

HelioNews

The sun protection news as proposed by



HelioScreen

Quality control of sun products: an unpublished method which is really innovative !

Summary

News within HelioScreen Labs :

Patent review within sun business.

It happened under the sun....

News and gossips

File of the month
Monitoring of technological development

To be found in next files

. In vitro methods: a pragmatic approach of essential prerequisite.

. One unique spreading procedure, is that reasonable?

. The in vitro tool, what can it bring: a manufacturer has his say.

. Nanoparticles within sun protection.

. Anti-mosquito sun products.



HelioScreen Labs

44, rue Léon Blum

60100 Creil

Phone: +33 3 44 24 33 29

administration@helioscreen.fr

Updated version

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

Editorial of the month.

A pre irradiation of jingoism couldn't harm the development of methods....

When some people think that France didn't bring back from Beijing OG as many medals as she could, I would like to say, as an « athlete » in a sport I've been practicing for more than 10 years— the development of in vitro tests— I'm more than just a little bit proud to be French in this field!

In such an important time as the one we live now, when a new strategy for controlling sun products by in vitro methods is being established, France knows how to be heard and can claim some influence in this area...

One can do nothing but note in the work of the ISO world group aiming at the standardization of methods, a common and efficient action from authorities and from the Trade through AFNOR, about which it's advisable to emphasize the GT217 group leader professionalism as well as the active french participation to the four working groups (SPF and UVApf *in vitro* and *in vivo*). The in vivo working group, by the way, is under a french presidency (D Moyal) and more recently, the whole TC217 group presidency was entrusted to France (P Masson).

If one adds the influence of Sanitary Authorities on the final European position as expressed in the 2006 directive, as well as the important role played by AFFASPS in the establishment of the TC 217 AFNOR commission, one can say that in sun products area, we can be proud to be french and to be able to positively contribute to the working out of to-morrow methods.

It's always better to force oneself to accept the restraints which are required for consumer safety rather than to have them dictated from outside. Sure, it would be jingoistic to state that the contribution from other countries has not been as important and positive, however sometimes, it's so good to make oneself pleased.

Cocorico (cock-a-doodle-doo).....

DL

Colour (visible spectrum) and UV protection : a strange relationship ...

The technique for colour measurement is similar to the one for UV protection. In both cases, we have **3 wave functions whose integration of their product gives the final result** : the « colour » or the protection index, for example the « SPF » (this being applicable to any other index such as the pf UVA).

In both cases, only **one wave function is measured** :

- for colour, the absorption curve (visible spectrum) from the chromameter which in fact is

	UV Protection	Colour
Spectrum area	280nm-400nm UVB UVA	400nm-800nm Visible
Wave function, measured for the evaluation;	Absorption curve of the spread on a substrate product	Absorption curve of the coloured product
Standard source as a wave function	« Standard Sun » (defined by CIE) or UV SSR source	Standard source D 65 "daylight" as defined by CIE
Sensibility curve as a wave function	Depending on index : erythema curve or ppd curve or ipd etc.,,	Curve of the average acuteness of a standard observer as defined by CIE

rq CIE: Commission internationale de l'éclairage

calculated from 3 prevailing values (trichromy principle).

- for the SPF index or the UVApf, the absorption of the product in the UVA/UVB spectrum.

See page 3...



B1 - WO2008024738 filed on 02/28/08 by AVON PROD INC [US]; PECHKO ANDREW H [US]; POLYWODA VINCENT T [US].

The invention concerns a sunscreen formula, with insect repellent effect, based on water, homogenous and transparent, containing an hydrophobic oil soluble sunscreen component, an amido insect repellent component, an alcohol component and water.

B2 - WO2008011546 filed on 01/24/08 par CPFILMS INC [US]; WINCKLER LISA [US]; VAN NUTT CHARLES [US]; CZUKOR JANOS [US].

