the science of beauty

Vol 8 No 5

April 2019

2019 ASCC Annual Conference

Fremantle, May 7-9

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Boundary Bend

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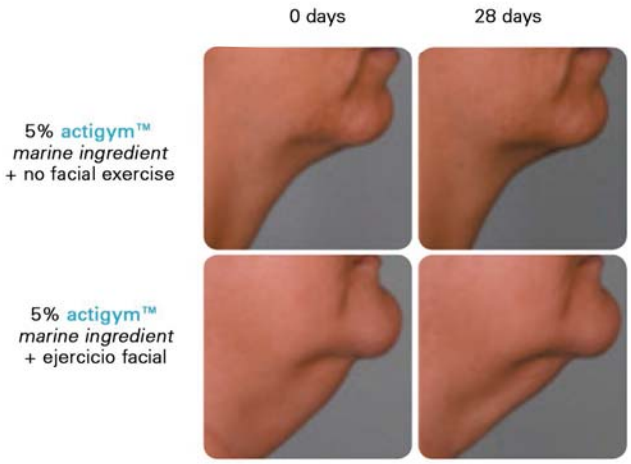
NEW TEST

With endurance-training-like effect, now actigym™ *marine ingredient* also sculpts double chin and facial contour.



- Double chin contour area decreased up to **9.9%** in only 28 days

  when combined with facial exercises, it was reduced up to **11.1%**

- Up to 17.2% decrease in oval contour without performing facial exercises

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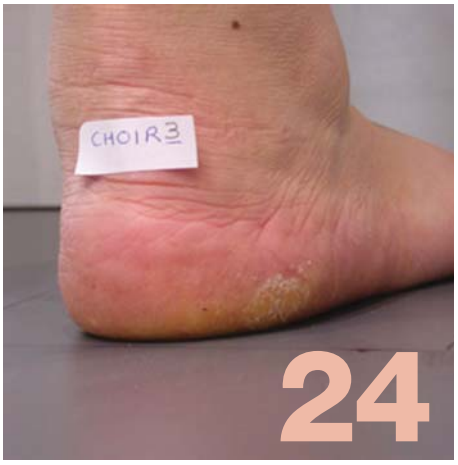

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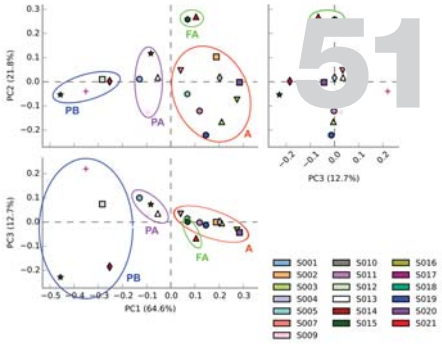

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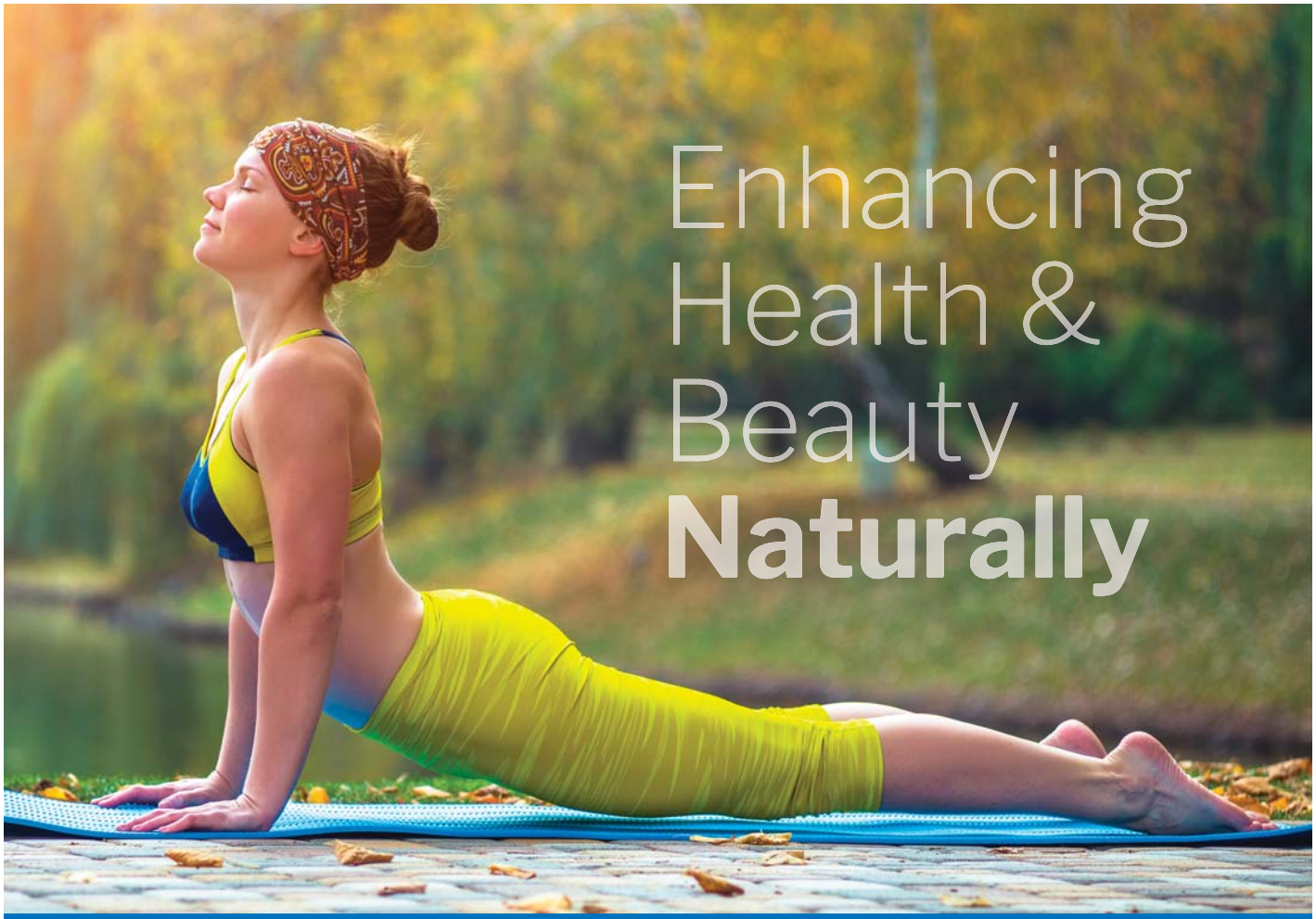
ASCC



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meet the team...

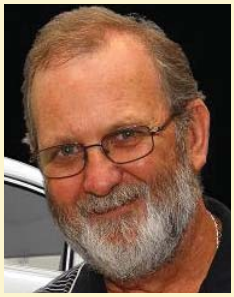
REBECCA AKHYANI is a creative perfumer with 15 years experience in the industry. Rebecca has a degree in Industrial Chemistry from UNSW and began her career as a fragrance evaluator before completing perfume school in Grasse, France. Rebecca has worked for a number of fragrance houses in Australia and abroad and is a full member of the British Society of Perfumers. Rebecca also runs perfume classes.

WENDY FREE has degrees in Science (B.Sc) and Technology Management (M.Tech Mngt) and is a member of a number of industry associations including Australian Society of Microbiologists, Royal Australian Chemical Institute, Association of Therapeutic Goods Consultants and is a Fellow of the Australian Organisation for Quality. With more than 25 years industry experience, Wendy's current roles include APVMA GMP auditioning, contributing to the Cochrane Collaboration and on a day to day basis, Scientific Director Quality Matters Safety Matters Pty Ltd (QMSM) that has over the last decade Wendy has provided expertise to over 400 Australian and International businesses. She specialises in regulatory compliance, commercialisation, troubleshooting and GMP systems, and considers cosmetics amongst the most challenging and enjoyable part of her work.

TONI OVENELL is a formulation chemist and consultant for Queensland Cosmetic Formulators. She has worked in the cosmetic industry for many years in a range of roles covering areas of technical sales, quality, supply chain, manufacturing and product development. Most recently Toni has worked for a small contract manufacturer as technical manager, prior to setting up her own business. Toni is passionate about sharing her knowledge, maintaining a viable cosmetic industry in Australia and helping people bring their product ideas to market. She also likes champagne and hockey.

JOHN STATON has a background of over 40 years experience in the pharmaceutical and healthcare industries. John is a life member of the ASCC and serves in a number of industry representative roles with ASMI, ACCORD, TGA and Standards. He is the Australian representative to the ISO Committee on Sunscreen Testing-TC 217. (The committee for development of sunscreen standards). John is also in demand as a speaker on the International Conference Circuit.

JULIAN JONES, the founder and Managing Director of ikonsulting Pty/Ltd, is Passionate about the Personal Care Industry in Australia and Globally. Julian has been an active member of the ASCC for over thirty years. During this time he has served as President and Chairman of the Victorian Chapter of the ASCC. He is widely known and well respected both nationally and internationally for his knowledge and skills in developing and marketing the best Personal Care Products.



RIC WILLIAMS was educated in Sydney obtaining his Bachelor of Science in Pure and Applied Chemistry from the University of New South Wales (1980) and a Diploma of Environmental Studies from Macquarie University in 1983.
Ric has had 40 years experience in the industry working for many companies and operating his own consultancy business for many years.
He has presented many lectures and workshops at national conferences for the Australian Society of Cosmetic Chemists (ASCC), the Association of Professional Aestheticians of Australia (APAA), Cosmetic and Pharmaceutical Special Interest Group (CAPSIG) and also beauty colleges nation wide.

MARG SMITH is the owner of Syndet Works – an Australian company established in 1984 to formulate and produce soap free skincare bars. Syndet has developed an enviable reputation for custom formulated and manufactured skincare that now extend well beyond the origins of the business.

CATHERINE CERVASIO is a business woman with experience in natural personal care, baby skincare, international trade, marketing and branding, spanning two decades. Catherine is most well known for developing Aromababy- the world's first skincare brand to combine the use of natural and organic ingredients with neonatal research, creating a new category in retail in 1994. As the only Australian natural baby skincare brand with registered products in China, she is also sought after as a speaker on accomplishing business in this region. Catherine was a recent winner in CIBE China (Most Popular Natural Brand) and TBPA China (Best Brand Experience) Awards along with winning the HKABA, Export category, for Excellence in Bilateral Trade – China/Hong Kong 2016.

EMANUELA ELIA is the Director of Ozderm, which specialises in *in vivo* testing and clinical trials for cosmetic and personal care products. Emanuela Elia has a law degree from Rome and a Master of International Business from the University of Sydney. She had collaborated with Australia's longest serving Contract Research Organisation Datapharm for a few years before setting up a cosmetic and personal care products testing facility in 2009. Emanuela is enthusiastic about improving the quality of cosmetic and personal care products' research in Australia through science.

JAMES GILLARD is the Principal of Insurance Made Easy whose services include – business insurance, travel insurance and financial services. Insurance Made Easy has a client list of over 2000 businesses from all industries. The relevant major insurance schemes are – Hair and Beauty, Pharmaceutical Companies and Natural Therapists.

STEVE WELSH is a cosmetic packaging specialist with over 20 years experience across all mediums of packaging. As the director of Weltrade Packaging, Steve leads a team of designers, technicians, printers and supply chain professionals. To ensure the best exposure of your beauty, skincare or cosmetics brand. Steve's philosophy is to design your packaging correctly, right from the start, so you can elevate your brand and move more product. Steve works closely with leaders in the cosmetic industry to ensure that your packaging consistently stands out on the shelves within this highly competitive market.

TINA ASPRES has worked as a Pharmacist for almost 20 years in retail, industry and academia as well as being a Cosmetic Chemist. Currently she works in industry and has vast experience in both the pharmaceutical and healthcare arenas. In addition to this she is a casual academic at UTS, School of Health, (Faculty of Pharmacy in Pharmaceutics). Tina has a great interest in clinical research in dermatology and the treatment of skin disease and conditions and is Clinical Trial Coordinator at South West Sydney Dermatology. She is a keen researcher in transdermal drug delivery systems. Tina is a Member of the Pharmaceutical Society of Australia and a Member of the Australian Society of Cosmetic Chemists. She regularly consults pharmaceutical companies in the area of acne, eczema and skincare especially in the area of cosmeceuticals and has devised and written numerous support, training and education material for companies aimed at both professionals and consumers. Tina consults for the Eczema Association Australasia and is on their Integrity Assessment Panel and has worked with Choice Magazine on numerous reports. Tina has presented at the Annual Scientific Meeting of the Australasian College of Dermatologists and has published within the pharmacy and medical literature in the area of sun protection, Vitamin D, skin cancer prevention and eczema as well as co-authoring the book 'All About Kids' Skin – The Essential Guide' published by ABC Books

GINT SILINS is a registered patent and trade marks attorney, and a principal of Spruson & Ferguson Patent & Trade Mark Attorneys (incorporating Cullens). He holds a Bachelor of Science degree in chemistry with honours in biochemistry, and a Doctor of Philosophy degree in biochemistry. Gint specialises in protecting branding and innovations largely in the health care, personal care, animal health, food and beverage, biotechnology, industrial chemical, clean energy and agricultural sectors. His practice includes: conducting brand and innovation availability and registrability searches; IP audits; registering patents, trade marks and designs worldwide; enforcing intellectual property rights; resolving IP disputes; and, providing infringement and validity advice.

