HelioScreen
HN 2013 N°16

HelioNews

Special Asia

News about In Vitro Sun Protection Testing

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Congress & Events

in-cosmetics Bangkok
2013 October 29-31th
Visit us on **Booth L31**

Journées Jean-Paul Marty Skin & Light
Paris
2013 Dec. 2-3th

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Editorial

In vitro testing has greatly progressed this last decade. Due to UE recommendation and new international ISO standard, it is now part of the requirements for claiming. As a new opportunity for business, lots of laboratories propose now testing services with more or less experience and practice.

Clearly rules has been proposed but most of the time, institutes do not follow them. As a consequence In Vitro testing is still challenged! But we are confident things will change very soon. This year, we have done a huge work to contribute about knowledge and mastering of important parameters (some times unknown before). As a final touch we are introducing an automatic way for spreading! At last, In vitro testing should give same results in all laboratories equipped with such a manner; some ones will still pretend they have experience and it is enough but we demonstrated it is not enough at all!

Testing tomorrow will be different than testing today! We are totally convinced of that and confident in our goal. Our laboratories both in Europe and now Asia have now full dedicated equipment and knowledge to give you the best services.

Dominique LUTZ, CEO Scientist Manager

HelioScreen Asia Co., Ltd.
Your best partner for In Vitro UV testing in Asia

HelioScreen Asia
เฮลิโอสกรีนเอเชีย

This is it!

In a previous HelioNews (HN 2013 n°15), we present you HelioScreen Asia Co., Ltd. laboratory borned through the joint and venture between the French HelioScreen Cie and the Thai Chemico Ltd Cie.

The laboratory is now quite operational and has been designed to guarantee the highest quality standards. Our Asia team has followed our training and coaching in order to provide our Asian customers the same UV In Vitro testing solutions as performed in France: In Vitro SPF evaluation; In Vitro UVA-PF; Critical Wavelength; Water Resistance; Photostability...

In this special Asia HelioNews issue, we are pleased to share with you information and photos regarding this new laboratory in Bangkok. Also a press conference took place on september 2013 at Bangkok and received very wide coverage.

Video of the press conference:
http://www.youtube.com/watch?v=CrXShcSTA0A

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HelioScreen

Through HelioScience (1999) and then HelioScreen, Dominique Lutz founded a laboratory dedicated to In Vitro evaluation of sun protection products. Quickly considered as a reference by the international cosmetic community, HelioScreen proposes since ever a complete range of sunscreen testing solutions. These tests follow up dated standards and official methods, specific methods helping in formulation screening and quality control.

By means of a continuous R&D activity, HelioScreen provides all the services and the consumables allowing the In Vitro UV testing with its patented substrate HD6, standard S2 product, UV source calibration and appliances for In Vitro UV testing.

At the heart of the In Vitro UV evaluation, we also support the development of In Vitro UV testing within your laboratories by training and coaching.

A worldwide company with several countries respresentatives and an Asian subsidiairy in Bangkok.

Discover HelioScreen's activities through this video

http://www.youtube.com/watch?v=b7OA6vdTeBI



CHEMICO
Health & Beauty Solution

The company Chemico was initially established in 1994 as an importer and distributor of high quality materials for personal care products. Chemico Group, the leading importer and distributor of raw materials in South East Asia, provides the services related to personal care, household, candle, food, nutraceutical, instrument and cosmetic packaging.

Chemico emphasizes on specialty products from all quality-product distributors around the world to satisfy the needs of consumers entirely. Moreover, they also provide technical services from suppliers, sales representatives and application lab staffs including quality and quick delivery.

CMC Group, having the headquarters in Thailand, has 4 subsidiaries in 4 countries -- Indonesia, Malaysia, the Philippines and Vietnam -- to cover all services provided in the region.

HelioScreen Asia
เฮลิโอสกรีนเอเชีย

As the first Asian subsidiary, HelioScreen Asia Co., Ltd. based in Bangkok serves all ASEAN and other Asian countries. With more than 100 m² dedicated to In Vitro sunscreen tests, our laboratory performed tests following the standards and methods with total compliance.