The present invention concerns high performance sun protection films, which are efficient to reduce sun radiation transmission without compromising the transmission of radio waves or others wavelength waves used for communication, for example, for satellite communication or for cell phones. Such sun protection films according to the present invention include a polymeric film on which a non stoichiometric aluminum oxyde layer has been deposited. Advantage in cosmetic field ?

B3 - WO2008031065 filed on 03/13/08 par EPIDERMALPET LLC [US]; DANN THOMAS W [US]; FLECK MICHAEL C [US].

The invention concerns a formulation to take care of a mammal skin which needs protection against sun exposure, composition containing at least one UV absorber, at least one revitalizing cream, at least one film forming agent, at least one antioxydizer and at least one perfume. A process to prepare such composition as well as a process to use such composition in order to protect the skin of a mammal, human being or pet, for example a dog, a cat or a horse, against sun exposure are also supplied.

B4 - WO2008030308 published on 03/13/08 par HENG MADALENE C Y [US] concerning a drug to cure acne and to revert effects of damages resulting from age and sun, and its manufacturing method.

The present invention concerns a chemical compound and its use as a topical drug to revert damages caused by the sun and by aging. The compound is proven to offer healing properties and acne curing but allowing the patient a sun exposure of the involved part without any risk. The product contains curcumine, water, alcohol, cellulose, an anti-inflammatory agent, carboxypolymethylene, diazolidinyl urea, triethanolamine, EDTA and an acid which maintains pH at an optimal level between 4,5 and 5,5.



B5 - EP1952842 filed on 08/6/08 by National Starch and concerning a sun formulation containing one or more filters, one or more film forming polymers and xanthan gum through an heating process. This formula thus presents high SPF values before and after water immersion and offers a lower sunscreen content with a better efficiency.

B6 - WO2008097223 filed on 08/14/08 by SENGUPTA ASHOKE K [US]; CURETON KEVIN [US]; LIN ILONA [US]; BEIHOFFER THOMAS W [US]; concerning a sunscreen composition, either impregnated on a wipe as a substrate or inside a sun screen spray. The composition contains an oil phase with the active principle which is an UV light absorbing organic sunscreen, this oil phase being dispersed in a stable form as emulsion droplets in an aqueous phase which contains : i) a booster for the sun protection factor (SPF), comprising a mix of hydrodispersible particles, one being clay smectite, and one hydrosoluble or hydrodispersible phenolic polymer; and ii) one hydrosoluble or hydrodispersible polymer with a weak acid group of an average molecular weight of 1, 000 - 100, 000 Dalton, and an anionic charge density equal or above 4 milliequivalent per gramme of polymer.

It happened under the sun

Cosmetics news – 26 mai 2008 – Indian police grabbed for 1,5 millions \$ value of misbranded cosmetics in Mumbai. Involved companies are Unilever, Beiersdorf and Oréal. Involved brands are: Dove, Pond's, Garnier Fructis and Nivea.

In an article of 22 may 2008, GCI note that the Oréal group is developing in Brazil with the creation of a new research center in Rio de Janeiro.

Michaela Brenner, Vincent J. Hearing (2008) The Protective Role of Melanin Against UV Damage in Human Skin - Photochemistry and Photobiology 84 (3), 539–549. This article studies UV radiation effects on the skin, melanin properties, the pigmentation regulation and its effect to prevent cutaneous cancer.

Design and evaluation of a photoprotective compound able to release taurin under conditions of oxydative stress – P.Lafitte, L.Valenti, L.Casciani, T.Hoarau, E.Lomonte, F.Maccario, and J.F.Nicolaÿ – IFSCC Magazine, Vol.11, N°2/2008, 105-112. One compound containing 2-oxo-1,3-thiazolidin is efficient for UV protection of skin. This compound gives taurin by reacting with the oxydant compounds created by the UV; this in-situ taurin contributes to photoprotection. *In-vitro* tests have shown the efficiency against UVA.

A new cosmetic congress:



COSMED, really very dynamical did organize its first cosmetic congress in Marseilles at Pharo Palace:



Palais du Pharo : True residence « les pieds dans l'eau », offered to Napoléon III by Marseilles, it was designed by parisian architect Lefuel.

