out in these new techniques without much of experiment often limiting itself to the measurement of the SPF- conclude sometimes too quickly, either to reject in block the technique just because they do not control it and do not have coherent results, or to state , unless, unexpected, their results are no doubtful with the opposite post arrogant certainty. This is the case with" debatable" results which call into question the result of evaluations *in vivo* and sometimes the product himself. That is often prejudicial for a good analysis of real problems often badly identified. Too much impatience to want to regulate overall what must be treated, step by step and in a pragmatic way is not productive. Too much impatience to use "the tool" before it is validated without any questioning in such or such case, is likely to involve us in excesses such as those evoked previously. The evaluation *In Vitro* of solar protection is a task of specialist and all the problems are still far from being elucidated. Then which is the "miraculous formula " of a good evaluation *In vitro* ?

We work on this subject for too long , having been pioneers on the matter, not to know that the experience is fundamental in these techniques. The rigour must be essential .logic and "bon sens" are sometimes helpful but one would never have to forget pragmatism and humility!

D.L

Reference spectrum: A stake for calculation of the SPF!

If we are still far from having a method duly validated for the determination of the " *In vitro* SPF ", the fact remains that the basic methodology is accepted universally. It consists in the determination of the capacity of absorption in the UV range of a product spread in thin layer over a substrate. The measure is obtain with the help of a spectrophotometer .This "methodology is so called as "method of Diffey" [1].

Similarly, the value which have to be finally calculated to express the endpoint , does not make debate because everybody agrees to think that it must be identical to that found with the international method SPF *In Vivo [2]*.

The link between the *in Vitro* measurement of the residual absorption - in fact a function of wave- and final value of the end point of the *In Vivo* SPF (determined by the evaluation of delay in appearance of the erythema reaction in human skin because of the spreading of the product on the exposed zone [2]) will be obtained by a further mathematical calculation. The first function of wave measured in the spectrophotometer will be multiplied two other functions of wave. The first one allows the expression of the erythema action spectrum which is in relation with the biologically efficacy of specific spectral zones on human skin. The second representing the spectral irradiance, is also expressed as a function of wave.

There is no debate on the curve of biologic efficacy producing the erythema [3] which is well defined and accepted.

On the other hand the second curve, of irradiance it is not universally defined.

A discussion is imperative thus on the choice of this curve and a study of the incidence on the final results and of course the correlation.

Choice of the curve of irradiance :

$$\frac{\int_{\lambda=290nm}^{\lambda=400nm} E(\lambda)\times S(\lambda)\times d\lambda}{\int_{\lambda=290nm}^{\lambda=400nm} E(\lambda)\times S(\lambda)\times A(\lambda)\times d\lambda}$$

"Solar" or "Institute" Irradiance in the SPF calculation

The curve of irradiance used in the calculation of the *in Vitro* SPF, was mostly that of the midway midsummer sunlight for eastern Europe defined by the CIE [4 [5]]. But other propositions were made (Fig. 1)

(continuation page 2)

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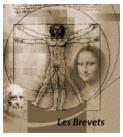
Patents ...



- **Patent WO2009132352** deposited on 29/10/09 by RHODE ISLAND HOSPITAL [US]; JAY GREGORY D [US]; CRAWFORD GREGORY P [US] and concerning: TRIGGERED{*ENABLE;ACTIVE;LIVE*} COMPOSITIONS FOR SUN SCREEN:
The invention concerns topiques compositions including a fluorescent paint which absorbs the brilliances UVA and UVB and transforms them into light of healing, into association with an acceptable excipient dermatology. The compositions of the invention are useful in the repair of the cutaneous cells damaged by beams and in the reduction or the prevention of future cutaneous damages further to the exposure in a lamp with ultraviolet ray.

- **Patent WO2009126722** deposited on 15/10/09 by KOBO PRODUCTS CPSC [US] and concerning: MANUFACTURING PROCESS OF BIG PARTICLES HAVING PROPERTIES OF NANO-OPTICAL SUN SCREEN:
The invention concerns nanoparticles easing the UV trapped in porous particles which are dressed in a wax material. The porous particles also include some fatty acid applied to the wax cover. The invention also concerns one *emsp (***?? Indicated such which in the summary***); process of production of powder constituted by nanoparticles of enfeeblement of UV trapped in porous particles dressed in a wax material. The invention concerns, furthermore, a composition, such as a cosmetic composition, which includes the porous particles charged with the nanoparticles of enfeeblement of UV. In variant, powders of sun screen with big useful particles as ingredient in cosmetic compositions and in dispersal intended to be incorporated into cosmetic compositions contain an agent of protection against the UV in a material of matrix. Powders of macroparticles can be used in a big track of cosmetic formulations, including sun screens, eye shadow, mascara, foundation cream, blusher, tonic lotion, lipstick and other compositions requiring a protection against ultraviolet rays.