With a permanent online connection between HelioScreen Europe and HelioScreen Asia Co., Ltd., our teams will be your best partner for your In Vitro sunscreen evaluation. Furthermore, the Asian team is continuasly trained by HelioScreen France in order to be in accordance with the last up dated standards and used the last up dated equipements.

Finally, you can show our last appliances dedicated to In Vitro UV testing (HD-THERMASTER and HD-SPREADMASTER) in this laboratory.

Discover the video of HelioScreen Asia Co., Ltd.'s laboratory

http://www.youtube.com/watch?v=Ru55T64t0Ts



New or updated appliances and consummables for In Vitro UV testing from HelioScreen

HD-THERMASTER

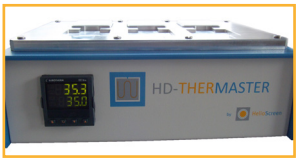
Described in previous HelioNews (HN 2013 N°15), the HD-THERMASTER increases the repeatability and reproducibility of In Vitro sunscreen teestings.

As a matter of fact, we have demonstrated [1] that slighly variation of temperature at substrate surface influences the In Vitro SPF results. The temperature of the plate surface play a key role in the testing process. As a key parameter it must be mastered.

By means of this appliance, the temperature at substrate surface of six plates was controlled and maintened with high accuracy during your whole testing process.

Method for In Vitro UV testing by means of the HD-THERMASTER

http://www.youtube.com/watch?v=IQCLQiDqG_g



[1] S. Miksa, D. Lutz and C. Guy. UV Transmission Assessment: Influence of Temperature on Substrate Surface. Cosmetics & Toiletries (July 2013)

New Sandblasted substrate SB6

Since the first In Vitro method based on the absorption evaluation of the sunscreen's thin layer on a substrate became the starting point, different substrates have been proposed with varying degrees of success. In 2000, for the first time, HelioScreeen has made available a PMMA substrate «HELIOPLATE» for In Vitro UV testing with a roughness of which was **from 2-7 microns**. More commonly called Sandblasted plate, they were produced by sandblasting and cutting up of large PMMA plates (see figure 1).

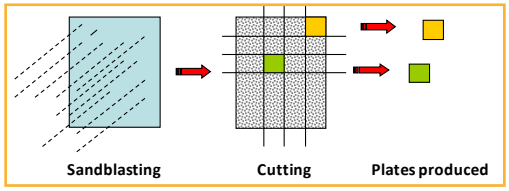


Figure 1. Former Sandblasted process

As an ex-distributors and users of this kind of Sandblasted substrates, we were aware very soon of the non-homogeneity of this kind of plates. It seemed for us very important to develop and find a more appropriate process to improve the reproducibility of the results. So, since 2008, we now propose the so called molded substrate HD6 with a very strictly control of topographic parameters. These plates are in compliance with all internationals standards and methods (ISO 24443:2012, Colipa rev. 2011 and FDA 2011).

HD-SPREADMASTER

In fact, it is well-known that the human product spreading on the plate is always submitted to a natural fluctuation even if all several keys parameters are controlled. Clearly, we need a new way for spreading which allows mastering movements and pressure. The ideal solution is a robot.

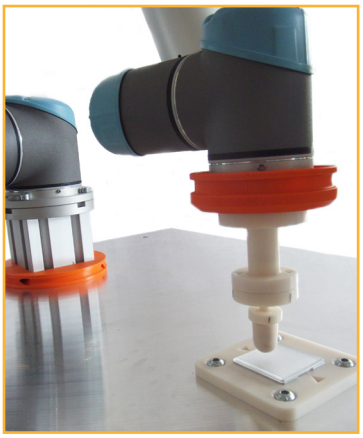
As a forerunner in the field of In Vitro UV testing, HelioScreen's R&D team is pleased to show off its news innovation to control product spreading on plate: the HD-SPREADMASTER.