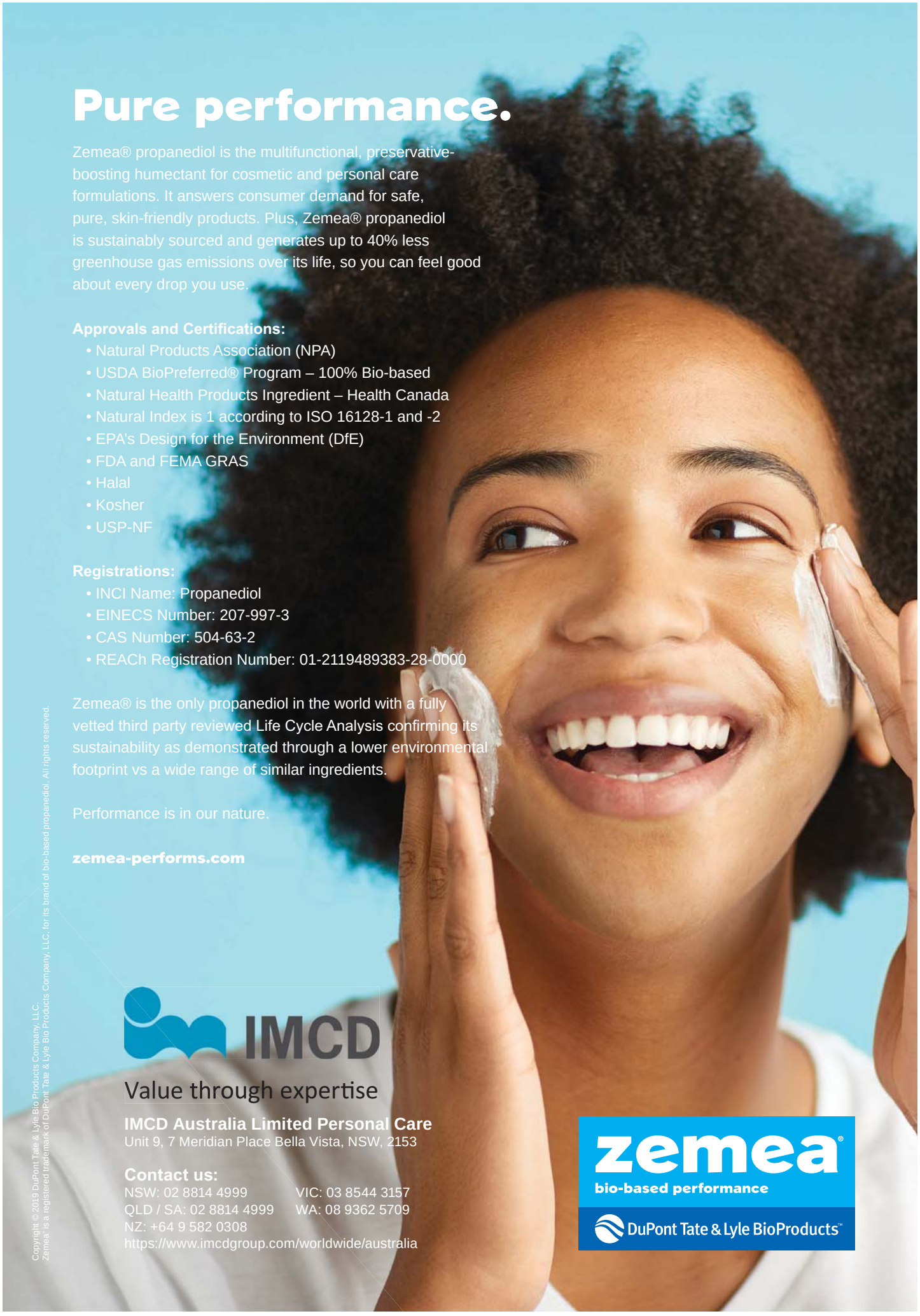
Vale

David James Burke

ASCC Member No. 42

It is with great sadness that we write to advise the passing of one of our members and a true Master of the industry. David J Burke of Scott Aromatics passed away on Friday 15th March 2019. David had been fighting hard to regain his health in recent months and was unfortunately finding the battle more and more difficult with each passing day. David loved our industry and was well respected by all through his nearly 30 years as an ASCC member. He will be sadly missed by many.

The ASCC President, Council and Members offer their sincere condolences to Kylie and family at this difficult time.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building relationships – not just a marketing strategy

by Julian Jones

I'm sure you have all heard marketing experts talk about the value of strong relationships in building long term, sustainable, profitable businesses.

Hardly a day goes by that there isn't a Linkedin article espousing the importance of relationship building. Whether it be between a brand and its customers, manufacturers and their suppliers, the dynamics within a management team or even a political party, high quality relationships built on mutual respect and honesty almost guarantee success both in the short term and, more importantly, the long term.

As I write this article, I have just returned from the funeral service for a dear friend- David Burke. Any of you who knew David will not be surprised to learn that he built extraordinary relationships throughout his 75 year life. He was a loving husband to Moya for 53 years, a devoted father and grandfather and a very highly respected professional within the Global cosmetics, personal care and fragrance industries. There wasn't much about essential oils and fragrances that David didn't know!

He was also my friend for 35 years, starting when I was a 22 year old, wet behind the ears junior rep at Bronson & Jacobs. I didn't know much back then but David saw something in me that I didn't see in myself and over the years he offered his guidance, support, knowledge and experience freely and without obligation. We built a wonderful relationship and I learnt the importance of friendship without judgment.

And I was not alone.

Many people wanted to share in the celebration of David's life including no less a person than Paul Keating (yes, the ex Prime Minister) who was a boyhood friend of David's and spoke eloquently about their growing up together and beyond.

People who loved David came from all aspects and periods of his life, both personal and professional and the overwhelming linking theme was the relationships he had with all of them. It has been said that the measure of a person at the end of their life is the number and quality of their friends and by that, David was rich indeed!

Another event that we are all reeling from at the moment is the horrific situation that has occurred in Christchurch, New Zealand. I along with almost everyone else found it difficult to comprehend how an individual could completely disassociate people from relationships and thereby objectify them simply as targets.

Regardless of religious or political beliefs, these people were human beings occupying the same world we all share and, as human beings, we should all be capable of building respectful, tolerant relationships.

It is when we don't that hate crimes such as this become possible.

Let's take a moment to reflect on the benefits of great relationships and what the alternative can lead to.

Till next time,

Julian

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Packaging: looks great but did you test it?

by Steve Welsh

After 25 years, I still get amazed with brands that do a quick aesthetics test, i.e. "does it look and feel like I want my brand to be perceived," but then do little else.

Product development is a high investment component for any brand that is looking for growth by releasing new or improved products. To go only one step towards checking off to make sure the package protects and functions how you want, really is negligent in the task.

Don't get me wrong, we are here to support you!

As your packaging supplier, we will provide as much as we can in terms of expected compatibility, between materials and address dispensing needs, however the ownership is ultimately yours.

We have designed a 5-step checklist that we work through with our clients so that there are no surprises and brings the packaging selection into line with good manufacturing practices.

The Aesthetic Test

Everyone naturally conducts this test. Does it look and feel like what I want, am I happy with the colouring, texture, should it be heavier or be more premium, is the artwork correct, etc. If your package doesn't pass this test, then it won't be taken from the shelf or ordered online. Our team see what works both online and in store on a daily basis, we can pass on knowledge on the options open to you.

Print test

Following on from the aesthetics test is the print test. When direct printing onto packaging you should always make sure the print has adhered well to the substrate. The industry standard test is to use 3M tape that is applied to the printed surface and pulled away. If the print remains intact then it is what is industry acceptable.

Sealing Test

Sounds basic, but it gets missed. To carry out this test adequately ensure that the packaging does not leak over time, in an upright or in an upside-down position. Make sure the package is airtight and does not evaporate.

Check the primary package and the closure with the actual capping or sealing process to be used when in production. If the capping is to be done with an automatic capper, test with the automatic capper and note the torque required on your machine. If capping manually, ensure the trials are carried out with hand capping.

If it is a tube that is being sealed, check that the tube filler has specified the actual amount of unvarnished space required for crimping/sealing so that the seal is structurally sound.

Think about how you intend to ship/freight the finished goods. Some products will not have a problem in cartons and on pallets, but when sent via post with insufficient protection or outer packaging, it can result in the cap opening in transit, therefore resulting in leakage.

Capacity Test

This test determines how much headspace or ullage is required for the

product to be filled and used effectively, even allowing for different temperatures. For example, shampoo products predominantly foam when being filled and then require more space to allow for this in the package.

When packaging powders the product will fluff going into the container, too tight for space and your filler needs to fill at slower speeds resulting in higher machine time and labour per unit.

The dispenser matters, if it is a pump or a spray this will have a dip tube and the space this takes needs to be allowed for.

Finally check with your chemist or manufacturer and note the specific gravity and any production tolerance they need to work with. If you are filling grams the specific gravity is used to convert it to millilitres. Packaging is sold by liquid volume even for dry goods and creams.

Compatibility/Stability

We can't stress this one enough, we see companies wanting to forgo this one to make a timeline, but it really is gambling with your brand. Different formulations will have different concentrations and ingredients that react differently in different temperatures or when exposed to oxygen or even the packaging itself. Some formulations, for example, with more or less of an active ingredient may discolour or panel the bottle or tube (i.e. Suck the walls in).

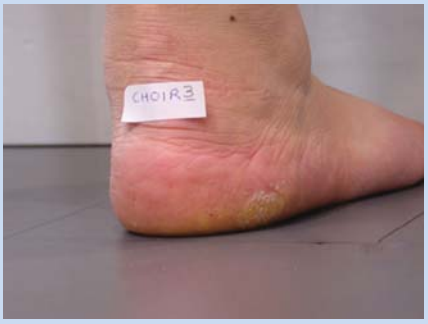
Your filler or chemist can help you carry out accelerated tests to ensure that the packaging that you have chosen doesn't change the colour, consistency or functionality of the product. If there is some adverse reaction we need to look at alternatives, barriers or thicker wall sections.

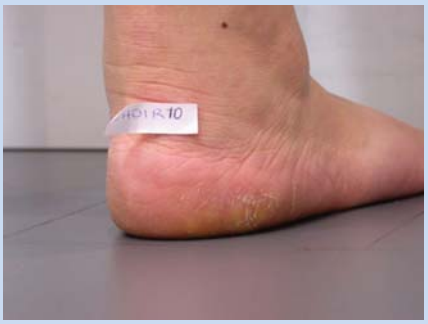
At Weltrade Packaging we have a lot of resources to help our customers carry out these tests. We would much rather work with you and make sure you don't have surprises later than gamble on a she'll be right attitude.

Our team is ready to support your packaging journey, we look forward to speaking soon.

eurofins | Dermatest

STEPS





1. Pre and Post Treatment

No. 35 Cracked Heel Study

The procedure for evaluating the efficacy of products intended for the treatment of cracked heel.

Supportable Claims

- **Visibly reduced heel cracking**
- **Measurably reduces skin roughness**
- **Treats dry, cracked skin**
- **Treatment of Xerosis**

Ra (roughness) and Ry(depth) values are indicative of clinically proven sufficiently smoothed heels. This supports the claims of visible effects within 5 days as per the test subject questionnaire, represented by a mean increase in all measured parameters including: Improvement to heel area skin smoothness, dryness, appearance and depth of cracks as well as total area of cracks; present at the final time point.

Technique

Calibrated high resolution photography.

Digital interpolation of skin roughness and wrinkle depth.

Subjective questionnaires by test volunteers.

Regression

Some formulas will continue to have an effect for a period of time after the last use. The design of the test method allows for this measurement of ... “even works if you forget to use it! “

Analysis of Results - How Many Test Subjects?

When tested on subjects with visible cracked heel condition, an effective product should provide at least 25% improvement in 14 days. Provided there is not a high variability between individual test participants, A 10 person study should show significant results.

References

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2. Grossman AB. Clinical evaluation of 35% urea in a water-lipid–based foam containing lactic acid for treatment of mild-to-moderate xerosis of the foot. J Am Podiatr Med Assoc. 2011;101(2):153–8. doi: 10.7547/1010153.

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ACTIGYM™ marine ingredient now also facial trainer

The current trend of maintaining an active life for a toned body now also applies to the face. Evidence of this is the boom of facial exercises and trainers that count among its biggest fans with famous actresses and influencers. It has been proven that we can exercise the muscles of our face as we do with those of the body to get a toned and rejuvenated aspect.

Obtained by biotechnology from a microorganism inhabiting Bermuda, Lipotec™'s ACTIGYM™ *marine ingredient* was developed to act as a personal trainer. This active ingredient mimics the effect of endurance exercise by increasing adiponectin release and enhancing mitochondrial activity. It helps to tone the body and has recently been shown to also redefine the facial contour and reduce double chin. The results are even better when the treatment is complemented with exercise.

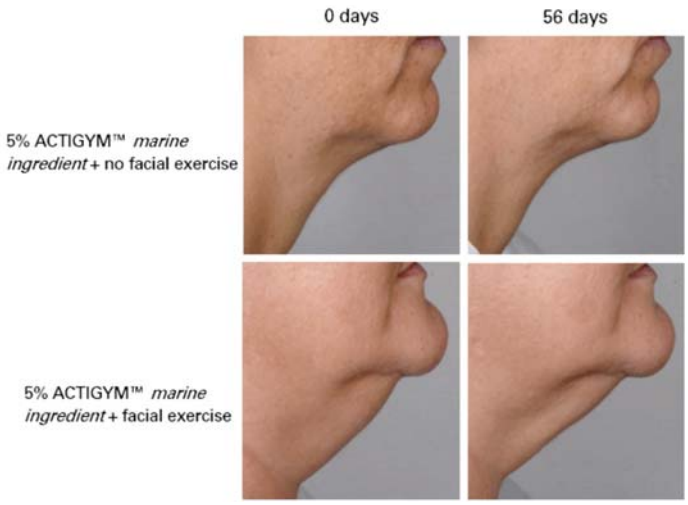
A new complete and unique clinical study was performed on 79 female volunteers between 39 and 59 years old with flaccidity on the chin. One group applied a cream containing 5% ingredient twice a day for 56 days and did no physical activity. Another group also applied the active cream at 5% twice a day for 56 days and did facial exercises with a personal trainer, twice a week.

In order to evaluate the reduction of the double chin, lateral images of the volunteers were obtained and analyzed before and after the study. After only 28 days of treatment without exercise the double chin contour area decreased up to 9.9%, and up to 11.1% when combined with facial exercises.

Following the same measurement method, the facial contour was also evaluated observing a reduction of up to 17.2% in this area at the end of the active treatment without exercise, and obtaining better results with exercise.

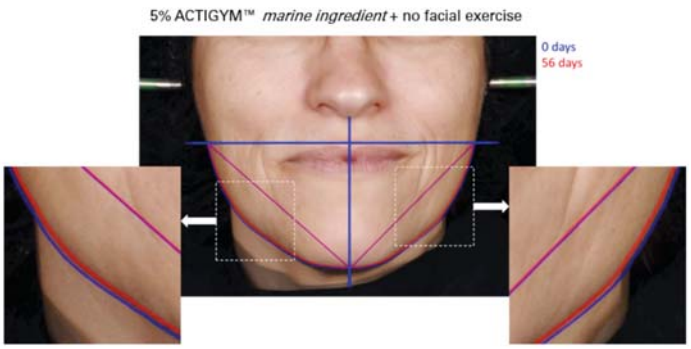
A self-assessment was also carried out with the volunteers and a positive feedback regarding the sculpting effect on the face contour and double chin was received.

Recognized with Gold at the Innovation Zone Best Ingredient Award during in-cosmetics® Asia 2014, ACTIGYM™ *marine ingredient* can be included in daily cosmetic formulations for body care to provide a more toned and defined silhouette as well as in skin care products to complement or substitute facial exercises, for a more defined face and a slender neck.



Macroscopic lateral images of the double chin.

For more information, please contact Robert McPherson, Account Manager for Australia and New Zeland, at Robert.McPherson@Lubrizol.com or Tel: +61 (02) 9741 5237.