Exhibitors and discussions whose summaries are available on our site (page Helionews) To be noticed, the following talks about sun protection :

Sun dangers and advantage of photoprotection :

Pr L. MEUNIER - CHU - Montpellier.

Following a review of the effects of photo protection towards photodermatoses, cutaneous cancers, immunosuppression system, Pr Meunier observes the benefits of sun protection by cosmetic products however reminding that the global strategy should never have the natural protection means and information forgotten.

Sun protection products :

J.C HUBAUD - DIPTA – Aix en Provence.

General remarks about photoprotection, skin and sun are presented. All kind of *in vitro* and *in vivo* tests are reviewed, with a special attention given to the method of the genome protection also said « comets method »

Measurement methods :

M. PISSAVINI - COTY LANCAS-TER - Monaco.

The author shows how the *in vitro/in vivo* correlation is tricky when one thinks about the variability of *in vivo* methods themselves. He reminds some important key points in *in vitro* approach, among which the PMMA substrate.

Survey of the sun products market :

C. GRASMICK –AFSSAPS Montpellier - D. LUTZ - HelioScreen - Marseilles.

After a review of the activity of the agency in terms of market survey, data about enquiries and controls by sanitary authorities are given to measure how new recommendations are taken into account. Presented is the progress of *in vitro* methods either in mentalities or from a technical point of view, which shows that such methods are more frequently used, and this is in line with what is clearly recommended by the authorities.

Self tanning products, polymers and DHA stability :

A. ROSO - SEPPIC - Castres.

An interesting presentation of DHA stability when in contact with some polymers, to be applied to self tanning products.

Quality control of sun products (continuation):

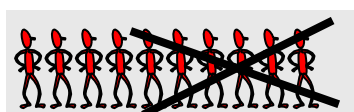
In both cases, **two wave functions are « mathematically » brought**, from experimental predefined standard values :

- **The UV source or the light source (visible spectrum)** : The « standard sun» spectrum (SPF or UVApf measurement); the « standard daylight D65 » for colour, both being defined by CIE.
- **The « sensibility » curve** : sensibility curve of the « standard » observer eye for colour and biological efficacy curve (ex erythematous reaction for the SPF or ppd curve for the UVA) for sun protection .

A good background of colour measurement would be of great help to the evaluation of sun protection !

Therefore, similarities exist between these respective physical data and their « mathematical construction» and however, at control step, the approach is fully different !

Colour and sun protection: obvious dissimilarities !



Usually, to check a sun product, a measurement by an *in vivo* SPF method is used (quite often calculated in a non conform way, with a small number of volunteers).

This consists in fact to compare products by using only one portion of the curve and furthermore, because of the principle of the method, to give more weight to that part of the curve.

One can easily assess that this approach is not the proper one, as it comes to say that two products with the same SPF are identical, which is absolutely not correct!

This nonsense can even be more easily appreciated when one compares this situation to a cosmetic product colour check (for example, a hair dye) which is made by any colourist to guarantee his product.

The absorption spectrum of the dye being characterized by three measures (trichromy), one can imagine that a check comparable to what is done for sun protection, would consist to take into account only the blue component for example and, furthermore taking into account the eye sensibility. One can imagine the claims from customers who would have used an hair dye or a make up only checked through this system after manufacture Because a colour is not defined by one single spectral component but by the full spectrum outcome!

Therefore it appears advisable to get into a logic similar to what is used in colorimetry for the comparison of the sun protective properties of sun products : **the global control of the absorption curve of both products to check their spectral conformity.**

This principle is the start of a proposal for a new method based on spectrum comparison.

An unpublished and novel control method:

It is not possible to fully describe here the method developed and proposed by HelioScreen Laboratories . It is based on the comparison of the absorption spectrum of the standard product and of the product to be measured, both spread on the proper substrate : « **Helioplates HD** » (see the insert). By the way, it's interesting to note that it was originally specifically designed in view of the development of this application– which clearly needs the perfect control of the absorption spectrum measurement–and

is now generally used as the substrate in *in vitro* evaluation.

