



Michigan SCC - News from the Mitten

SOCIETY OF COSMETIC CHEMISTS — MICHIGAN CHAPTER

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A Message from the Chairperson Yulia Welcome to the second year of the SCC Michigan Chapter!

Our chapter had an amazing inaugural year and already made SCC very proud! Among 19 chapters we took the 4th place in the member retention contest last year; we have a website, a quarterly newsletter, and a facebook page; we ended the year with a positive balance in our bank account; we were the first chapter to use electronic voting to elect our board members for 2014. Our remarkably high voting rate impressed the National office and prompted them to explore electronic voting option for the election of area directors in 2014. Most importantly, many SCCMI members now see and receive the benefits of having an SCC professional chapter here, in their own state!

Being in the midst of the “polar vortex” I feel the decision to start our chapter meetings in March, instead of January, this

year was absolutely right! Despite the later start date, our active volunteers are enthusiastically preparing exciting events for 2014 – read on to learn more about them.

This year the Seminar & Dinner meetings will be taking place on Thursday afternoon at 3:30 pm; the first one will be held on March 6, the second – on May 1, and the final one - on November 13. Just as in 2013, we will open the year with a meeting in Grand Rapids. Dr. Jat Rana of Amway will talk about “Biological Screening and Development of Botanical Ingredients for Skin Lightening Applications” – find the abstract on our website. Our second meeting will be held on the east side of the state and will focus on “The Advancements in Hair Care”, with Trevor Evans of TA Evans LLC and Bethany Johnson of Dow Corning presenting on the topic, further information will be available shortly. The topic of the November meeting has not been finalized yet and the Program Committee welcomes your suggestions, as always. This year we decided to try a bit earlier start time for our Seminar & Dinner

meetings, 3:30 pm, make sure to let us know how you feel about it!

Our full-day technical symposium will be held on September 4 in Grand Rapids with a social event preceding it on September 3. With the topic of the meeting “The Future of Beauty”, you wouldn’t want to miss this event! Watch for the announcement with the list of speakers and the schedule of events coming soon.

Our chapter was fortunate to receive a full-day educational seminar sponsored by the National SCC office. We are hoping to hear back from the National office soon on the dates when the speakers of our choice will be available. Check our website (www.sccmi.org) and like our facebook page to hear the news as soon as they become available. The start of a new year is always exciting. I am looking forward to working with our exceptional volunteers to continue bringing value to all of our SCCMI members. Let’s carry on the momentum of our inaugural year and make 2014 remarkable and memorable as well!

SCC MICHIGAN CHAPTER OFFICERS

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FOR MORE INFORMATION ON OUR CHAPTER, PLEASE VISIT US ON FACEBOOK AND SUPPORT OUR CHAPTER BY LIKING US

OR VISIT OUR WEBSITE AT
SCCMI.ORG

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Announcing Our First Meeting for 2014

The meeting will be held on March 6th at Amway World Headquarters. The speaker will be Dr. Jat Rana, who will give a presentation entitled "Biological Screening and Development of Botanical Ingredients for Skin Lightening Applications" (*see page 5 for an abstract and information about our speaker*)

Meeting registration and cocktail reception will start at 3:30 and the talk will be given at 4:30. A buffet dinner with dessert will be served at 5:30.

Please visit the Events and Calendar page of our web site for more information:

<http://sccmi.org/events-and-calendar>

We Hope to See You There!