- **Patent EP2105124** on 30/09/09 by BAYER MATERIALSCIENCE AG [OF] and concerning: compositions of sun protection
The invention describes compositions of sun protection to be applied to the skin, which contain particular polyuréthanes, as well as the use of these polyuréthanes to produce products of sun protection.

.. It happened under the sun

In *The current events of Cosmetics*, we find an advertisement for the guide: nanoparticles and sun creams: the guide 2009-2010 Friends of The Earth Australia

The Australian branch of the international environmental organization Friends of The Earth (The Friends of the Earth), present in 77 countries, publish his guide 2009-2010 of the sun creams without nanoparticles.

Here is what we find as summary: Invested in anti-nuclear campaigns, of protection of forests and environment, and for the use of the renewable energies, Friends of The Earth is interested for some years in the development of the new technologies. Since 2005, the organization threw a Debate on nanoparticles in answer to the fast promotion of this industry still little regulated.

So that the use of sun products is a security of protection for the skin and the health, she has just published her guide 2009-2010 of the sun creams where are listed the brands of Australian cosmetics exempt of nanoparticles and by clocking also those there who use it in their formulation.

Cosmetics not considered as solar energy but including a protection anti-UV in their products (moisturizing creams, care anti-age, foundation creams minerals, sticks lips) are examined closely so for the first time.

On both lists below are thus mentioned four categories of following products:

« **Without nanoparticles and without chemicals »**
(Is notably quoted Thalgo)

"Nanoparticles"
(Nutrimetics)

Using potentially nanoparticles (are notably quoted: Avène, Chanel, Clarins, Private hospital, Dove, Elizabeth Arden, Ella Baché, Estée Lauder, Givenchy, Guerlain, Inooxa, Occitane, Lancôme, The meadow, MAC, Neutrogena, Nivea, Origins, Revlon, Sisley, Shiseido, Skinceuticals)

"Nanoparticles"
(Amber Solar energy, Dior, Garnier, Helena Rubinstein, Oréal Paris, Maybelline, Shue Uemera, The Body Shop, Yves Saint Laurent)
To note for products sold in France: the list of the quoted brands is not exhaustive (only the international French and foreign brands are present).

Spectrum of reference :

Continuation.....

In 2006, the COLIPA finalized a method [5] concerning the determination of the factor of protection UVA. This method, more and more accepted, will be surely the base of a worldwhile normalization .So, That would be the first *in Vitro* method of reference. During its development , it has been considered that the practical measurement of the residual spectrum of absorption could miss of reliability. As the result of the *in Vitro* SPF, which is deducted from it by calculation could be "peeled", it has been decided to adjust it on the value of the SPF In-Vivo. It is thus necessary to determine this one beforehand. The gap is obtained by the calculation of a coefficient «c» allowing to make an homothetic slip of the curve measured towards an adjusted curve. (Fig. 2).

It is thus necessary, to realize this method, to begin by measuring both the *in Vitro* SPF and the SPF *In Vivo*.

But This *"in Vitro* SPF » initially measured from the spectral curve is however *a little bit different* from the *« In Vitro* SPF » previously mentioned.! If the method as well as the calculations are the same, the spectrum of irradiance has been differently chosen during the elaboration of the method COLIPA. In other word**, from the same spectral measurement can be calculated « two » *in Vitro* SPF**: the one which is used « communally» although the method is not finalized (we shall call it later the SPF $_{\text{« Sun»}}$), the one which was proposed by the COLIPA (we shall call it the SPF $_{\text{« Institute»}}$) (Fig. 2).

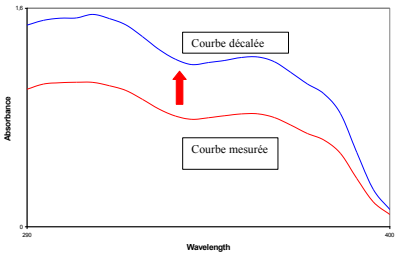


Fig. 2 Gap of the original curve of absorption of a coefficient C, determined by the difference between the moderate values of the SPF *In-Vivo* and *In-Vitro* in the method proposed by Colipa.