The test should always be conducted in comparison to a single standard as requested by the qua-

lity control principle.

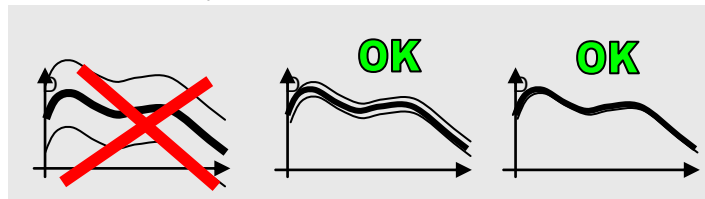
A method based on some obvious facts :

- A control or comparison method can only be grasped on the product as a whole: quality is the conformity to a standard. One should be able to GLOBALLY define the standard and to compare every parameter in order to assure conformity. What else but the spectrum for a global signature ?

Such a method could only be based on the product physico-chemistry, and not on one or other biological reaction.

- How evaluate a global property starting from a single reaction which only takes into account a part of the spectrum?
- Such a method should be based on a comparison in as identical as possible conditions: the method proposes to measure the two spectrum together, thus restricting the unavoidable dispersion linked to the measure.
- Such a method should incorporate the variability of the measurement. The method doesn't compare two spectrums but rather two spectral areas limited by minimum and maximum values this with the help of the proper statistical tool.

Each product presents its own variability (everybody in the *in vitro* measurement activity knows that product itself is the first parameter for variability): the method compares what is comparable.



It takes into account the variability of the products themselves (which is previously checked) and furthermore, evaluates it with time in order to define the « acceptable variabilities ».

Statistical approach and validation of the method

We distinguish two steps in the process of comparing two products. First, measurements of both products are performed in order to evaluate the statistical variability of each of the two products spectrum so as to state whether they are statistically comparable. It appears in fact that the dispersion of results is above all a characteristic of the product, linked on one hand to the product itself and to its physico-chemical affinity for the substrate on the other. If it appears that both products are comparable, then one conducts the evaluation of the statistical overlap of the two clusters of curves to calculate the approval or rejection probability with an error risk.

This mathematical approach can't be fully described here as it was specifically developed with the participation of Bordeaux Mathematical University and will be published later.

During the development of this method, we had a cooperation agreement with an industrial group, which produces cosmetic sun products batches on a regular basis.



Helioplate HD

The manufacture of HELIOPLATES HD by injection is performed in strict conditions, fulfilling quality certification standards. Patented by laboratoires HelioScreen in 2008, they are supplied with a control card including 9 specific control parameters.



Quality control of sun products (continuation and end)

Three different products were analysed on more than 15 batches. Sampling was performed on every batch after manufacture at three levels: top, middle and bottom. The method was applied to the same reference standard and the SPF and UVAPF *in vitro* values were measured for each sample.

Results show the good correlation of global quality values obtained with SPF and/or UVAPF indexes. Interesting is to notice that the correlation is better with the average of the two indexes than with each index separately. This is valuable as acceptability is globally estimated, avoiding to give more weight to one or another spectrum area.

Also interesting to notice is that some products have been approved although showing an noticeable difference in SPF but a weak global energetic variability when some others have been rejected although having quite close SPF because of a very different global profile.

This is quite normal as the aim is to compare the reproducibility of the absorption profile, which is the real indicator of the product conformity, while to take into account one single particular parameter such as the SPF would allow to state that when two products have the same SPF, they are comparable!

It's not possible to give the results of this study in this *HelioScreen*, but they will be available in a next issue where will be found the experimental conditions as well as the mathematical aspects of the developed method.

Conclusion and prospects.

This validation shows the rightfulness of the principle of the method and its relevance for the control of the conformity of a product from a strictly physico-chemical point of view.

From now on, this « new tool » allows the comparison of two products but doesn't come as a substitution to another method, as obviously until now **no method was available**.