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Who is Who in the Michigan Chapter (committee heads)

Publicity / Newsletter:

Mike Starch—lead editor (*msstarch@charter.net*)

Angie Hendrickson—Facebook editor (*angie.hendrickson@amway.com*)

Programs:

Debbie Pinardo—committee chair (*debbie.pinardo@amway.com*)

House Committee (organizes social event and meeting arrangements)

Doug King—committee chair (*doug.king@dowcorning.com*)

Records and Election Committee:

Beth Johnson—committee chair (*beth.johnson@dowcorning.com*)

Dates to Remember

March 6 - Michigan SCC Dinner Meeting (Grand Rapids)

May 1 - Michigan SCC Dinner Meeting (Frankenmuth)

September 3-4 - Michigan SCC Scientific Symposium (Grand Rapids)

November 13 - Michigan SCC Dinner Meeting (Lansing)

Several years ago when I was working on sunscreen formulations, I used the sunscreen simulator that was developed by sunscreen supplier CIBA. Recently, I had occasion to look up this website again, which is now run by BASF (they bought CIBA several years ago). This website requires registration but is free. It allows you to estimate the performance of sunscreen products based on the percentages of actives. The input screen allows you to select the region where the sunscreen is to be marketed (EU, Mercosur, USA, etc.) and provides the maximum allowable use levels for each region. The software predicts SPF using several different methods and also rates UVA performance under U.S., Japan, and EU regulations. Obviously, performance estimates are no substitute for actual testing, but they allow formulators to try different combinations of actives “*in-silico*” in order to decide which formulations merit further *in-vitro* or *in-vivo* testing.

http://www.sunscreensimulator.basf.com/Sunscreen_Simulator/Login_show.action

Coming Events

Midwest Chapter of the SCC Announces Teamworks 2014

The next Teamworks trade show will be held on April 9, 2014. Technical sessions will run from 8:30am to Noon and the trade show from Noon to 6:00pm.

For more information, visit the SCC Midwest chapter website: www.midwestsc.org

In-Cosmetics will be held April 1-3 in Hamburg, Germany.

NYSCC Suppliers Day will be held May 13-14 at the New Jersey Convention Center

The **Cosmetics & Toiletries Summit** will be held June 26-27 in Philadelphia, PA. Visit summit.cosmeticsandtoiletries.com for more information



www.essentialingredients.com
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Our Chapter is organizing a special one-day educational program with a nationally-recognized speaker to be held sometime over the summer.

Watch our website for updates:
sccmi.org/events-and-calendar



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If you haven't already, check out our page on Facebook: "Society of Cosmetic Chemists Michigan Chapter". Support our chapter by liking our page!

Dr. Jat Rana is our Spreaker at the March Meeting:

"Biological Screening and Development of Botanical Ingredients for Skin Lightening Applications"

The pigmentation of the skin, due to synthesis and dispersion of melanin in the epidermis, is of great cosmetic significance. Melanin in the major pigment presents in the skin and determines the human skin color. Lower amounts of melanin in the skin epidermis signify lighter skin while higher amounts of melanin are found in darker skin. Current efforts to develop effective skin whitening products have focused on agents that inhibit the function and activity of tyrosinase. Synthetic tyrosinase inhibitors, hydroquinone, kojic acid, and arbutin, have been shown to cause skin irritation or acute dermatitis raising concerns about the safety of these compounds. As a result, there is a need for safe natural botanical ingredients that demonstrate effective skin lightening properties.

With the recent advent of high-throughput biological screening technologies, experimental analyses of the active ingredients have become increasingly important along with the identification and standardization of ingredients. In this session speaker will present the development of super fruit, pomegranate, standardized to 20% punicalagins (hydrolysable tannins) as a potential inhibitor of melanin content.



About our speaker:

Dr. Jat Rana grew up in a small village in India in the foothills of the Himalayas. He received his undergraduate degrees in Chemistry and Biology at India's HP University. He earned his PhD in organic chemistry at Birmingham University in the U.K.