Why to have proposed a new curve of irradiation ?

This proposal of another curve of irradiation (Fig. 3) was justified by the fact that the end being to simulate the result *in vivo* which are obtained after exposure of a subject not under the sun but under a lamp of institute, it seemed more logical to take the reference spectrum as that of the institute.

Moreover in the international discussions about the method of determination of the SPF, there are other propositions, such or such continent sometimes wanting a specter of illuminating with reference more in equivalence with its local reference geography.

The problem is that involving the evaluation of an endpoint by a real and physical measure, followed from a mathematical calculation by means of two "theoretical" curves, the change of the values of one of these two curves leads to a different subscript for the same measure. This is relatively logical when we consider the shape of both curves (Fig. 3).

A stake for calculation of the SPF !

How to choose a curve of irradiation ?

The final goal being to define from the initial measure of absorbance, the elements of calculation allowing to obtain a value of subscript in correlation with the value *in vivo*, the debate could be closed by considering the "best" respective value within the " different SPF " by taking into account various propositions of curves of illuminating !

We shall limit ourselves however to the calculations of the SPF $_{\text{« Institute »}}$ and the SPF $_{\text{« Sun »}}$ from the same values measured to consider first of all which are the differences obtained from the curves of absorption and then what seems to be the specter of illuminating which seems to give the best correlation.

Different " *In vitro* SPF " for the same products !

It is not surprising, on examination of the values of the curves which go into the equation of the calculation of the SPF (fig.1) that in certain cases the obtained SPF is different according to the choice of the curve of irradiation.

"Starting from « theoretical curves », the change of the values leads to a different index for the same measurement."

To determine the influence of the choice of the curve of illuminating it on the final *in Vitro* SPF, we compared the result on an important number of products (255) measured in our institute. These representative products of the market had values of from 3 to 80..

The values of absorption being strictly identical because it is about a single manipulation, only the calculation of indexes SPF $_{\text{« Institute »}}$ and SPF $_{\text{« Sun »}}$ obtained with the respective curves vary in proportions which will be expressed in relative percentage of variation.

Products were then categorized according to the level of difference between the calculation of their SPF $_{\text{« Institute »}}$ and of their SPF $_{\text{« Sun »}}$(Fig. 4).

The SPF $_{\text{« Sun »}}$ is always lower than the SPF $_{\text{« Institute »}}$ This is moreover predictable if we consider the figure 3.

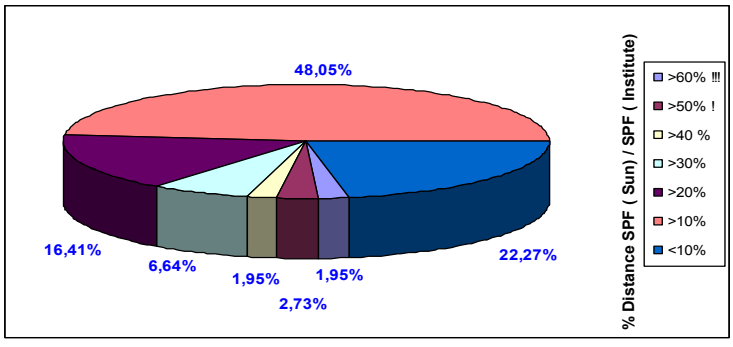


Fig. 4 Distribution on 255 products of the market, the proportional differences in the values of SPF calculated according to the choice of curve of illuminating "sun" or "institute". [Measures realized by HelioScreen on 2008].

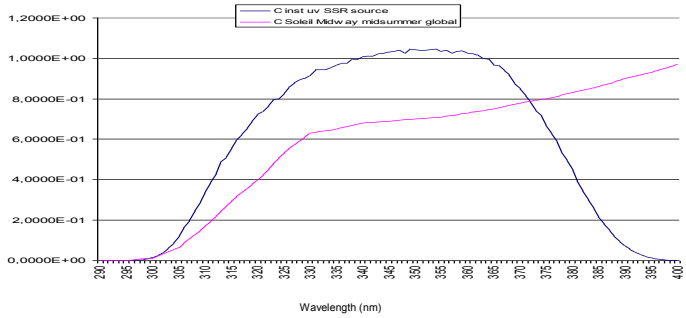


Fig. 3 Spectrum "Sun" and "Institute" for the calculation of the *in vitro SPF.*

On these 255 products we notice that about three quarter of the products have SPF $_{\text{« Sun »}}$ and SPF $_{\text{« Institute »}}$ quite comparable because the difference does not exceed 20 %. 15 % . An other about 10% give different SPF $_{\text{« Sun »}}$ and SPF $_{\text{« Institute »}}$ but this difference does not exceed 30 %. On the other hand, it takes there place to consider the 15 % of the other products of which the calculation of the SPF $_{\text{« Sun »}}$ and SPF $_{\text{« Institute»}}$ diverge from more than 30 % with for certain products of the values going to close differences even superior to the double .