After the offer of a new substrate *HelioPlates HD*, *HelioScreen* laboratories once again show their ability to make new proposals in the field of *in vitro* evaluation of sun protection, backed by a decade of exclusive research in this area.

A new service proposed by *HelioScreen Labs*:

.What we can do for you now:

- Help you with the global strategy to reach the requested protection by thinking about with you on the best filters combinations within your restraints.
- Validate or make documented remarks on you formulae orientation or on modifications.
- Bring advices about legislation according to your markets choice.
- Help you with the development of your quality validation or follow up with time.

To know more about it, please contact us at:

administration@helioscreen.fr

Strange allusion

- Seen in a recent publication from an European country official laboratory: *in vitro* tests on Canson type paper! One could dream about better conditions... Note from Editor: deliberately, the reference of this article is not given.

Companies information

- Seen in *Cosmetics and Toiletries* (08/27/08) : Sun & Skin Care Research Inc. has bought the sun products brand No-Ad Suncare. Sun & Skin Care Research Inc. Company already distributed the Ocean Potion sun products; this merge should allow innovation. The No-Ad range was started in 1960. Its concept : premium products at lowest prices.

Scientific articles

- *In vivo* measurement of skin erythema and pigmentation: new means of implementation of diffuse reflectance spectroscopy with a commercial instrument - G. Stamatas, et col. - [British Journal of Dermatology](#) - Vol159 Issue3, p 683,690 (Sept 08). Colour measurement are performed on the skin after 24 heures (erythema) and after one week (melanin content). An algorithm was designed to measure oxyhemoglobine, deoxyhemoglobine and melanin concentrations. This methodology is a non-invasive means to measure reactions to UV rays independently from skin initial colour.
- A novel ultraviolet photography technique for assessing photodamage - Z. D Draelos, and col. - [Journal of Cosmetic Dermatology](#) - Vol7 Issue3, p 205,209 (Sept 8). Authors developed a photograph technique by using an UV filter placed in front of a digital camera. This technique allows to take pictures under UV light so as to show cutaneous damages.
- [Photodermatology, Photoimmunology & Photomedicine](#) - Vol24, Issue4, p211,217. Data from 64 patch-test and photoallergy studies, between 1992 and 2006, unpublished by Schering-Plough company have been analyzed (irritation and sensibilization from products containing 1 to 6% oxy-

benzone). Out of 19570 results, 48 provoked irritation or sensibilization that is to say 0,26%. This study thus shows that allergizing potential of oxybenzone was overestimated.

- P.Agin and col. - Pigmentation effects of solar-simulated radiation as compared with UVA and UVB radiation - R.Wolber, and col. - [Pigment Cell & Melanoma Research](#) Vol21, Issue4, p 487,491 (August 08). Authors did compare effect of skin irradiation during two weeks at comparable doses (visible tanning) from a solar simulator. These results show that the solar simulator is more efficient to cause a postponed tanning than UVB alone which suggests a synergistical effect from UVA.
- Commentary on 'UVB-SPF': the SPF labels of sunscreen products convey more than just UVB protection - Robert M. Sayre, John C. Dowdy, Dennis L. Lott, Edward Marlowe - [Photodermatology, Photoimmunology & Photomedicine](#) - Vol24, Issue 4, p 218,220. Authors do insist on the fact that sun products with a high SPF, automatically give an UVA protection as they block an important part of the UV reaching the skin.
- Rates of allergic sensitization and irritation to oxybenzone-containing sunscreen products: a quantitative meta-analysis of 64 exaggerated use studies.

New raw materials

- Sunscreens containing the broad-spectrum UVA absorber, Mexoryl® SX, prevent the cutaneous detrimental effects of UV exposure: a review of clinical study results - A. Fourtanier, D. Moyal, S.Seité - [Photodermatology, Photoimmunology & Photomedicine](#) - Vol 24, Issue 4, p164,174 (Août08). Authors did show the UV absorbing power of Mexoryl SX as well as the protective action (ADN protection) brought against UVA and preventing action towards the polymorphic solar eruption for people disposed to this disorder.

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