Macroscopic images of the facial contour

Moisturisation

Concept Ingredients

sales@conceptingredients.com.au

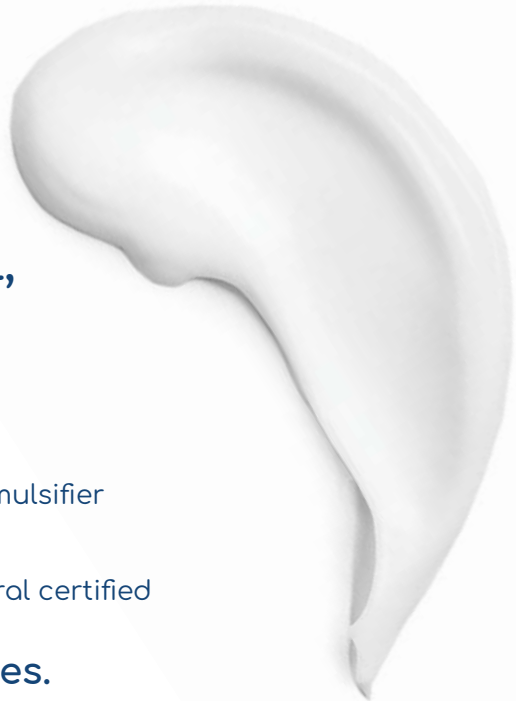
Glycogen

- Native form, obtained through patented green, water-based process
- Water-dispersible, Non-ionic
- Free from allergens and preservatives
- Stable across wide pH range (pH = 3-10), temperature (180°C) and salt levels
- Boosts hydration performance, recovers skin luminosity and enhances skin tone
- ECOCERT & COSMOS approved

PhytoSpherix at 0.1% improves skin hydration by 60% after 7 hours versus placebo. PhytoSpherix boosts Hyaluronic Acid moisturising performance instantly and after 7 hours up to 40%.

RITA

See us at Booth 21/22 at ASCC Fremantle



Ritamulse SCG

Glyceryl Stearate, Cetearyl Alcohol, Sodium Stearoyl Lactylate

- A complete, balanced, All-Natural Emulsifier blend
- Works effectively and efficiently with moisturising actives
- Extremely mild, non-irritating (HRIPT Data), multifunctional Emulsifier
- Moisturising boosting effect
- RSPO, Vegan, GMO free, PEG free, Acrylate free, Ecocert Natural certified

Available now from our Australian Warehouses.

We are entrusted to create a sustainable future that supports local business and the Australian economy. We focus on natural ingredients, sustainable sourcing and formulation assistance. Our materials are certified and guaranteed not tested on animals.

PhytoSpherix Active and Ritamulse SCG presented exclusively by Concept Ingredients

Concept Chemical Corporation Pty Ltd, trading as Concept Ingredients

Moisturisation efficacy and efficiency

A moisturisation label-claim is a key market-driver, whether formulating for face, body or hair. There are many formulation components that deliver moisturisation efficacy. Actives and Emollients play a key role in delivering moisturisation capabilities, but often overlooked are other components with moisturisation efficacy and "moisturising boosting" effect on other key Actives within the formulation.

As a formulator, the benefit of taking this holistic approach, is that not only can a formulator minimise the often expensive Active usage levels in the end-product, but also create a more efficient system with increased moisturisation efficacy that also offers provable label claims.

If increased moisturisation efficacy can be achieved for example through emollient or emulsifier, then the formulation can be streamlined to achieve manufacturing efficiency. This holistic and streamlined approach can deliver big cost savings with at-scale production manufacturing.

Does your customer want increased marketability and lower overall manufacturing costs? Less complicated formulation equals more efficient production, less wastage and more efficient procurement.

Concept offer a range of Actives, Emollients and Emulsifiers which are natural or naturally sourced and offer proven efficacy in moisturisation and ability to boost moisture actives. We also are able to offer assistance in formulation efficiency and efficacy improvement, utilising our formulation consulting capabilities.

No Animal Testing in Cosmetics

The Industrial Chemicals Act passed the Senate last in February 2019 but received royal assent recently on 19 March 2019. Included in this new Industrial Chemicals Act, is a ban on Australian companies relying on data from animal testing for ingredients to be used in cosmetics, from 1 July 2020. Additionally, the regulator won't accept safety data gained from animal testing after that date.

It is important to note that the ban will not however apply retrospectively for ingredients tested on animals in the past. Although further strengthening measures, such as an undertaking that the ban will also capture cosmetic ingredients used in other product sectors have also been incorporated in the ministerial rules accompanying the act.

In conjunction with National Industrial Chemicals Notification and Assessment Scheme (NICNAS) changes for importers in relation to the Australian Industrial Chemical Introduction Scheme (AICIS) from 1 July 2020, there are significant changes that all suppliers, manufacturers, brand owners and formulating chemists ought to be aware of. For example if a new industrial chemical is to be introduced for an end use solely in cosmetics, it is not possible use animal test data obtained from tests conducted on or after 1 July 2020.

Concept are committed to being a cruelty-free business. None of the ingredients we supply have ever been tested on animals by us, by anyone on our behalf, or by any upstream suppliers, or anyone on their behalf. Concept

Emulsifiers

presented by RITA

Concept Ingredients

sales@conceptingredients.com.au

Ritapro 300

Cetearyl Alcohol, Ceteareth-20

Cosmetic Grade
GMO Free
Gluten Free
RSPO Certified Feedstock
Not Tested on Animals

Ritapro 165

Glyceryl Stearate, PEG-100 Stearate

Cosmetic Grade
GMO Free
Paraben Free
Gluten Free
Vegan Friendly
RSPO Certified Feedstock
Not Tested on Animals

Available now from our Australian warehouses, as well as many other materials.

Non-ionic, withstand temperatures up to 130°C

Low cost with robust performance

Functional and stable over broad pH ranges

Versatile and compatible with a wide range of Co-Emulsifiers, Esters, Oils, Lanolins and Silicones

See us at Booth 21/22 at ASCC Fremantle

We are entrusted to create a sustainable future that supports local business and the Australian economy. We focus on natural ingredients, sustainable sourcing and formulation assistance. Our materials are certified and guaranteed not tested on animals.

Rita materials are presented exclusively by Concept Ingredients

The Concept Ingredients operations team in their new office. L to R: Isil Sam,Nathalie Kinnear. Peter Milkovic and Marten Hauville.

already offer our customers the ability to comply with the new Industrial Chemicals Act, particularly in relation to the new No Animal Testing regulations.

From Concept Chemical to Concept Ingredients

We've changed our name from Concept Chemical to Concept Ingredients. This new name highlights our increased portfolio and focus on natural ingredients and formulation assistance. Concept Ingredients offer a complete range of ingredients in the Cosmetics, Personal Care, Home Care and Auto Care markets from global companies such as Rita Corporation, Sandream Impact, Troy Corporation and major Oleo manufacturers. This global manufacturer portfolio provides the capability to deliver all components of formulation.

We now offer a range of naturals, organic and naturally-derived specialty ingredients, which includes a strong portfolio of Palm Free, RSPO, Ecocert/ COSMOS approved ingredients. Our materials are not tested on animals and we are able to provide validation or certification where relevant. We currently have local stock on hand of the majority of our ingredient's portfolio.

All ingredients are provided with relevant complying certification for RSPO, GMO Free, Vegan, Gluten Free, Not Tested on Animals and COSMOS Natural/Organic.

Concept at ASCC Annual Conference Fremantle 2019

Come see us at ASCC Conference in Fremantle at Stand 21/22 to find out more about our Moisturisation Ingredients portfolio and some of the other new and unique ingredients we offer.

If you are a Formulator looking for the latest formulation trends, regulatory updates and innovative ingredients then you should attend our annual ASCC Conference Breakfast Briefing. Please email events@conceptingredients.com.au to find out more and book a seat.

a primer on skin hyperpigmentation

by Emanuela Elia

What is hyperpigmentation?

Our skin colour is determined by the number of pigment-producing cells called melanocytes in our skin. When an excessive or abnormal amount of melanin is produced and deposited by these cells, hyperpigmentation can occur. Hyper (i.e. over excessive) skin pigmentation is usually harmless, and appears as blotchy areas of the skin that are darker than their surroundings. A variety of factors can influence the development of hyperpigmentation including age, sun exposure, skin disease, and genetic disposition.

Skin hyperpigmentation can affect all skin phototypes, from very fair to very dark skin, and it is one of the top cosmetic skin concerns both in Australia and globally. As a result, many beauty brands have responded to consumer demand with a range of possible solutions that may assist with issues related to pigmentation in the skin. Note that skin blemishes due to other reasons, such as raised pigmented lesions, moles or skin cancers, will require a different approach.

Types of hyperpigmentation

There are several different types of hyperpigmentation, which are categorised according to the depth of pigmentation in the skin.

Epidermal (superficial) pigmentation is usually close to the surface of the skin and is caused by sun exposure. This includes solar lentigos, freckles, and café au lait spots/macules.

Dermal (deep) pigmentation is normally located in the dermal layers. Examples are Hori's macules and naevus of Ota.

Mixed dermal/epidermal pigmentation can be found in both the superficial and deeper layers of the skin. An example of this is Melasma.

Main causes

The production of melanin is a natural protective mechanism of the skin that is typically dependent on UV or sun exposure. This is distinct from excess production of melanin leading to darker spots of pigmentation in the skin. Hyperpigmentation has been associated with several causes:

1 UV radiation

Most commonly, in geographical areas of high UV radiation levels (such as Australia), issues related to skin pigmentation are due to excessive UV or sun exposure. This is considered the most avoidable risk factor.

2 Hormonal

Hyperpigmentation can be a result of hormonal changes during pregnancy. In some women, skin pigment may fade after delivery. Other causes are hormone treatments such as oral contraceptive pills containing oestrogen and/or progesterone, hormone replacement, intrauterine devices and implants. Examples of hormonal-induced pigmentation are melasma or chloasma.

3 Trauma to the skin

Also known as post-inflammatory hyperpigmentation, this can be a result of acne or other physical trauma to the skin such as chemical peels or laser treatments.

4 Birthmarks and acquired pigmentation

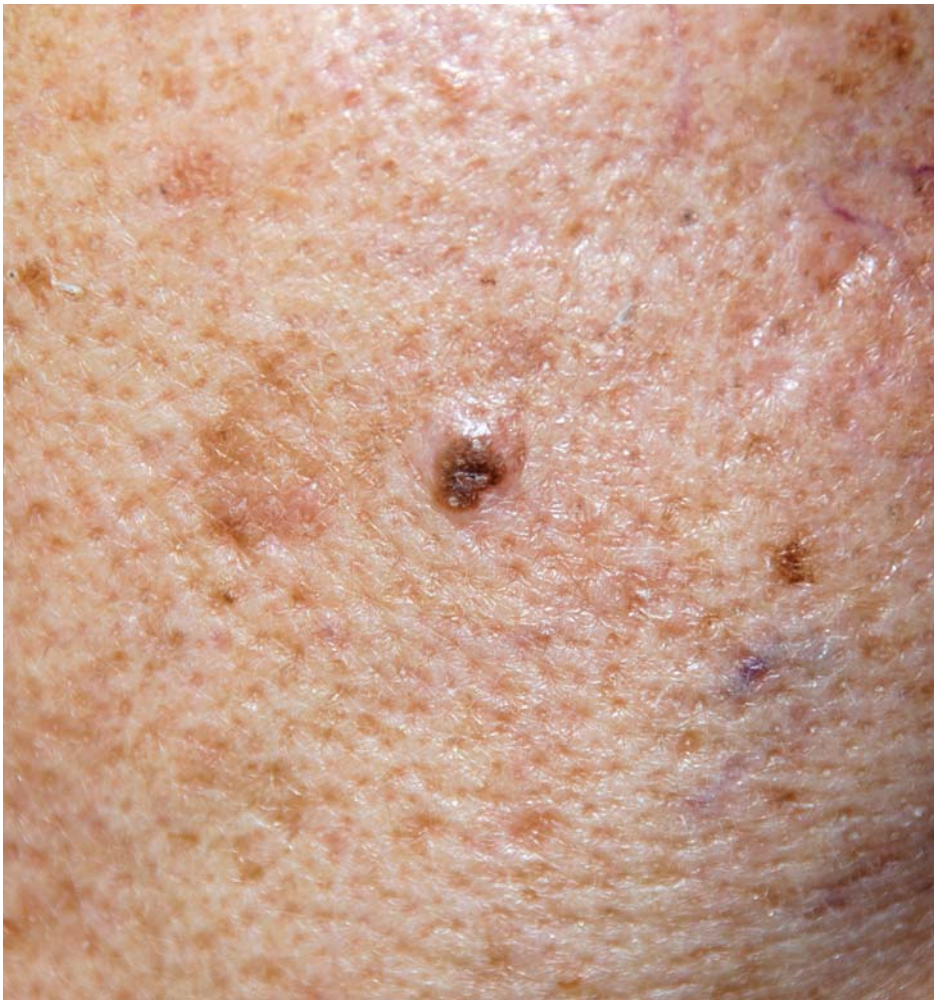
Congenital melanocytic naevus, café au lait spots, spilus naevus, Hori's macules, and naevus of Ota are some examples.

5 Medications and other products

Certain medications, as well as various toiletries and cosmetics may cause a phototoxic reaction that increases the risk of developing long term melasma.

Treatment

The main two types of treatments for hyperpigmentation are lasers and topical lightening products (e.g. creams). Some lasers used by experienced laser dermatologists have shown to produce fast and effective results. However, the cost, downtime (i.e. recovery post-treatment), risks associated with lasers such as worsening of the pigmentation, loss of normal skin pigmentation (hypopigmentation) or scarring of the skin, need to be taken into consideration. On the other hand, topical skin lightening products may not remove



the pigmentation completely, but have shown to be effective at lightening the colour of hyperpigmentation, reducing its appearance.

Topical skin lightening preparations

A number of topical ingredients have shown to be helpful in reducing the appearance of hyperpigmentation. Inhibiting enzymes that produce melanin and increasing the turnover of the skin (i.e. exfoliation) are two methods that can be used to fade existing pigmentation. Common lightening agents include: hydroquinone (in Australia, this requires a doctor's prescription), arbutin, retinoids, glycolic acid, lactic acid, licorice, kojic acid, paper mulberry bark extract, niacinamide, and vitamin C.

However, the first line of treatment for hyperpigmentation is unanimously recommended by dermatologists and skin care professionals. This is the consistent daily application of sunscreen on the areas predominantly affected by hyperpigmentation, such as the face. Sunscreen serves to avoid worsening of the existing pigmentation, to prevent the appearance of new pigmentation, and to maximise the effect of any skin lightening products being used.

A shift has been noted in recent years from sunscreens being used to protect from UV during outdoors activities, to sunscreens being used as an everyday anti-ageing product. This is even more so for people affected by hyperpigmentation. It is recommended for one to apply sunscreen even if it is cloudy, and even if they are in a car or building, as UV light can penetrate windows. Avoiding direct sunlight on the face is important for people affected by hyperpigmentation, especially around midday when the UV index is highest. Naturally, it is also recommended to wear a hat and seek the shade when outdoors.