Dr. Rana is active in several technical societies, including the SCC



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Emollients and Moisturizing Ingredients and How They Work

by Mike Starch

I don't think anyone would disagree with the observation that this has been a particularly brutal winter so far. And with winter weather comes dry skin, so it seems like a good time to write about moisturizers and the ingredients used in them. Moisturizers are skin care products intended to relieve the symptoms of dry skin and improve the condition of skin with regular use. Like most personal care formulations, the main ingredient in moisturizers is water, which seems logical since the presence of water in the skin is obviously related to moisturization. But moisturizers contain two other types of ingredients that strongly affect product performance: emollients and moisturizing agents. For the sake of brevity, in this column I will refer to the latter of these ingredients simply as moisturizers. Emollients and moisturizers are two types of ingredients that are indispensable in formulations intended for the alleviation of dry skin. But what do these terms mean and what functions do emollients and moisturizers provide in a skin care formulation? I have noticed that these terms are sometimes used interchangeably, but I believe that it is useful to distinguish between emolliency and moisturization even though the same ingredient can provide both benefits in a formulation.

Let's take emollients first. If you consult a dictionary, you will find that an emollient is defined as something that provides a soothing or softening effect. Although skin softening is something that can be measured objectively, I think of emolliency as mostly a subjective effect. It pertains to how an ingredient affects the feel of a formulation when it is first applied to the skin and more importantly, when the water has evaporated from the formulation after application. Consumers who have dry skin want a product that makes their skin feel better (soothed and softened) so emolliency is a very important function. This function is effectively provided by a variety of different ingredients such as petroleum-derived oils (e.g. mineral oil, petrolatum), oils from plants (e.g. sunflower oil, mango butter), lanolin, fatty esters (e.g. isopropyl myristate, triisostearyl citrate), and silicones (e.g. dimethicone, dimethiconol). Any of these ingredients can function as emollients, but each has a somewhat different skin feel. The goal of the formulator is to combine them in order to provide the soothing and softening skin feel that consumers expect while minimizing undesirable effects like greasiness or stickiness.

Moisturization refers to the ability of an ingredient in a formulation to hydrate the skin or more accurately, the top layer of the skin called the stratum corneum. It is well-established that increased hydration of the stratum corneum is correlated with alleviation of dry skin symptoms. Moisturizing ingredients hydrate the stratum corneum by two different mechanisms: humectancy and occlusion. Humectancy is the ability of an ingredient to attract and bind water. Using a humectant ingredient in a skin care formulation will help to hydrate the stratum corneum because the humectant binds some of the water from the formulation or some of the water vapor that is always passing out through the skin. Glycerin is one of the most common humectants and a very effective skin moisturizing ingredient. The other moisturization mechanism is occlusion. An occlusive ingredient forms a film that reduces the rate of water loss through the skin and helps trap more water in the stratum corneum. Occlusive ingredients are generally hydrophobic oily materials such as petrolatum. In fact petrolatum is one of the most occlusive ingredients available.

The alert reader will notice that I have used petrolatum as an example of an emollient and also a moisturizer. Petrolatum provides both effects, but other ingredients like glycerin provide only a moisturization effect with essentially no emolliency. So, moisturizing ingredients are not necessarily emollients. Similarly, there are many good emollients such as dimethicone that provide essentially no moisturizing effect. Dimethicone is a very hydrophobic material but it is not very occlusive, nor does it provide humectancy.

So the task of formulating an effective product for alleviating dry skin must involve selecting a combination of ingredients that provide emolliency and moisturization. The consumer expects the formulation to make their skin feel better and also provide actual relief from dry skin symptoms. Both effects are important to produce a successful formulation.

Now I'd like to revisit the subject of how moisturizers work because I'm afraid that I have vastly oversimplified the current understanding of why ingredient such as glycerin and petrolatum work so well as moisturizers. I think this topic deserves a more thorough exploration because it isn't as simple and straightforward as I may have led you to believe. And no discussion about skin moisturization is really complete without some explanation of the skin barrier function.