By means of this appliance which performs automated spreading, reliability of In Vitro methods is drastically improved compared to human spreading as demonstrated in a recent study [2]. Some results of improvement of repeatability and reproducibility are presented in the following paper.

This new appliance can be seen as the innovation of the year for In Vitro UV testing . The HD-SPREADMASTER changes the way of thinking about product spreading.

Discover new spreading method by means of the HD-SPREADMASTER

http://www.youtube.com/watch?v=sk2tKM2cRIY



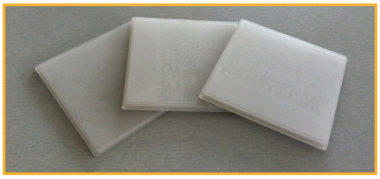


Figure 2. New SB6

Although the HD6 plates are specifically dedicated to In Vitro UV testing, we have done a huge work in order to propose an innovative version of the Sandblasted plates: the SB6 plates (see figure 2). Sandblasting is performed plate by plate and performed in our laboratory. Topographic parameters control is realized also in our laboratory with a specific equipment (Altisurf 500). All plates as for HD6 plates will be delivred with a certificate of guaranty for all topographic parameters as defined in ISO 24443 standard.

I. Robot vs. Human spreading

I.a. Introduction

In order to rely on a reliable In Vitro SPF method, both **correlation** and **reproducibility** are required. But clearly, the reproducibility is the prior condition of any methods. We started a larger reproducibility optimization program that aims to identify, demonstrate and control all variables that can influence In Vitro SPF. Since first In Vitro method, several keys parameters have been yet identified for improvement of reproducibility. In our opinion, the most important variation in the process is due to human spreading.

Thus, we developped a robot which allow automatic sunscreen spreading on the plate. We compared the two spreading ways: Automatic and manual onoes. This article is partly extracted from a recent publication **[2]**.

I.b. Materials & Methods

Automated spreading:
The automated spreading was performed by means of the HD-SPREADMASTER. This appliance developped by our R&D department allows a very high reproducibility of movement and pressure.

Substrate:
In order to assure the higher reproducibility of other parameters, the **HD6 substrate** was used.

Product:
36 sunscreens covering various formulations were chosen.

Transmittance measurements:
The **Labsphere UV-2000S** was used to measure the UV transmittance through the thin product layer.

Procedure:
We applied product in order to have a rate of **1.3 mg/cm²**. The product was spread on whole surface by automated spreading and by a specific protocol which guaranteed a high repeatability for human spreading . After the drying step, each plate was measured (3 plates per product). During the whole process (application, spreading and drying), the temperature was controlled by means of the HD-THERMASTER.

I.c. Results

As we expected, by means of the new **HD-SPREADMASTER** device, a great improvement of repeatability and reproducibility have been demonstrated. Indeed, the following figure 3 shown a box and whisker plots. Without listing all of the values, this simple and complete univariate representation of quantitative data samples provides a sense of the data's distribution. We conclude a reduction of coefficient of variation for repeatability by means of the automated spreading compared to human spreading.

In other hand, the reproducibility have been also studied between 8 operators from different cosmetic laboratories compared to automated spreading. For that a principal component analysis (PCA) was used in order to identify trends or similarities. In this map, the closer that plots are to one another, the more alike they are. The results shown clearly a reduction of In Vitro SPF variation by means of the automated spreading (see figure 4).

I.d. Conclusion

In conclusion, from this study, it appears that automated spreading improves repeatability (figure 3) and reproducibility (figure 4) for In Vitro SPF assessment. In both cases, we reduce the variation by a factor about 2. We can also conclude that even if all parameters are stricly controlled as in this study, a «natural» variation will be always present with human spreading. This variation is not acceptable for a futur harmonized method.

Clearly, the new appliance HD-SPREADMASTER demonstrates the needs to use an automated spreading for In Vitro SPF assessment. Obviously, mastering several key parameters will mainly influence In Vitro SPF variation but now we are able to assure repeatability and reproducibility, we will focuse our work for improving In Vivo/In Vitro correlation. This was the first compulsory step and we pass it with sucess.