Studies on cosmetic products to improve the appearance of hyperpigmentation have shown good results when the application of these products was consistent and supported by regular UV and sun protection of the area(s) exhibiting the hyperpigmentation. More of such in vivo studies need to be conducted on existing and newly developed products claiming an effect on skin hyperpigmentation in order to prove their efficacy.

References

https://www.thevictoriancosmeticinstitute.com.au/detail/skin-pigmentation-treatment/

https://www.dermnetnz.org/topics/melasma/

EMANUELA ELIA is the Director of Ozderm, which specialises in *in vivo* testing and clinical trials for cosmetic and personal care products. Emanuela Elia has a law degree from Rome and a Master of International Business from the University of Sydney. She had collaborated with Australia's longest serving Contract Research Organisation Datapharm for a few years before setting up a cosmetic and personal care products testing facility in 2009. Emanuela is enthusiastic about improving the quality of cosmetic and personal care products' research in Australia through science.

sunscreen highlights

by John Staton

OMG – *I'm flying*

FDA early this year announced that the agency "Proposes to raise the maximum proposed SPF value on sunscreen labels from SPF 50+ to SPF 60+." (1)

On one hand, there is the question of disharmony in permitted sunscreen claims for products in other markets and the potential risk in encouraging longer in the sun. On the other, we have the opportunity to again increase product efficacy for the consumer.

What is the benefit of SPF 60+ over 50+? In reality, there will be glass half empty or half full comments on this.

On the pessimist side, comments such as that on the Cancer Council Australia website… "Many Australians are surprised to learn that SPF50+ only offers marginally better protection than SPF30. SPF50+ filters out 98% of UVB radiation, while SPF30 blocks out 96.7% of UVB. "(2) – can be expanded to argue that SPF 60+ (in effect, SPF 70) will only give an extra one percent of protection. On the other, SPF 60+ is more that double the protection of SPF 30 when UV that gets though is considered.

What is the scientific truth? Very simply – it's not what **doesn't get through** that does the damage. If

2% gets through instead of 1% then that's simply only half the protection. Sunglasses work the same way – 99% versus 97% protection rating – so powerful at light filtering that you must not wear Type 4 sunnies whilst driving – yes, note **99% protection**.

"But I can re-apply my SPF 30 to increase protection!" many will say. Reapplying a lower strength SPF twice does not do the same thing. Imagine you put on a thin T-shirt and get a bit red through it. Do you just take that T-shirt off and put on another thin one, or do you put on more protective clothing for the rest of the day or go inside out of further UV challenge?

Provided that an SPF 60+ sunscreen provides the 1/3rd ratio of UVA protection (as is required in most regulated countries excluding the USA), it should be impossible to develop even a tan with this type of formulation.

Sunscreen is a bit like a bullet proof vest. No design will stop all forces. If you had the choice of buying one which lets through only three percent of bullets or one which let through less than half a percent, which one would you choose?

Higher SPF formulations do compensate for well recognised under-application of products in use. An SPF 60+ applied at half the tested film thickness should work "all day".

Remains to be seen where we go from there – towards SPF of infinity, maybe.

References

1. *FDA Press Release 21st Feb 2019* https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm631736.htm

2. *What's the difference between SPF30 and SPF50+?* https://www.cancer.org.au/preventing-cancer/sun-protection/preventing-skin-cancer/spf50sunscreen.html

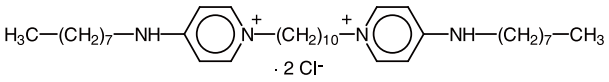
schülke

Innovative Antimicrobial - Octenidine HCl

Discover - purefreshness
Groundbreaking antimicrobial active

- NICNAS approved in Jan. 2019
- Ideal antimicrobial to replace triclosan

Chemical Name: 1-Octanamine, N,N'-(1, 10-decanediyldi-1(4H)-pyridinyl-4-ylidene)bis-, hydrochloride (1:2)
CAS Number: 70775-75-6
$C_{36}H_{62}N_4 \cdot 2HCl$



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INCI Declaration:
Phenoxyethanol, Ethylhexylglycerin
and Octenidine HCl

Product benefits

- New patented preservative blend
- Strong fungicidal effect
- Including OCX – Efficacy Enhancing System
- Performs well in challenging formulations

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INCI Declaration:
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and Octenidine HCl

Product benefits

- Deodorant protection for 24 hours
- Safe for aerosol applications
- Effective against odour-causing bacteria
- Highly effective at very low content of actives

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Formulations – Who **Invented** it? Who **Owns** it?

by Gint Silins

often asked the following types of ions: "I developed a formulation, so n it … right?" Or, "I helped develop mulation, so what rights do I have e formulation?" Or "I came up an idea for a formulation and then d someone to help me formulate it, n I the inventor and do I own it? Or, formulator an inventor and does ormulator own it?" Or "Someone pinched my idea for a formulation. What can I do about it?" Or "To my surprise, I have been named as an inventor on a patent application. What does that mean and what should I do about it?"

Answers to the questions above are in most instances fairly straight forward, yet in other instances finding answers can be like falling down a rabbit hole. However, if you are, or believe that you, are an inventor, then you need to be aware of the following:

1 As an inventor you own what you have invented ('the invention'), unless there is an agreement, understanding or obligation to the contrary.
2 If an inventor, you must be named as an inventor on a patent application for the invention. (No, this is not optional.)
3 As an inventor on a patent, the patent owner must be entitled to your contribution to the invention, else you should be an owner of the patent (unless 1. above applies).
4 As an inventor, you can dispute ownership of a patent application or patent for the invention.
5 If an inventor on a patent application that is filed overseas, you may need to sign a power of attorney, assignment and/or other document type as part of the patent application process.

This article will focus on the issue of inventorship. Ownership and related issues will be discussed in a future article. [Or you can read ahead. See the Full Court decision in University of Western Australia v Gray [2009] FCAFC 116; 179 FCR 346 (UWA).]

The Inventive Concept / Invention

The Courts and other authorities have the following to say about inventorship.

"First, whether someone is properly described as a joint inventor is not determined by quantitative contribution, but rather, qualitative contribution. The contribution does not have to be equal to the other person's and the key question is whether there has been a contribution to the invention. Secondly, in some cases it may be helpful to look to the claims and in some cases evidence may assist. It is important to look at what the invention is said to be. For example, a contribution to the construction of an apparatus may be sufficient where the invention is the apparatus and insufficient where the construction of the apparatus can be done by simply following the instructions in the specification. Thirdly, the key question is whether the person's contribution had a material effect on the final invention. Fourthly, it is sometimes useful to approach the issue by asking who conceived the solution to a problem, but that will not always be so because not all inventions are susceptible to a problem and solution analysis. Fifthly, rights to an invention are determined by objectively assessing contributions to the invention rather than assessing the inventiveness of respective contributions and if the final concept of the invention would not have come about without a particular person's involvement, then that person has an entitlement to the invention. Finally, a person may be considered a joint inventor where they had a general idea of what was required, but someone else was required to put the ideas into effect and did so." Polwood Pty Ltd v Foxworth Pty Ltd [2008] FCAFC 9; 165 FCR 527, and Neobev Pty Ltd v Bacchus Distillery Pty Ltd (Administrators Appointed) (No 3) [2014] FCA 4 at [108]:

A person has entitlement to an invention if that person's contribution had a "material effect on the invention". Upham v Commissioner of Patents [1998] AATA 853 (at paragraphs 19 and 20), Harris v CSIRO (1993) 26 IPR 369, Costa v GR & IE Daking Pty Ltd [1994] APO 23; 29 IPR 241, CSIRO v Gilbert & Hazlewood [1995] APO 16; (1995) 31 IPR 67 and Falkenhagen et al v Polemate 1995 APO 32. The US decision of Mueller Brass Co v Reading Industries 17 USPQ 361 noted at page 372:

"The exact parameters of what constitutes joint inventorship are quite difficult to define. It is one of the muddiest concepts in the muddy metaphysics of the patent law. On the one hand, it is reasonably clear that a person who has merely followed instructions of another in performing experiments is not a co-inventor of the object to which those experiments are directed. To claim inventorship is to claim at least some role in the final conception of that which is sought to be patented. Perhaps one need not be able to point to a specific component as one's sole idea, but one must be able to say that without his contribution to the final conception, it would have been less – less efficient, less simple, less economical, less something of benefit. This Court has found no case in which co-inventorship

status was not deemed in some way, at least presumptively, to have beneficially affected the final concept of the claimed invention, and if such a case exists, it would be so anomalous as to warrant little attention."

"Final conception" and "final concept", which appear in Mueller Brass v Reading Industries (supra), do not mean that a co-inventor need be involved in the final form of the invention. A co-inventor's role could occur at any stage in the development of the invention:

"Each needs to perform but a part of the task if an invention emerges from all of the steps taken together. It is not necessary that the entire inventive concept should occur to each of the joint inventors, or that the two should physically work together. One may take a step at one time, the other an approach at different times. One may do more of the experimental work while the other makes suggestions from time to time. The fact that each inventor plays a different role and that the contribution of one may not be as great as that of another, does not detract from the fact that the invention is joint, if each makes some original contribution, though partial, to the final solution of the problem." Monsanto Co. v Kamp 154 USPQ 259.

Primmcoy v Barry Charles Teer [2003] APO 37 (at paragraph 26) found that a person who took an initial step leading from the problem to the ultimate solution would still be an inventor even if another person was needed to finalize the invention. This approach does not generally apply to someone who merely points out the state of the art or explains well known principles and instead:

"The step must be one that one that materially contributes to the invention ultimately described and the question sometimes put is whether the invention would have occurred without the involvement of the party seeking to claim entitlement – see Harris v CSIRO [1993] APO 43; (1993) 26 IPR 469 and Costa v GR & IE Daking Pty Ltd [1994] APO 23; (1994) 29 IPR 241."

Summary

To summarise, an inventor need not be an Einstein. Even small contributions can count as inventorship. An inventor need not develop the entire invention (ie. formulation), just contribute to a part of it/a step of the process leading to the invention. The contribution may be a brainstorming session or idea (ie. conception) and/or hands-on wet chemistry in a lab (ie. reduction to practice). On the other hand, taking instructions and implementing them using your trade knowledge, but nothing more, is unlikely to be deemed inventorship.

My next article will touch on invention ownership and related issues.

This article is intended to provide general information only and the contents should not be relied upon as legal advice for any specific case.

why should I register my product name as a trade mark?

by Geraldine Rimmer

Your final product has finally come together. You have a name and maybe even a snappy new logo as part of your branding plan. You might have a catchy tagline or a distinctive shape for your packaging. What to do next? Register each as a trade mark of course!

WHY?

With a trade mark registration, you'll gain:

Protection over your reputation

As the owner of a registered trade mark, you can bring an infringement action against a copy-cat without having to submit evidence proving the reputation of your trade mark. Your registered trade mark can be used to prevent the infringing use of a company name, business or product name, shape of packaging, tagline and/or logo.

Deterrence

Third parties may be encouraged to re-brand away from your registered trade mark, rather than risk an allegation of infringement.

A defence to infringement

A registered trade mark can provide you with a defence to an allegation of trade mark infringement raised by a third party.

A continuing monopoly over your most valuable business asset

As long as your renewal fees are paid every ten years and you continue to use your trade mark as registered, your trade mark registration can continue to protect your name/logo forever.

And the best bit? All of these benefits are provided nationwide – trade mark registrations are rarely subject to geographical limitations within Australia. On the other hand, unregistered (or "common law") trade marks are geographically limited to wherever reputation can be proven.

So, what exactly should you register?

Often, a trade mark forms only a small portion of an overall brand. Your brand may be represented by a very distinctive font, logo or distinctive colours. Your particular business ethos, product quality and customer service goals might also form part of your brand. Whilst these things are all very valuable from a marketing perspective, it's likely not every element can – or should – be protected as a trade mark.

A registered Trade Marks Attorney can help you figure out what aspects of your branding would be best registered to maximise the effectiveness of a trade mark registration, giving you peace of mind that the value you're building in your brand is properly protected.

Tips for choosing a strong trade mark

There are so many things to consider when launching a new business, product or service. Choosing a trade mark can be a very exciting step, but it is important to get it right from the outset.

Firstly, you could put together a list of potential marks and then go through and consider the relative strength of each mark; a strong or distinctive mark is easier to register and to protect.

To choose a trade mark that is

inherently distinctive, try to avoid names that refer to a geographical location where the business is, or could be, carried out. For example, DUBBO IRONING SERVICE is not a distinctive trade mark because any number of IRONING services might wish to do business in Dubbo and legitimately use this trade mark. There are some situations where geographical names may form distinctive trade marks. For example, NORTH POLE for bananas is distinctive because banana producers would not conceivably need to use this trade mark.

Invented words are usually inherently distinctive so long as they do not directly describe the goods or services that they are used in connection with. For example, XEROX® for photocopiers is highly distinctive. However, ORGANIC BODY CREAM for a body cream made from organic ingredients would be lacking in inherent distinctiveness.

Laudatory words that would normally be used to describe goods or services in exemplary terms usually lack inherent distinctiveness. For example, NATURALLY ORGANIC for organic based cosmetics, EXTRA FRESH for fruit and vegetables and HIGHLY CONFIDENTIAL for private investigation services are all lacking in inherent distinctiveness.

Keep these tips and benefits in mind when deciding whether or not to register your product name as a trade mark. If you have any questions or you need to discuss your trade mark needs, contact Geraldine Rimmer on geraldine@mbip.com.au.

GERALDINE RIMMER – as a Trade Marks Attorney/Solicitor and a trade mark practitioner, Geraldine Rimmer has been assisting Australian brand owners since 2001. Geraldine enjoys working with innovative clients including cosmetic companies, assisting them with their branding strategies and general IP protection.
Preparing and progressing a trade mark application can often involve subtle issues that if ignored or not properly handled can reduce the value of the resulting registration. Geraldine specialises in the filing and prosecution of trade mark applications both in Australia and overseas to maximise the value of the resulting intellectual property right. Her work involves due diligence, trade mark searching, overcoming examination reports and also contentious areas such as oppositions and dispute resolution. Geraldine is experienced in handling Hearings before the Trade Marks Office and the supervision of trade marks portfolios of companies throughout Australia.

President's Report

by Robert McPherson

With the 51st ASCC Annual conference in Fremantle fast approaching, it's time to reflect on the previous 12 months activities from the ASCC. As always it has been a busy, productive and successful year for the ASCC, with several highlights and learning opportunities. I don't want to steal the thunder from the rest of the team, so I will give a top line report and the full reports will be available at the AGM from the designated council/committee members.

One of the biggest successes we have had is the roll out of our educational workshops, which has seen a couple of hands on workshops travel round the country demonstrating fit for purpose with essential oils and how to develop several different types of emulsions. To quote the late Steve Irwin "I believe that education is all about being excited about something. Seeing passion and enthusiasm helps push an educational message." This statement runs true for the ASCC and we will continue to push this educational message by investing time, resources and money in developing our educational workshops with the hope to excite and educate our members.