Comment on the value of SPF depending on the irradiation curve.

The choice of irradiation curve thus influences in quite a no negligible way the value of the *in Vitro SPF* calculated for a low but not unimportant number of products. The SPF certain products can so pass of the simple to the double . It is the habit to consider the SPF $_{\text{« Sun »}}$ when we speak about *in Vitro* SPF. In the progress of the method COLIPA, you should not forget that the *in Vitro* SPF is the SPF $_{\text{« Institue »}}$.For the development of a method universally accepted for the *in Vitro* SPF, the choice of the reference curve will quickly arise. The method is in the course of international validation. If the curve SSR («institute ») would be retained, it would mean that the *in Vitro* SPF which we are in the habit of using would be to reconsider. But before envisaging this hypothesis, it will there take place to consider the curve which gives the best correlation. The pragmatism has to be the rule in this choice which must be guided only by the observation because the stake is to transform the same value measured in a final value about which we know that it has to be the closest possible of the value measured *In Vivo*. One of the means to end is to study a big number of products by the methods *In Vivo* and *in Vitro,* to realize the calculation of the *in Vitro* SPF with both curves (or can be later the other propositions) and to verify which curve gives the best correlation.

« ... The choice of irradiation curve influences value of SPF End value for few products can so pass from the simple to the double ...»

This second part of the study is much more consequent than the calculation of the SPF $_{\text{« Sun »}}$ and SPF $_{\text{« irradiation »}}$ on identical measures of curve of absorption because it requires both measurements *In Vivo* and *in Vitro* of a great number of products.

In this first part , we already put in evidence the influence of the choice of this curve of irradiation. We shall try to make a contribution on the aptness of such or such curve of illuminating by presenting a study of correlation realized on 70 products estimated *In Vivo* and *in Vitro* in a second part (next number of Helionews HN9).

[1] « A new substrate to measure sunscreen protection factors throughout the ultra violet spectrum. B.L Diffey et J Robson JSCC 40-127-133 (May June 1989)

[2] SPF *In Vivo* Colipa Sun Protection Factor (the European cosmetic toiletry and perfumery association)

[3] A.F McKinlay and B.L Diffey "A reference action inducing erythema in human skin" (CIE journal,6 17-22 - 1987 -)

[4] "Report LA-UR-83-728. Los Alamos National Laboratory (1983) SA W Gersl A Zardecki H L Wiser

[5] P. Berner, Approximate values of intensity of natural ultraviolet radiation for different amounts of atmospheric ozone. *Final technical report DAJA 37-68-C-1017, European Research Office, US Army, London (1972)*

[6] Method for the *In Vitro* determination of UVA protection provided by sunscreen product guideline 2007 The Colipa *In Vitro* protection methods task force

.. Guide Line: Use of the sun filters in the world

List of the main sun filters used in the world with reminder of the authorized maximal quantities or the possible bans following countries (Attention this list is not contractual and we recommend you to verify the local legislations before any launches on market).