Acknowledgements: The authors would like to thank all participants of this study from Chanel Parfum Beauté–Pantin; Yves Rocher–Issy les Moulineaux; Clarins–Pontoise ; Pierre Fabre–Castres ; Sisley–Saint Ouen l'Aumône; Parfums Christian Dior–Saint-Jean-de-Braye ; and L'Oréal–Chevilly-Larue.

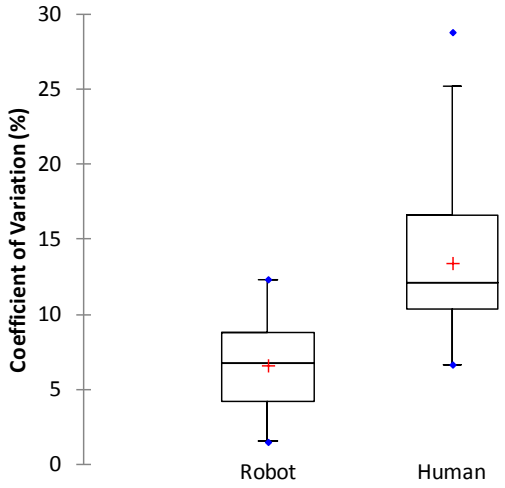


Figure 3. Repeatability of Automated and Human spreading on In Vitro SPF for all products

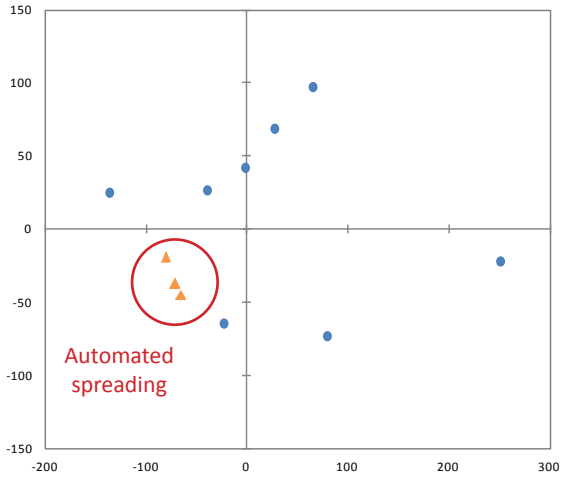


Figure 4. Reproducibility of Automated (orange) and Human (blue) spreading on In Vitro SPF for all products

Scientific articles

Cosmetics & Toiletries:
- S. Miksa, D. Lutz and C. Guy. *In Vitro UV Testing: Robot vs. Human Spreading for Repeatable and Reproducible Results.* Oct. 2013 **[2]**
- S. Miksa, D. Lutz and C. Guy. *Influence of Pressure During Spreading on UV Transmission Assessment.* Nov. 2013 **[3]**
- C. McLeod. *Testing Sun Protection Factor on Skin*. Sept. 2013

Monographic supplement series: SUNCARE - H&PC Today - Vol. 8(4) July/August 2013:
- D. Lutz and S. Miksa. *in vitro comparison - A new accessible and reliable statistical method to compare the global UV protection properties of cosmetics.*
- A. Duev, G. Kelm, R. Wickett and O.D.-Koganov. *Are SPF and Critical Wavelength sufficient to measure efficacy of sunscreen products against sun induced skin damage?*

Fragrance Journal (Japan), August 2013:
- K. Nishimoto. *In vitro sunscreen characteristic testing based on various international standards and photodegradation of sunscreen samples.*

Links for videos

Press conference
http://www.youtube.com/watch?v=CrXShcSTA0A

HelioScreen's presentation
http://www.youtube.com/watch?v=b7OA6vdTeBI

HelioScreen Asia Co., Ltd.
http://www.youtube.com/watch?v=Ru55T64t0Ts

Method for In Vitro UV assessment with HD-THERMASTER
http://www.youtube.com/watch?v=IQCLQiDqG_g

Spreading method with HD-SPREADMASTER
http://www.youtube.com/watch?v=sk2tKM2cRIY