The ASCC functional groups have been working tirelessly to deliver information to our members with the Technical functional groups producing several position statement and Position papers, to our chapter committees who continue to delivery high quality, lecture dinners, seminars and industry days. These groups keep the ASCC functioning on a day to day basis and are the cornerstone of the ASCC success, I'm sure the upcoming year will be no different.

Our annual conference is always a highlight of the year for me, it is an opportunity to learn, network, and have fun with our industry peers. Michelle and her team have put together a fantastic program this year, which I'm sure will be the launch pad to many new innovations, inspirations and friendships. Please make sure you take the time to thank the 2019 Conference committee team for all their arduous work over the past 18 months.

The financial management of the ASCC is of upmost importance, and I'm happy to report that for the second consecutive year the ASCC treasurer will be reporting a surplus, this is even though we have invested heavily this year in our educational workshops and speakers. This is of course fantastic news and is also testament to all the committees we have working around the country who continue to control costs and deliver fantastic events. The result of this successful financial management means that we do not need to increase our memberships costs (which haven't risen in 4 years) and the ASCC is now in a stable and sustainable financial position.

Finally I would like to thank all our volunteers and the companies who support them, without your help the ASCC will not be the success it is today, It's great to see so many new faces joining our committees and I encourage anyone who wants to be involved in one of our committees or help out in any way they can to speak to one of our committee members.

I look forward to seeing everyone in Fremantle.

Best regards,

Robert McPherson

ASCC President

PROGRAM
ASCC 2019 ANNUAL CONFERENCE

Tuesday 7th May

"This is a tentative program and subject to change"

	Plenary Room	Presentation Room 2	Workshop Room
10:00-10:20	Welcome & Formalities - Robert McPherson (ASCC President)		
10:20-11:20	Introductions and Keynote Speaker - Dr Richard Walley OAM		
11:20-12:00	Plennary Speaker - Dr Alain Khaiat		
12:00-14:00	Lunch and Exhibition		
14:00-15:00	Panel Discussion Suggested members; Dr Alain Khait, Belinda Carli, Ric Williams, Dr Gint Silins, Dr Shiva Farabi Hosted by Julian Jones		
15:00-15:30	Afternoon Tea		
15:30-16:00	Camel Milk: The New Superfood for Your Skin Author ; Dr Max Bergmann, Ronja Bergmann, Prof Dr Andrew Curry. - DromeDairy Body + Skin, Murdoch University - Presenter ; Dr Max Bergmann		When Make-Up Meets Ease: Create the Perfect BB Cream with Easy-To-Disperse Pigments Presenters ; Armelle Sebbag, Sharon Morse-Greene, Rachel Finch, Anna Trinidad-Nicolas, Vivianne Wu.
16:00-16:30	East Meets West - Hot Trends & Material Launches from Around the Globe! Author ; Belinda Carli ; Institute opf Personal Care Science Presenter ; Belinda Carli		
16:30-17:30	ASCC AGM		

2019 ASCC Conference
7-9 May, Esplanade Hotel Freemantle

PROGRAM
ASCC 2019 ANNUAL CONFERENCE

Wednesday 8th May

"This is a tentative program and subject to change"

	Plenary Room	Presentation Room 2	Workshop Room
8:30-9:00	Sensorial Profile of Natural Waxes in O/W Emulsions Author ; Natalie Koester, Kahl Waxes Presenter ; Natalie Koester	Patent Protection Underutilised for Natural and Organic Cosmetics Author ; Zhi Ling Zeng - Lord and Company WA Presenter ; Zhi Ling Zeng	
9:00-9:30	Wormlike Micelle Formation Of Novel Alkyl-Tri(Ethylene Glycol)-Glucoside Carbohydrate Surfactants: Structure–Function Relationships And Rheology Authors ; Jackson E. Moore, Thomas M. McCoya, Liliana de Campob, Anna V. Sokolovab, Christopher J. Garveyb, Graeme R. Pearsonc, Brendan L. Wilkinsond, Rico F. Tabora - School of Chemistry, Monash University Presenter ; Jackson E. Moore	East Meets West – IP and Brand Battles Dr Gint Silins - Spruson & Ferguson Dr Gint Silins	
9:30-10:00	Deuterium Isotope Labelling from the National Deuteration Facility for Structure Function and Quality Control Applications of Colloidal Mixtures and Blends Author ; Dr Tamim Darwish - The National Deuteration Facility, ANSTO Presenter ; Dr Tamim Darwish	Navigating IP to Create Innovative and Competitive Products Auther ; Albert Abram - Professional, Scientific & Technical Services Presenter ; Albert Abram	
10:00-10:30	Morning Tea		
10:30-11:00	Cosmetic Claims and the Implications If You Get It Wrong Author ; Ric Williams - Cosmepeutics International Pty Ltd Presenter ; Ric Williams	New Solutions for High Performance Sun Care Applications with Organic Chemistry Technology Author ; Pornsak Raopattananon - Dow Chemical (Thailand) Presenter ; Pornsak Raopattananon	
11:00-11:30	From In Vitro To In Vivo Tests: A Complete Testing Strategy for Anti-Pollution Claims Substantiation Authors ; Marie Dubernet, Hélène Marot, Christophe Courbiere Pharm.D. and Frederic Nunzi - Idea Tests Group Presenter ; Virginie Ribiere - Idea Tests Group	New Water Resistant Film Former for High SPF Emulsion Sunscreen with Improved Aesthetic Properties Authors ; Dr Jane Wang, Brian Patten. Nouryon, formerly AkzoNobel Presenter ; Dr Jane Wang	Get me out of this Mess! Simple solutions to overcome everyday formulation problems Presenter ; Matthew Martens Croda Australia
11:30-12:00	Opportunities of Natural Beauty Through Current Natural and Organic Certification Bodies; Their Guidelines and Formula Examples Author ; Rita Sellars - pH Factor Presenter ; Rita Sellars	New Biotechnologic Eye-Care Endophyte Active Ingredient. The Window to Eye Beauty Authors ; Dr Elaine Ferreira; Dr Silvia Pastor; Dr Meritxell Llinàs; Dr Julia A. Boras, Dr Patricia Carulla. - LipoTrue S.L. Presenter ; Dr Silvia Pastor	
12:00-14:00	Lunch and Exhibition		
14:00-14:30	The Measurable Facts About Skin Colour Author ; John Staton - Eurofins Dermatest Presenter ; John Staton	Phytoene: Promoting Healthy Skin For Visible Anti-Aging Benefits Jonathan Sy - Solvay Presenter ; Jonathan Sy	Musings of a contract manufacturer 'Breaking Bad' on the issues of formulation upscale Presenter ; Michelle Kane PharmaScope P/L
14:30-15:00	Biomimetic And Psychobiological Approaches For A Positive Skin Ageing: Effect On Senescence Skin Markers Author(s) ; Edwige Ranouille, Mathieu Bey, Jean-Yves Berthon, Edith Filaire - Greentech. Presenter Edwige Ranouille	Plant-Based Alternative to Conventional Glucosamine Booster of Hyaluronic Acid Synthesis Authors ; Alexandra Jeanneau & Winnie Shi. Alban Muller International Presenter ; Bree Webster (IXOM)	
15:00-15:30	Afternoon Tea		
15:30-16:00	Comparing Antioxidant Activity of Commonly Used Antioxidant Ingredients and Evaluate Their Capacity in Different Forms of Cosmetic Formulations Author ; Dr Shiva Farabi - Ultraceuticals Pty Ltd Presenter ; Dr Shiva Farabi	Reversing Hair Greying by Targeting Bulge Stem Cells Author ; Emilie Venera - Givaudan Active Presenter ; Emilie Venera	Less Is More Presenters ; Malie Zauber, Francesca Cradduck - Carst & Walker
16:00-16:30	DermalRx FSE, DNA repair and skin protection from a biofermentation algae extract Author ; Alyce Wangmann ; Biocogent LLC Presenter ; Alyce Wangmann	Infinite Possibilties, Infinite Opportunities Author ; Joseph Chan - Stepan Company Presenter ; Joseph Chan	
16:30-17:00	East Meets West - Agarwood Revisited Author ; Dhanushka Hettiarachchi - Phytocognosy , WA Presenter ; Dhanushka (Danny) Hettiarachchi	An exemplary claim substantiation for the firming / filling activity of a synthetic tripeptide Jeannie Ang - DSM Presenter ; Jeannie Ang	

PROGRAM
ASCC 2019 ANNUAL CONFERENCE

Thursday 9th May

"This is a tentative program and subject to change"

	Plenary Room	Presentation Room 2	Workshop Room
8:30-9:00	Good Morning Beautiful Skin Authors ; Alicia Gimenez, Olga Laporta, Núria Almiñana, Raquel Delgado, Robert McPherson and Dr Subhashree Mahapatra. - Lubrizol Presenter ; Dr Subhashree Mahapatra	Spray: Experiencing Polymer Gels Release Authors ; Emmanuelle Merat, Marion Dumaine, Alicia Roso. - Seppic Presenter ; Frederick Santos - Seppic	The strength of HPTLC (High Performance Thin Layer Chromatography) as an analytical tool in Cosmetic product quality control Presenter ; Tom Sostaric Chromatech Scientific
9:00-9:30	Pigment Dispersant. Optimise Sun Care or Colour Cosmetic Performance Author ; Sofia Lee - Lubrizol Southeast Asia Presenter ; Sofia Lee	Proteomics throughput platform to support efficacy to sustain beauty and nature Authors ; Prof. Dr. Dipl-Ing. Jörg von Hagen, Dr. Lilia Heider. ; Merck Presenter ; Dr. Lilia Heider	
9:30-10:00	Forget K-beauty and J-Beauty it's all about C-Beauty Author ; Robert McPherson - Lubrizol Australia Presenter ; Robert McPherson	Novel In Silico-Designed Peptide Acting on Both the Pre- and The Post-Synaptic Terminals of the Neuromuscular Junction for Smoothing Expression Wrinkles Authors ; Dr Ariadna Grau-Campistany; Dr Silvia Pastor; Dr Patricia Carulla; Dr Julia A. Boras; Míriam Mateu. - LipoTrue Presenter ; Silvia Pastor - LipoTrue S.L.	
10:00-10:30	Morning Tea		
10:30-11:00	Microorganisms in Cosmetics – Species, Resistances, and Vulnerability Authors ; Dr. Alexander Thiemann, Timm Zabel. - Evonik Dr. Straetmans GmbH Presenter ; Timm Zabel	Innovation solutions on protection yourselves from external aggressive factors and keep your skin healthy as you age Author ; Pornsak Raopattananon - Dow Chemical (Thailand) Presenter ; Pornsak Raopattananon	
11:00-11:30	Microbiota, Life in Our Skin Authors ; Erazo Carolina, Quintero Milett, Reynoso Damaris. - Novachem S.R.L. Presenter ; Carlos Sica - Novachem S.R.L.	Epigenetic Modulation of Skin Inflammation with a Plant-Derived Active Ingredient Authors ; Francesca Germani, Mohamed Essawi. ; Akott Evolution Srl Presenter ; Armelle Sebbag ; Avenir	Fancy product forms: How do they make THAT? - Presenter ; Belinda Carli Institute of Personal Care Science
11:30-12:00	Antimicrobial testing: what do the results mean? Author ; Kevin Roden - Thor Specialties Presenter ; Kevin Roden	Anigozanthos Flavidus flower extract modulates Tenascin-X for a strong tensor effect to regenerate the skin Authors ; Joan Attia, Philippe Daigl, Marty Shortt, Estelle Loing. - IFF Lucas Meyer / Southern Cross Botanicals Presenter ; Marty Shortt	
12:00-14:00	Lunch and Exhibition		
14:00-14:30	Sustainable Cosmetics- Marketing Hype or the Way of the Future? Author ; Matthew Martens - Croda Presenter ; Matthew Martens	East Meets West - Immortality Herb And Rock Rose For Mature Skin: Counterbalancing Skin Barrier Perturabtions And Strengthening The Anti-Oxidative Defence System. | Authors ; Emina Besic Gyenge, Stefan Hettwer, Brigit Suter, Barbara Obermayer. - Rahn AG Presenter ; Francesca Cradduck - Carst & Walker	The Chemistry of Fragrant Compounds Presenter ; Iman Irhimeh
14:30-15:00	Social Innovation In Aloe Vera Production In Guatemala Author ; Scott Meadows - Concentrated Aloe Corporation Presenter ; Scott Meadows	Powerful Natural Antioxidants From The Fresh Water Alga Tetradesmus Obliquus: Nature's Answer To Solar And Digital Radiation Threats. | Authors ; Stefan Hettwer, Emina Besic Gyenge, Brigit Suter, Barbara Obermayer. - Rahn AG Presenter ; Malie Zauber - (Carst & Walker)	
15:00-15:30	Afternoon Tea		
15:30-16:00	3D Innovative Epidermis Models as a New Tool to Assess Tolerance of Cosmetic Ingredients for Specific Applications Authors ; Alicia Roso, Mickael Puginier, Mathilde Bergal. Presenter ; Frederick Santos - Seppic		Pure Goodness. Skin Protection From Sun And Cold. All Year Round Presenter ; Sofia Lee Lubrizol Southeast Asia
16:00-16:30	Shortening Development Timelines – From 3 Months To 3 Weeks - Claire Dinh - Formulytica Author ; Claire Dinh - Formulytica Presenter ; Claire Dinh		

Olive Oil –

'the nectar of the gods'

Olive oil is essentially the pure 'juice' from the fruit of the olive tree, referred to in ancient times as 'the nectar of the gods'. It is one of the oldest trading commodities: an essential spice, central to the early economic development of Mediterranean civilisations, who used olive oil for cooking purposes and as medicine for a number of ailments.

Today, olive oil is still an essential product to numerous communities around the world: Spain, Morocco, Greece, Argentina, Turkey, Portugal, France, United States, Italy and Australia, to name a few. Each Country grows its own predominant olive varieties, which are best suited to the particular climate and typography of the area. Consequently, each country produces an olive oil that has aromas and flavours unique to their region.

However, it is not just flavour and aroma of an olive oil that varies from country to country, but its quality, in terms of the picking and processing techniques employed. Picking olives at the optimal time and processing within hours produces the freshest most flavoursome oil. Cold pressed oil ensures that natural flavour and aromatic qualities of the oil are maximised.

Present standards and regulations can make it difficult to really know the quality of an olive oil and one must trust the supplier. But, a basic understanding of the various olive oil classifications and some terminology can help you choose an appropriate olive oil to suit the required purpose.

The olive

Each olive will vary, but a typical olive contains around 50% water; 22% oil; 5% pit; 11.5% flesh and skin 1.5% antioxidants and other minor components.

Natural olive oils are obtained solely by mechanical or other physical means under conditions, including thermal conditions, that do not lead to alterations in the oil, and which have not undergone and treatment other than washing, crushing, malaxing, decantation, pressing, centrifugation, and filtration.