You may have heard somewhere along the way that the skin is the largest organ and provides important protective functions. In fact, our skin is the main barrier of defense against the outside world. It keeps bacteria and chemicals out and keeps water in. If it were not for the skin barrier function, we would all dry out like a slice of tomato left in the sun. And this barrier function is achieved by a structure, the stratum corneum, which is no thicker than a sheet of paper and is continuously

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self-destructing. The stratum corneum is composed of specialized cells called corneocytes that originate in the deeper layers of the skin and move outward to replace the cells on the surface that are being sloughed off. In fact, your stratum corneum is completely replaced every two to four weeks. This sloughing process (called desquamation) is normally imperceptible because the corneocytes are small and are shed individually.

So how can a structure that is always breaking down provide such an effective barrier? The answer lies in what happens as the corneocytes mature and move toward the skin surface. During this process, corneocytes excrete a complex mixture of lipids that fills the spaces between them. The resulting structure is sometimes referred to as “bricks and mortar”, where the bricks are the corneocytes and the mortar is the intercellular lipid matrix. The intercellular lipids form multiple bilayers that surround each corneocyte and this is what we believe retards the movement of water out through the stratum corneum. The bricks and mortar structure is also effective in keeping potentially harmful chemicals like surfactants out.

The collection of symptoms that consumers describe as “dry skin” is associated with a disruption of the barrier function and the normal sloughing process. The barrier function can be disrupted by several different factors, but probably the most common is frequent use of cleansers such as soaps and body washes. The surfactants in these formulations effectively remove lipids from the skin, including the intercellular lipids. I should point out that sebum, a mixture of lipids that is excreted from the base of hair follicles, is unrelated to the intercellular lipids but consumers’ efforts to remove sebum from their skin and hair can also remove intercellular lipids. Under normal circumstances the skin isn’t bothered by the loss of some intercellular lipids, but if the skin is subjected to additional stress, say from dry winter air, sunburn, or shaving, the result is dry skin. Once the barrier function of skin is disrupted, a vicious cycle ensues where barrier is more susceptible to environmental stresses such as cleansers and the irritation produced by the cleansers causes the normal desquamation process to accelerate. This further compromises the barrier function. As corneocyte turnover speeds up, the connections between the corneocytes (desmosomes) don’t have time to break down and this leads to the sloughing of large assemblies of corneocytes. These assemblies of corneocytes form the visible flakes associated with dry skin.

Moisturizing ingredients that are occlusive supplement the compromised barrier function of the skin. They retard the loss of moisture through the skin and protect it from environmental insults, allowing the skin to repair itself. Some researchers have found evidence that occlusive ingredients like petrolatum actually find their way into the intercellular lipid structures where they presumably take the place of lipid components that have been lost.

Glycerin is an example of an effective moisturizing ingredient that is a humectant, but glycerin is particularly effective in reducing the symptoms of dry skin and simple humectancy does not seem to account for its effectiveness. Researchers who have studied the effect of glycerin on the intercellular lipids suggest that glycerin improves barrier function by helping to restore the flexibility of lipid bilayers that have been compromised by dehydration. Others have suggested the glycerin may aid the function of enzymes that are involved in desquamation, thereby helping to alleviate flaky skin.

Whatever the mechanism, glycerin is in my experience the best moisturizer to include in any moisturizer formulation, especially when you consider the cost versus more exotic humectants such as hyaluronic acid. Unfortunately, the use of high levels of glycerin can have a negative effect on esthetics; glycerin is sticky and this stickiness must be balanced by the use of higher levels of emollients. You will find high levels of glycerin and emollients in many skin care products designed to treat severe dry skin on the hands, which are constantly exposed to surfactants. These hand care products are too greasy for many consumers, but for those suffering from the scourge of dry skin brought on by the combination of winter dryness, handwashing, and the use of hand sanitizers, they are indispensable.

Given the all the abuse that our skin must withstand, it is remarkable that it works as well as it does for most of us. And for those whose skin has been stressed beyond its ability to cope, our industry provides a variety of different formulations that alleviate dry skin symptoms and give the skin a chance to return to its normal healthy state.

We encourage readers to submit short articles or news items for publication in our newsletter.

Please Contact Mike Starch at: msstarch@charter.net