Filter name	Europe	South Africa	Australia and New Zealand	South Korea	China	Thailand
	% maxi	% maxi	% maxi	% maxi	% maxi	% maxi
2,2'-Methylenebis[6-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol	10	10	10	10	10	2
2-Phenylbenzimidazole-5-sulphonic acid (et sels Na, K, TEA)	8	8	4	4	8	6
3-benzylidene camphor	2	2			2	10
4-(2-Beta-Glucopyranosiloxy) Propoxy-2-Hydroxybenzophenone		5				5
4-Methylbenzylidene camphor	4	4	4	4	4	6
a-(2-oxoborn-3-yliden)toluene-4 sulphonic acid (and salts)	6 (en acide)	6	6		6	
Avobenzone	5	5	5	5	5	10
Benzophenone-1 Benzophenone-2		10		10		10
Benzophenone-6		5				8
Benzophenone-8		3	3			10
Bis(2-ethylhexyl) 4,4'-[6-terbutylcarbamoylanilino)-1,3,5 triazine-2,4-diyldiimino] dibenzoate	10	10			10	5
Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine	10	10	10		10	5
Cinoxate		5	6	5		10
DEA Methoxycinnamate		8 (en acide)		8 (en acide)		10
Diethylamino Hydroxybenzoyl Hexyl Benzoate	10				10	4
Diisopropyl Methyl Cinnamate		10				10
disodium 2,2'-(1,4-phenylene)bis(1Hbenzimidazole-4,6-disulfonate)	10 (en acide)	10	10	10	10	10
Drometrizole Trisiloxane	15	15	15		15	
Ethyl Dihydroxypropyl PABA		5				8
Glyceryl Ethylhexanoate Dimethoxycinnamate		10				10
Glyceryl PABA		5				
Homosalate	10	10	15	10	10	12
Isoamyl p-methoxycinnamate	10	10	10	10	10	
Isopropyl Methoxycinnamate		10				
Lawsone and Dihydroxyacetone				3		
Octocrylene	10 (en acide)	10	10	10	10	
Octyl dimethyl PABA	8	8	8	8	8	
Octyl methoxycinnamate	10	10	10	7,5	10	
Octyl salicylate	5	5	5	5	5	
Octyl Triazone	5	5	5	5	5	
Oxybenzone (Benzophenone-3)	10	10	10	10	10	
PABA	5	15	15	5	5	
PEG-25 PABA	10	10	10		10	
Pentyl Dimethyl PABA				5		
Polyacrylamidomethyl benzylidene camphor	6	6			6	
Sulisobenzone et Sodium Sulisobenzone	5 (en acide)	5	10		5	
Terephtalyidene Dicamphor Sulfonic Acid et ses sels	10 (en acide)	10	10		10	
Titanium dioxide	25	25	25	25	25	3
Zinc oxide		25		25	25	

Strange allusion

The best defense being the attack or more exactly not to practice the set language FEBEA (the French cosmetic industrial association) publishes in its Web site two studies on still very polemical subjects among which the nanotechnologies.

Réglementation

FEBEA (the French cosmetic industrial association) definitively makes the French government move back on the bill of finance 2010 which foresaw a tax 0.25 % on the CA of the industries of the cosmetic.

Scientific articles

International Newspaper of Cosmetic Science, Volume 31 Exit 6, Pages-418 - Importance of sunscreen products spreading protocol and substrate roughness for *in vitro* sun protection to factor assessment - L. Fageon, D. Moyal, J. Coutet and D. Candau: the objective of this study was to estimate the impact on the values of *in vitro* SPF, on one hand the roughness of the patches of PMMA and on the other hand the method used to spread products and to determine the conditions operating offering the best correlation between the values of *in vitro* SPF and *in vivo*. At this end, the *in vitro* SPF of 13 sun products (covering various levels of protection and various types of formulation) was measured with the various studied protocols and the predictive of the *in vitro* SPF with regard to the values *in vivo* was estimated for every protocol.

International Newspaper of Cosmetic science resume 31 Exit 6, 479 - Development of has water-resistant and detergent-washable powder coated with has stimuli-responsive polymer and its application to suncare products - Tomo Osawa, Atsushi Sogabe, Masayuki Shirao, Shuji Nishihama, Isamu Kaneda † and Shin-ichi Yusa
Development of a processing of surface of the oxide of titanium so as to obtain a waterproof and easily washable filter by a soap.

International Newspaper of Cosmetic Science, Volume 32 Exit 1, 46 - *In vitro The COLIPA UVA method*: has standard and reproducible measure of sunscreen UVA protection - P.J. Matts, V. Alard, M.W. Brown, L. Ferrero, a hour. Gers-Barlag, N. Issachar, D. Moyal and R. Wolber.

Companies information

Sanofi Aventis acquires the Oenobiol company specialized in the dietary complements with notably Oenobiol Solaire.

With the inauguration of the town of the cosmetic in Marseille, Cosmed becomes established in its new premises and installs in Paris. Soon a setting -up in the West of France will complete the national aim of this organization representing mainly small and medium-sized firms of the cosmetic industry.

Yves Rocher died, it is indeed his grandson Brice, a son of Didier Rocher died accidentally in 1994, that will take leader ship of this multi national company.

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