The olive leaf has been used as a health remedy for many centuries, dating back to the Ancient Egyptians. The Bible references the use of olive leaf in medicine – "The fruit thereof shall be for meat, and the leaf thereof for medicine".

Olive leaf extract

Olive leaf has been incorporated in the diet as an extract, tea and powder (in consumable products and cosmetic preparations). The leaf contains a wide variety of bioactive compounds that are beneficial for health and wellness. The olive leaf is full of natural antioxidants, the most prominent being Oleuropein and Hydroxytyresol.

When applied topically:

- Potential reduction of skin erythema (redness).
- Potential improvement in skin blood flow and dehydration.

What makes oleFresh™ unique?

oleFresh™ is a superior quality olive leaf extract formulation made with fresh olive leaves 100% sourced from Boundary Bend's olive groves in north-west Victoria, Australia.

Produced using a proprietary process, olefresh™ has a unique profile containing over 10 different biophenols, of which oleuropein and hydroxytyrosol are the most abundant.

olefresh™ is created using fresh leaves that are processed within 4 hours of being picked.

The natural extraction process using fresh leaves results in a range of olive leaf extracts with unique biophenol profiles, the active components of which work synergistically to produce a wide variety of therapeutic effects.

The broad spectrum of natural biophenol compounds found in Olive Leaf Extract are not typically found in ethonol-based extracts from dry leaf.

Key Feature & Benefits – oleFreshTM

Key Feature

Made from Fresh leaf (when produced using fresh leaves will result in a product with a wider range and higher levels of biophenols.)

Does not contain solvent/alcohol

Standardised to both oleuropein and hydroxytyrosol (a powerful natural antioxidant that has many researched health and wellness benefits.)

Benefits:

Natural antioxidant activity – evidence shows that OLE can reduce cellular damage in the body, by acting as a potent scavenger of free radicals.

Characteristic	oleFresh™4000	oleFresh™ 5000	oleFresh™ 5%
Appearance	Brownish-green cloudy slightly viscous solution		Orange brown, Free flowing powder
Flavour	Sweet, bitter and herbaceous		Bitter and herbaceous
Component used	Fresh olive leaf (Olea europaea L)		
Oleuropein %	NLT 4,400mg/kg	NLT 5,500mg/kg	NLT 55,000mg/kg
Hydroxytyrosol %	NLT 290mg/kg	NLT 350 mg/kg	NLT 4,000mg/kg

Extra Virgin Olive Oil

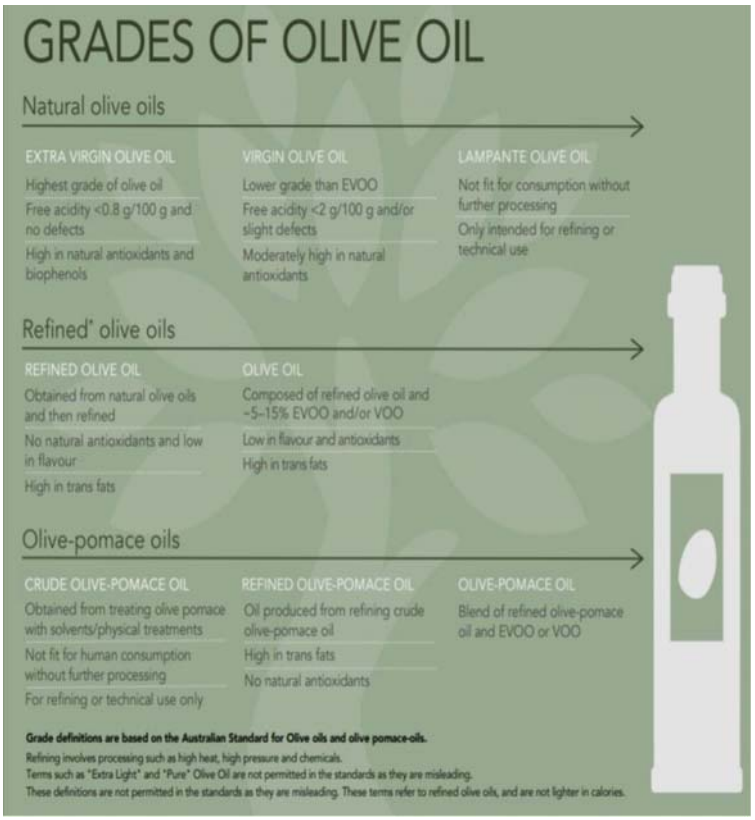
There are two major factors which contribute to the health benefits of Extra Virgin Olive Oil (EVOO) in the ageing process:

- EVOO contains compounds which have strong antioxidant activity – such as polyphenols, squalene and tocopherols (vitamin E).
- The fat profile of EVOO consists of high levels of oleic acid, (a mono-unsaturated fatty acid (MUFA)) and low levels of linoleic and linolenic acids (polyunsaturated fatty acids (PUFAs)). Oleic acid is essential for the maintenance of cellular integrity and a reduction in cellular ageing processes.

When applied topically, there is evidence to support the following effects of EVOO on the skin:

- Free radical species can cause significant damage to skin cells. The antioxidants in EVOO can work to reduce such damage.
- EVOO contains many antioxidants, such as vitamin E (tocopherols), which can help to repair damaged skin and retain skin radiance.

Specialty Grade Olive Oil



- Hydroxytyrosol (naturally found in EVOO) can help to prevent free radical damage to the skin.
- The vitamin E content of EVOO has an anti-ageing effect, as it helps restore skin smoothness and protect from ultra-violet light.
- EVOO helps regenerate skin cells and soften dry skin

Refined Oil BP

Refined Olive Oil BP is a safe and effective excipient for use in pharmaceutical or cosmeceutical preparations:

- Refined Oli BP is well known as a natural moisturiser for the skin.
- Refined Olive Oil BP is also an effective vehicle for the softening and removal of ear wax.

Benefits:

- Refined Olive Oil BP is not solvent extracted and contains a healthy fatty acid profile – comprised mainly of mono-unsaturated fats. It is soft refined by mechanical means without the use of chemicals or extreme heat.
- Refined Olive Oil BP can penetrate deep into the skin and acts as an efficient moisturiser.
- Can be used in the preparation of liniments, ointments, massage oils, plasters and soaps.
- Is an effective product for inclusion in ear care products (e.g. for wax removal)

The Olive Oil extract

Appearance: Solid, paste – off white with yellow tones at 21C
Source: Olive Oil

Benefits when applied topically:

- A very effective emollient which is quickly and efficiently absorbed deep into the skin, restoring healthy flexibility (without leaving an oily residue).
- Assists with occlusion allowing for improved skin hydration.
- Has potent antioxidant properties that may reduce oxidative damage caused by sunlight exposure.
- Has an oxygenating effect in cells which can help reduce the signs of ageing.

Olive Oil Extract Active Compounds	Composition %	Per 1000 mg
Fatty Acids* (includes Oleic Acid >70 %)	73	730
Squalene	25	250
Phytosterols	1	10

- Proprietary product produced from second extraction Olive Oil using an eco-friendly physical process without the use of harsh chemicals.
- Olive Oil Extract contains a bioactive and fat profile that is rich in squalene, oleic acid, phytosterols, minor fractions of Vitamin E (alphatocopherols), waxes and biophenols.
- These active compounds can be used as topical cosmeceutical products, as an excipient or distinct active ingredient.

- Oleic acid, the predominant fatty acid in Olive Oil Extract, is highly stable to oxidation and can enhance the activity of antioxidants.

The Olive Pit powder – Coming soon

Olive Pit Powder is a high-grade fine powder derived from the olive stone – a by-product generated during olive oil production.

It acts as an exfoliating agent and smoothing agent, preservative-free and fully biodegradable

Fine ground olive pit available in 200, 300, 500, 800 micron.

The Boundary Bend story

A S Harrison & Co are proud to be partnering with Boundary Bend who were established in 1998 and are now a leading player in the global 'modern' olive industry and are Australia's largest olive farmer and producer of extra virgin olive oil. They own 2.5 million producing trees on over 15,000 acres and own Australia's two top-selling homegrown olive oil brands – Cobram Estate and Red Island. International expansion in July 14 saw Boundary Bend purchasing a 9-acre industrial property in Woodland California for the construction of an olive oil mill, bottling facilities, olive oil laboratory, and administrative offices.

Boundary Bend Wellness story

A wholly owned subsidiary of Boundary Bend Limited:

- Boundary Bend Wellness focuses exclusively on the extraction and supply of scientifically validated, unique, high quality and fully traceable speciality ingredients and wellness products for use in the nutraceutical, cosmeceutical, sports nutrition, food, beverage and pet food industries.
- Their unique, holistic business model enables them to fully harness the natural goodness of the olive tree in a sustainable manner that ensures all parts of the olive tree are used to create products and services that may help improve the health and wellness of people all over the world.

Olive Wellness Institute

The Olive Wellness Institute is a science repository on the nutrition, health and wellness benefits of olives and olive products, which is all subject to extensive peer review. The institute is guided by scientific experts that specialise in the nutrition, health and wellness benefits related to olive products.

This website is intended to be the go-to source of credible information relating to the nutrition, health and wellness benefits of olives and olive products, such as Extra Virgin Olive Oil and other products derived from the olive tree.

Their mission is to increase awareness of Extra Virgin Olive Oil and other olive products by gathering, sharing and promoting expert, credible and evidence-based information on their nutrition, health and wellness benefits. Source: olivewellnessinstitute.org

A S Harrison & Co offers a comprehensive range of Boundary Bend olive products – for more information and samples please contact your A S Harrison & Co account manager or email performanceingredients.ash@harrison.com.au or call us on +61 (0)2 8978 1016

FAIR DINKUM 老外 láowài !!!!!

(formidably good for a foreigner)

COSMETICS MADE IN AUSTRALIA

Some musings on being hopelessly lost in translation

by Margaret Smith

We Aussies can have a turn of phrase that is entirely our own… The ONLY way to be really clear and understood by someone new to our version of the English language is much hard work.

The art of avoiding getting too lost in translation with new and ESL (English as a second language) customers is more than just finding a way to converse in their language. One must demonstrate and show what is meant culturally as well, and necessarily do this in ways that make as few assumptions as possible that the message given by one party has the same meaning to the other party. Trust me on this. I am still learning this art, even after nearly 20 years teaching at RMIT University where many of my students came from different cultures and countries. The art of clarity in communication has been a long, always illuminating and sometimes difficult path.

An Asian friend of mine who had been living in Australia for years reminded me of the dangers of assumptions many years ago. She recounted that she had been invited to a party where the written invite had what most us consider the usual "*bring a bottle and a plate*". Yep, you guessed it, she took the plate and a bottle, all the while thinking it was unusual, but there you go. *Not a plate of food and a bottle of wine, just a nice white plate and an empty bottle.*

Been there, done that with too many customers – of all languages and cultures.

They know what they mean and what they expect and they think that I think I know what they mean, but there is a load of expectation and assumptions sitting on both sides of the table.

So what do International distributors and brand owners really want from an Australian formulated and made cosmetic? This is the main point of this brief paper.

In my opinion the answer is they actually want it all, that's everything. Undefined. Just "it all". There that's it, I have answered the question but not addressed what the customer expectations really are.

Ha, I shall delve into this a little deeper, yet the answers are as varied as could possibly be.

Why Australia? Why? Why? Why?

In 1999, the ASCC hosted a conference in Tasmania with the theme "MADE IN AUSTRALIA SOLD TO THE WORLD". I was privileged to be the Conference Convenor on that occasion. It was in Tassie, the original Aussie clean, green and pristine state and a hotbed that continues to thrive on that reputation.

Before then and since, communicating the virtues of this grouse country has been my focus. And as I was certainly not alone, the reputation of the country became well known.

However, seeing so many iconic Australian cosmetic companies now sold to International owners has been part of the proof of people willing to part hard earned cash for a piece of the Aussie dream. Our lifestyle is bloody good. Hence all our New Australian neighbours.

I feel this began with the good work of Australian food producers, especially from Tasmania, where the air is definitely the cleanest in the established world. And back when China had the one child policy and troublesome air quality, foodstuffs (and by association, cosmetics) from this wide brown, but clean land looked appetising and safe. So thanks to our great farmers battling with the adversities that our land and climate does throw at them, Australia has definitely won its place amongst the hearts of many Internationals as safe and of high quality.

Whether or not the clean or green label should apply unreservedly to cosmetics made here may be open for debate. Many of the raw materials available in our industry are imported from some of the most heavily industrialised countries in the world. So we, as a company tend to go to pains to make certain that as MUCH as possible comes from Australian owned and produced raw material manufacturers. This ensures that we have captured the ethos and heart of the clean and green message.

As any regular reader of my musings will know … it is true that since the '80s most multinational cosmetic brands have abandoned their own Australian based manufacturing operations. I have written extensively on how the industry has travelled since the '80s so I will try not to bore you too much.

However, many of those same brands now see the benefits of having "made in Australia" on their labels.

I despair at how manufacturing here is nearly always depicted as in a dreadful dwindling state. There are still a lot of us around, and better made here than , well where would you choose? We have so much talent and innovation, yet some Brand owners still feel they can still threaten with "going offshore". They look at a single element in their strategy, and now this has turned.

What does "Australian Made" mean to your customer?

Well, it could be much of the points above, just clean and safe. Underlying it means perhaps an "angle" in their product marketing profile. This angle maybe about fresh and clean and safe. Probably no doubt at all.

But be clear, in my opinion it is based on what they believe is a sound economic base. Selling Australian images of openness, clean skies and waters, sunshine and koalas works.

A clean beach for sun and hair products. Cool clean rivers and forest (gosh – hard to find at the moment in this horrendous drought and bushfire season) perfect for bath products. And of course koalas for the kids. All instantly meaningful. All instantly, identifably Aussie. And their product must reflect this. It must have Aussie stuff in it. Good clean Aussie grown and made stuff. And it does sell. It does make money.

Americans mostly like this Australian ethos and imagery, who I think hanker after a bit of nostalgia. Perhaps we are a bit like what they used to be or wanted to be. We were very popular indeed even 10 years ago. The Middle East is enamoured with Australia and has become a powerhouse for good skin care and top end branded products which are clear on what they need. And certainly, Asian customers are well happy with Australia and what it provides. But it is never only the clean and green.

Being Australian also has the hope of openness in relationships, honesty in business and whatever one wants to interpret as "mateship". We are meant to be fun, friendly, helpful. And others who aspire to this, hope to buy it, either in a bottle or a house or an education. As I say "Made in Australia, Sold to the World".

This is an aspiration on the part of both Brand Owner and Manufacturer, yet all these dreams can be dismantled as the importing countries regulatory devices can be an antidote to this hugging and love in. These regulations can be so difficult, and so shifting that even the best laid plans are tested endlessly.

What do we think about what the International customer really wants?

This has been a long journey and the answers are hopelessly long. Too long for this little article. Australian texture preferences are fundamentally different to most of your overseas based customers likes.

This means that totally, absolutely what you like is not at all important. It's all about what they like, not what you think they like. This is the most important thing to understand; indeed it is the only thing that matters. And this is legend in its breadth of what may be preferred by a client compared to what we might think is best for them.

What we have found is that very very rarely are we presented with the "iconic" Aussie brands as a benchmark. Asian women (particularly young ones) may chase a brand when they see it being used by one of their heroes, but sometimes that all falls away after a period when they discover something new.

Recently, like in the last four years, we have not had a single one of these iconic brands given to us.

What is hot is new. Not a copy. And the textures are very tailored.

Sleek and soft. Very sophisticated indeed.

All the more fun for a formulator, one size certainly does not fit all. I ended up being able to replicate a few brands, and that was great to learn, but I certainly prefer to start from scratch and come up with something very individual. So, never a dull moment if you custom formulate to meet a client's specific requirements. So we may think that a great Aussie brand fits perfectly, but we are VERY lifestyle oriented and EXTREMELY price sensitive as a nation of beauty users.

There are some budget brands that may do well, however Aussie stuff will always be more premium than anything else on

the market, so it still needs to be special.

We think Australian skins are fundamentally different to Asian skins. We think we are tough skips. Out in the sun, wind and, well, tough.

Then we think everyone is like us. I mean "they" buy Australian companies. But nay. Asian and Middle Eastern skins, (and it depends definitely on EXACTLY from where), can be super duper delicate and sensitive.

In fact super sensitive can be applied to a few, for all sorts of reasons, and we have found there is a couple of aspects that create sensitivity. And if we can avoid these then, all is well. I am lucky (perhaps not so much) that I am the one who is the sacrificial anode with the sensitive skin in the factory. I get laughed at daily walking around with all sorts of "tests" on my face, but then that is THE ONLY simple way to find what works and what doesn't. So far my learning curve is beginning to flatten out, and the reactions are getting less.

We have taken on producing ranges of paper face masks over the last couple of years – all driven by requests from new customers. I admit to it being a very steep learning curve to get the right alchemy working, the right materials and the right, well everything. Yet the final products have proved to be products that our customers are very pleased with, having met all their expectations and then some. Although a newbie to the face mask phenomenon prior to this new venture, I am happy to wear a face mask daily, 'cos they feel great.

And all this means lots and lots of experiments. And we work it out, another thing to add to the "what works" list.

Never on ratties or bunnies, all on Marg. I am the animal in the house.

Listen to your customers – carefully. Test your products or samples – carefully – for colour change, another thing that Asian customers do not expect. And this was grand revelation to us. Organic meant using quantities of certified organic plant extracts, vegetable oils and essential oils. All of which do change with time and temperature.

Expectations on our part is that a customer asking for organic would understand the swings and roundabouts of such a request. But no. A new customer requesting this needs help to understand the life spans and conditions and changes in a products appearance when using totally natural materials that vary from season to season and over time. We need to manage their expectations and gain understanding from them as to how they will be testing and using the product. Never assume that the way you or I use a product is the way that they will use it! This was very clear when a customer brought in seven bench marks for seven new skus.

We, across the table were delighted, and took them on board as we would. Using perhaps two of them at a time.

How wrong could we be? Very in this case. A few weeks later while using the samples, said lovely young woman and her assistants proceeded to use all seven one after another. THEN applying SPF 50 and concealer and foundation and powder. Along with cleansing that made 12 layers.

I was in shock, as even now at my great age, I use only a cleanser, oil and very light moisturiser. So it was a revelation. The most I have encountered is 16 steps and products.

So this is not like an Australian range.

Three times now we have needed to make ranges to fill entire stores. 50-80 skus at a time. Quite different to the "tight and bright" advice to Australian entrepreneurs.

If you are a formulator and refuse to try the product on yourself, then poo to you… I mean really??? I have met them… "oooh nooo not on my skin or precious hair!!!!" they say…really???? A client shouldn't have any confidence at all in a formulator not prepared to try the product on themselves. Even if it means them trying on 15 layers. No client should get something we are not willing

to use. In the end one must care about your ingredients, your formulas. It is the caring that is an essential ingredient with all customers, wherever they come from. If you are a manufacturer or formulator, seriously you have to give a damn. Every customer wants a good darned product at whatever pricepoint.

Understanding these new customers.

It helps, no, it is FUNDAMENTAL to understand both exactly where your customer hails, not just country but by the city as this will just start to inform you about their knowledge and expectations. The culture of differing cities in the same large or small country has a profound effect. It is like all relationships where you actually want to really connect and last a long time. There is a lot of work and time and resources that go into establishing a long term association.

Some may expect 24/7 contact rights. On Christmas day, Good Friday, when you are asleep! It will depend on what they get now. And one must be ready and then set parameters.

We have had an overnight enquiry via WECHAT and when we returned their call the next morning, we were set upon for NOT responding immediately. It made no difference to this "gentleman" that it was four in the morning when we got the call. On the other hand to get Aussie products and work with Aussies, the customer too, needs to really understand the limits of the Australian labour laws and some niceties!

Consistently we have found, on their side, they want assurance, longevity and trust. Just like what we all want too.

You must be understand exactly where they want to send their products. (It is not just about regulations, and that could fill a book, which would need daily updating). Because knowing the market expectations is everything to the success of your formulation. Sticky is an anathema to most but NOT ALL. Sticky can be fun to some sectors. What works in hot, dry conditions is vastly different from what works for a hot, humid climate and so forth for cold and super dry or what ever climate one is creating for. How are the products going to be stored or transported? Where will they be retailed? A little shop on the beach in Sri Lanka or a multiplex air conditioned retailer?

Even European made raw materials take forever across the oceans, stored in big tin boxes for sometimes months over equatorial climes. Will they have any shelf life at all after their journey? Should you be bothered using them?

As described above, Organic may not be what they really want. They may actually need and want something that begins and remains completely white. Well, extracts and essential oils and vegetable matter is going to age gracefully – NOT!!!. What they want are marketing claims that tell of the Australian clean story. I really feel that a raw material sourced in Australia that tells of a local story is so much more than just the tag "organic" or whatever. A local connection to real materials reigns supreme over an imported certified organic material every time, at least in this context. If one is selling "global" then the opposite may be more appropriate.

Perception and expectations are EVERYTHING! Managing these things after the event is a bit like crisis management, so management of perception and expectations should be something started right at the beginning – not after when the relationship is at risk of being damaged irreparably.

All cats or customers are not the same in the dark and indeed, they are extremely individual. However they share many similar traits with anyone else walking through our doors. New customers can be everyone, even established brands who may already have great products and they want a line to reflect the new world or they want the same products produced here. or want to penetrate new markets. It is not just new entrants setting up an Australian entity.

If the customer is a new entrant, and has very little experience, then things can be very complex, as the amount of know how and information and contacts required are pretty vast. And they will lean on you enormously to lead them through the minefield. Hard to do when it is shifting sands on the regulation front.

How does one handle the REGULATION AVALANCHE? Or how to play Snakes and Ladders with gumboots on

Over the years I have talked to so many consultants taken on by prospective new Brand owners, who just focus on the bleeding obvious things like pack colour, without drilling into the meaning that is attributed to the product by the brand owner and the intended end user of the products. Had they been able to do this it may well have made selling to the end user so much easier. Many of these consultants are being paid handsomely, so it always comes as a surprise when we from time to time find them advising their clients that we, as their manufacturer SHOULD be supplying everything needed for registration totally free.

A good manufacturer or formulator should be able to assist a customer with formulation development and documentation that supports registration of a product according to the known rules in force at the time. This may seem self evident, but a new brand or even an old one may find that they design a range or product for one region, then a market opens in another but it has restrictions, the usual snakes and ladders, and the opportunity can look like a ladder when the consequences are actually snakes.

Just to try to avoid this we may ask a barrage of questions, yet it is to ameliorate disappointment. We tend to formulate to the most restrictive of the regions or countries. We hope that this gives some longevity.

Be aware that you need to have some insight into what the regulatory and test requirements are for every region. Some are legend. I keep a little ring folder with a guide to what we need to supply for every country. I have 3 and half people now trying to keep up with this. Crazy, crazy times.

China has very strict regulations and one must be prepared to bare all to the regulators. Trade names, purity, method, percentage. They do have the product made, they do test for up to a squillion

different aspects. You must be prepared to reveal.

As a company we needed to invest in building databases and programmes to make it easier to generate the appropriate regulatory documents for various regions. These are not the full set of PIPS for every country, which quite frankly are best done by those qualified and on the home ground. Shapeshifting is part of the regulators game and, in my opinion, all part of a process to maintain barriers while pretending there is free trade.

Case in point. We make a shampoo for a customer and have done so for many years. It is sold in many countries and after being imported into the sub-continent for a number of years was recently stopped at the border. Why? One of the "checkers" felt it did not foam to an invisible standard of foaming. To say this was bizarre is an understatement. I shall leave you to consider why this occurred.

And the biggest thing is that once a product/formula/name of product/packaging design is registered, then it is set in stone. This can be utterly disastrous if a raw material is deleted by a supplier. There can really be no changes, otherwise the usual requirement is for another registration process to be undertaken.

Supply and Demand – basically what do suppliers think of Australia?

Unfortunately a shrinking manufacturing base has coincided with a number of Suppliers of raw materials now restricting their offerings to Australia. I have experienced many product and Supplier presentations where great things have been talked about only to find that actually getting the super whizz bang product is a trial in itself. Sometimes the product has not been approved by NicNas or distribution has been restricted to US or EU customers only. Or indeed the trader here has an "old list" and the product one wants has gone by the wayside and is no longer produced.

A former Prime minister[1] was attributed as saying that Australia was at "the a*** end of the earth."

And to my dismay, many suppliers have decided to treat us thus, and then we as manufacturers need to explain to a customer who has previous access to ANY material under the sun, we must gird our loins to find out whether we can get it, over what incredible lead time, and at what cost. Again we must be educated to what can be used in which country and if the supplier of said goods will be bothered bringing it in.

We must try to ameliorate the shock to some customers when they see what the cost of some of these materials are against what they are spending in their homeland. They can understand to a degree that Aussie labour costs are very high against their home town, but the cost of many materials especially when getting a high local natural alternative, or even just the addition of the transport from the land of their initial manufacture to here, ("the a*** end of the earth.") with intervening traders margins can leave them shell shocked. Most shocked are the Americans I admit.

The products they use with gay abandon are slow to get here and sometimes poisonously expensive by the time they hit our door.

However the same Prime Minister did say: " By the year 2000 we should be able to say that we have learned to live securely, in peace and mutual prosperity among our Asian and Pacific neighbours. We will not be cut off from our British and European cultures and traditions or from those economies. On the contrary, the more engaged we are economically and politically with the region around us, the more value and relevance we bring to those old relationships. Far from putting our identity at risk, our relationships with the region will energise it." [2]

Although we are ignored by some of the old world, usually because they have their own amazing crap to deal with, any distance with them has worked for us in making us independent, resilient and smart. I like to live in this space. Hey and we are actually close to Asia unlike the EU and the US. We are now experiencing this all coming quite true.

Relationship. The state of being connected.

We have been very fortunate to have been working continuously with customers whose skin and personal care businesses have had a strong international focus for well over 15 years. Over this period the number of countries they sell into has grown considerably.

The key underlying a business partnership of more than 15 years is hard work to maintain the relationship in both good times and bad. Not just in assisting one another with exchange rate travails or those of buying and selling, one must have a strong relationship where each party assists the other as best it can.

And yes, some parties can expect a little too much, and yes I have walked away when it got silly. It is definitely a relationship. As each week passes we increase our relationships with more and more new people, ideas and opportunities. Although each customer is very different from one another in some respects, there are some features of the initial expectations of new customers that may really assist everyone in creating a good strong bond.

We are as perfect or imperfect as the other party will allow. The lower the personal guard and the more open one can be, by far the better the outcome.

This article actually started as a presentation that was to be "all singing all dancing" with lots of anecdotes and case studies and pictures, and more importantly a long Q and A, however it was not accepted and so as an article I am afraid it is much drier and less case oriented. And if you have a question: tough. No dancing allowed. It is a musing that follows the journey over our companies last decade or two, dealing with the many and varied customers looking to create a new Australian presence with the aim of selling to the wider world.

Good luck and as always marg@syndet.com.au or info@syndet.com.au is always available for your comment.

Reference

1. Right honourable Paul Keating

2 Election campaign launch, February 14, 1996

the risky business of risk management

by James Gillard

Risk Management is important to your business success. Knowing your risks will help you get the right insurance cover to protect your business against loss, damage, business interruption, employee liability and general liability. Inadequate insurance may cause large unexpected expenses or, worst case scenario, the inability to continue operating.

Risk management involves 3 parts:

- Identifying the risks. Some risks are major and others are not. Identifying potential risks to your business can be a challenge in itself. Start by asking the question – What if… ? What could go wrong?
- **Assess your identified risks.** What is the likelihood the risk will affect my business? What are the consequences to the business? Are these major, moderate or minor?
- **Develop a strategy to deal with the risks.** Develop a cost-effective plan which gives you details of the causes, consequences, and alternative options including:
  - Avoid the risks – is it possible to avoid the risk, but still achieving similar goals?
  - Reduce the risks – is it possible to reduce the risks if you cannot avoid them?
  - Transfer the risk – Can the risks be transferred to another party or by way of insurance? With some risks you may find that there is nothing you can do about them but to accept them.

You don't know what you don't know. For example, your power supply to your factory is routed via your neighbor's factory so that any disruption to your neighbor's power supply will result in a power failure at your premises, interrupting your production activity.

Business owners need help to identify significant risks which may not be obvious. An insurance professional, such as an Insurance Broker, deals with risk analysis and risk mitigation on a daily basis and is therefore well placed to

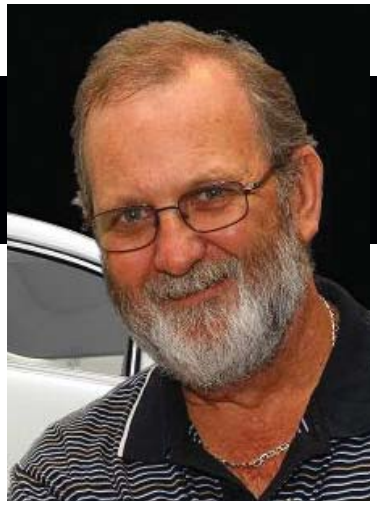
advise and assist.

One of the most important ways to protect your business against a significant loss is having sufficient Business Insurance. An experienced Insurance Broker who understands your business industry can provide you with professional advice to get the right policy cover.

Business insurance can be divided into three categories

Assets & Revenue Insurance	Building & Contents Glass breakage Fire Machinery & Equipment breakdown Goods in transit Motor Vehicle Money Theft Business Interruption
Liability Insurance	Public liability & Product Liability Professional Indemnity/Medical Malpractice
Personal & Workers Insurance	Workers compensation insurance Income protection Personal accident, Illness insurance

The insurance cost is minimal compared to the consequences of the unexpected. If you are unsure about your current coverage and need a Professional Advisor to review your policy or risk, please contact the friendly team at IME Insurance Brokers – Insurance Made Easy for personal assistance to discuss your own individual circumstance 1800 641 260 or visit us www.imeinsurance.com.au



Part 45 –

by Ric Williams

The formulation of natural skin care, hair care and household products using novel surfactants

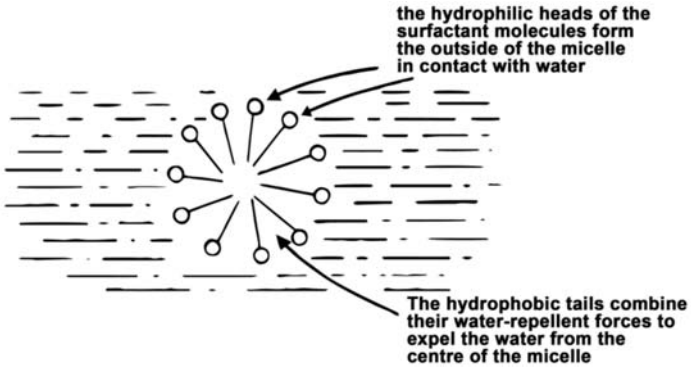
Abstract/Summary

After 44 editions, not that I am running out of topics, but someone suggested I go back to the start and update earlier presentations based on the changes that we have seen over the last 7 to 8 years. (Yes, that is how long I have been doing this).

With the market shift towards more natural products, the quest for more natural surfactants/emulsifiers has meant that novel materials have been created, or in some cases, reinvented. The paper revises common surfactant/emulsion theory then looks at four novel surfactant/emulsifier systems (Sodium Surfactin, Hydrogenated Lecithin, Arginine Lauraminopropionate and Soapberry extract) as examples of more natural and exciting cosmetic systems. The paper will discuss their properties and provide some example formulations developed using these "new" surfactant/emulsifier materials.

The Action of a Surfactant

Firstly, if the skin or hair is to look attractive it must first of all be clean, and should be washed at least once a week with a good quality cleanser/shampoo. The surfactant must be efficient enough to remove both dirt and sebum which binds dirt to the hair. The action of the surfactants in a cleanser, ie.



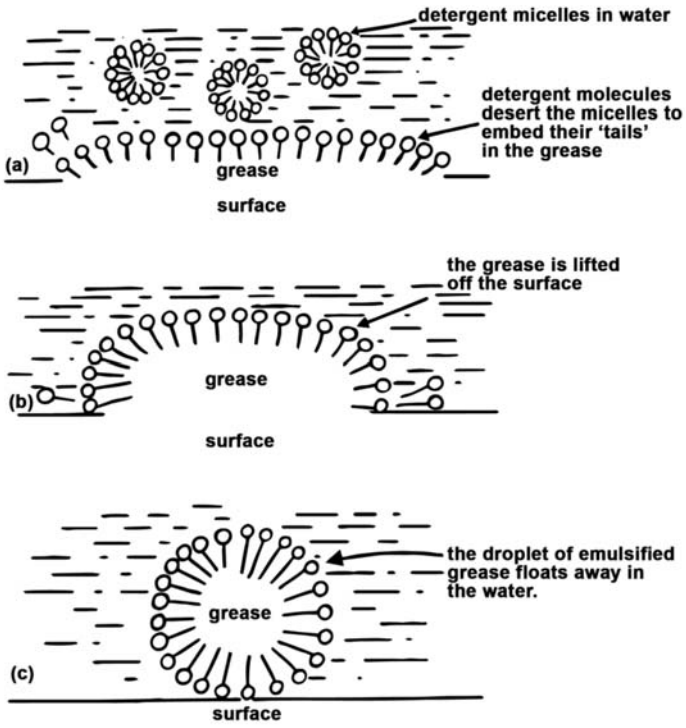
Similarly, with skin care cream and lotions a surfactant (in this case called an emulsifier) acts in a similar way, in that the surfactant/emulsifier surrounds the introduced oil phase globules, preventing them from coalescing and hence destabilizing the emulsion.

Emulsions

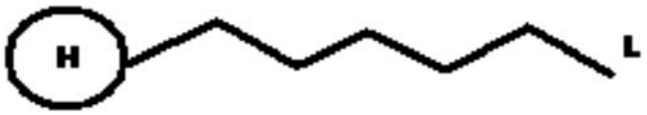
Emulsions are relatively stable mixtures of an **oil** phase (oil-soluble materials) and a **water** phase (water-soluble materials), and are made by mixing these together in the presence of an emulsifying agent (or **emulsifier**).

Ric Williams B.Sc. Dip.Env St.
Cosmepeutics International

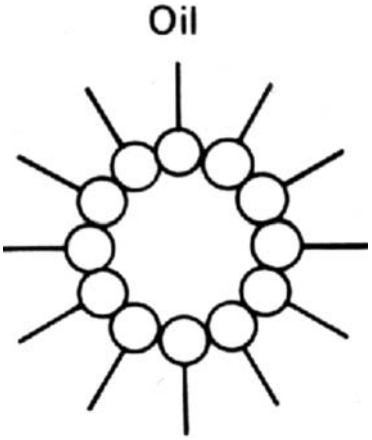
This column is intended not only as an education tool for non-technical people or beginners in our industry, but as a forum for those wishing to enlighten all about recent technology advances and new ideas. I hope experienced scientists will also contribute to this ideal and if you wish to do so please email me at: ric@cosmepeutics.net.au and I will publish your comments.



An emulsifier is a compound with two major molecular groups on the one molecule. The first is a hydrophilic part which determines its affinity for the water phase. The other end is a lipophilic part which itself dissolves in the oil phase. Figure 1 is a schematic representation of a molecule of the more conventional type of emulsifier. The hydrophilic end is usually represented as a ball (denoted **H**) while the lipophilic end (usually a long carbon-hydrogen chain) is often represented as a tail (denoted **L**).



It is easy to see how such a molecule would behave if dispersed in a single liquid. In figure 2a the emulsifier has been dispersed in oil. Since the cohesive forces between the hydrophilic (or lipophobic) ends is greater than the attractive forces between the hydrophilic ends and the oil, the emulsifier molecules will orientate as indicated in clusters or "**micelles**". The lipophilic end experiencing comparatively large cohesive forces from the oil phase are happy to extend outwards into the oily environment.



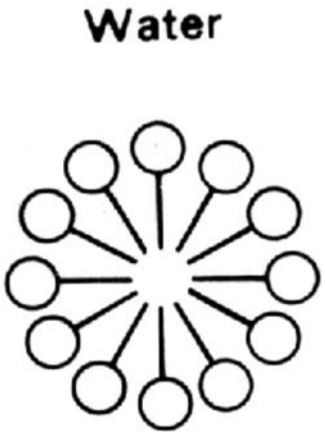


Figure 2b indicates the opposite orientation encountered when the same emulsifier molecules are dispersed in water or hydrophilic media. The same rules apply in that the lipophilic ends will form clusters in order to escape the watery environment.

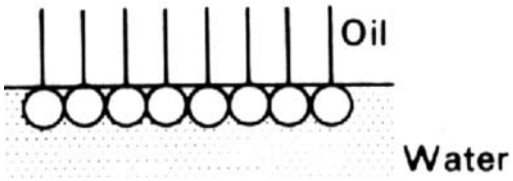
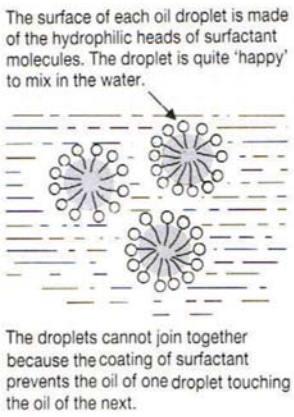
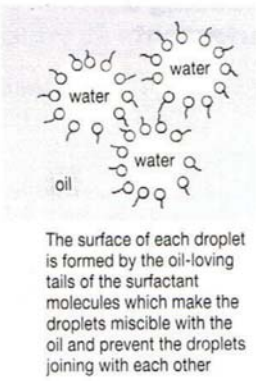


Figure 2c depicts where an emulsifier has been added to a mixture of oil and water. As expected the emulsifier has migrated to the oil-water interface.

If now an emulsion is formed, usually by taking the form in 2c. above and applying strong agitation (stirring or shaking), one phase will break up and form spherical internal phase droplets which will be surrounded by emulsifier molecules and in turn the external phase. When the emulsion is formed the phase that will become the **Internal Phase** (the oil in an Oil-in-Water emulsion or water in a Water-in-Oil emulsion) is broken up into small droplets and this is completely surrounded by the other or **External Phase**. The emulsifier aligns itself at the barrier between the two phases with the hydrophilic part dissolved in the water phase and the lipophilic part dissolved in the oil phase. This forms a third phase of Water-Emulsifier-Oil mixture which acts as a barrier between the two phases preventing the droplets from coalescing which would cause the emulsion to separate into its component phases.

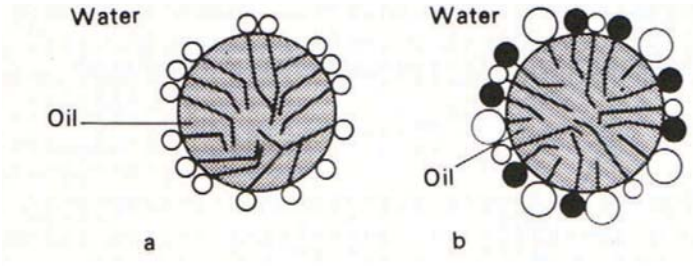
Two basic types of emulsions are **Oil-in-Water emulsions** and **Water-in-Oil emulsions**.





The most common type Oil-in-Water emulsions have the oil phase as droplets or Internal Phase emulsified into the Water phase that is called the External Phase or Continuous Phase. With Water-in-Oil emulsions the water phase appears as droplets or Internal Phase emulsified into the Oil phase which is called the External Phase or Continuous Phase.

Mixed emulsifier systems;



a Poor stability *b* Good stability
○ Low HLB—unsaturated
● Medium HLB—unsaturated
◯ High HLB—saturated

This happens because the different molecule sizes\provide a better surface coating, with less "gaps" in the emulsifier layer at the surface.

But what about serums or clear skin care products, these are not creamy in appearance as one would expect from the term "Emulsion". However, they generally are emulsions.

If a serum or clear product contains an oil phase component (eg oil soluble vitamin or fragrance) then this must be "emulsified" into the water phase in order to remain stable over the shelf life of the product. Some serums may be hazy to translucent and this seems to be acceptable, while clear products are emulsions with high HLB surfactants or high levels of surfactants (relative to the amount of oil phase component) that "solublise" the oil phase, creating a refractive index or such a small particle size that the oil phase becomes transparent.

Overall the effect on opacity is an effect on particle size usually governed by the chart of opacity vs particle size below;

> 0.5 mm	Globules clearly visible
0.5 mm to 1 um	Milky-White
1 um to 0.1 um	Blue-White
0.1 um to 0.05 um	Grey, Semi-Transparent
< 0.05 um	Translucent or Transparent

I mentioned Refractive Index – this is in optics, the refractive index or index of refraction of a material is a dimensionless number that describes how fast light propagates through the material. For example, the refractive index of water is 1.333, meaning that light travels 1.333 times faster in vacuum than in water. In some products it is possible to create an internal phase that has the same refractive index as external phase. In this case the product may appear transparent as light travels the same speed through both phases and with no interference, you cannot see the internal phase. As a matter of interest, this is generally how transparent toothpastes are made.

Now to some of the unique surfactants I have seen in recent years.

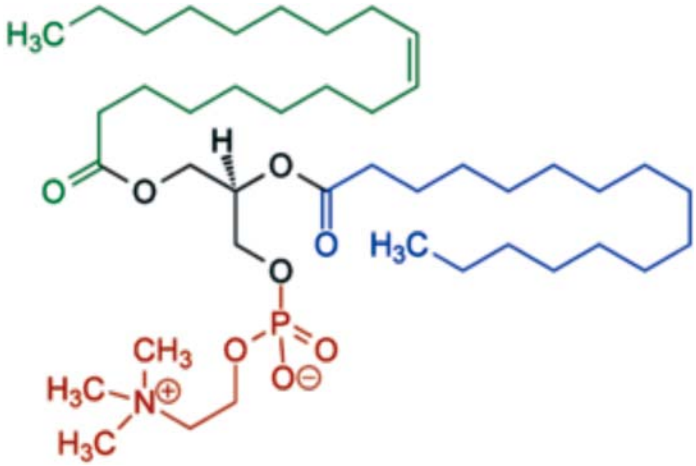
Hydrogenated Lecithin (and) C12-16 Alcohols (and) Palmitic Acid[7][8]

Composition / Structure

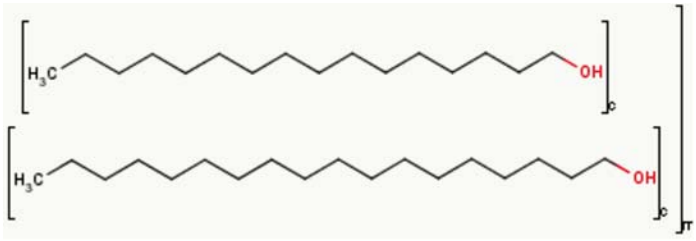
Lecithins are a natural component with important functions in living cells of humans, animals and plants. Our cells are separated into compartments by bio membranes. Their unique composition is needed for the complex processes in each cell. Human membranes mainly consist of membrane lipids which form the double layer surface of all cells. These lipids are so called phospholipids which have one water soluble end formed by a polar head group (phosphate group) and a lipid soluble end formed by a nonpolar tail (fatty acids). Within membranes polar ends point outwards, whereas unpolar ends point inwards. In this way they form the fluid mosaic model proposed by Seymour Jonathan Singer und Garth Nicolson (fig 1.)

The flexibility of a membrane is based on phospholipids. Besides phospholipids membranes also consist of integral and peripheral proteins as well as carbohydrates. The individual ratio of these components influences the flexibility and biological activity of a membrane. All of them are essential for cell metabolism.

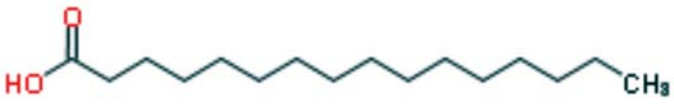
Hydrogenated Lecithin



C12-16 Alcohols



Palmitic Acid



Properties

This blend is a natural lamellar O/W emulsifier based on the emulsifying properties of phospholipids combined with other vegetable lipids. It contains saturated lecithin providing very important thickening properties and allow the formulation of white and odorless emulsions from cream to butter with a rich and ultra-sophisticated skin feel. Its lamellar biomimetic structure merge with skin acting as a "second skin" to restore the cutaneous barrier of damaged skin. The blend provides active properties with a moisturizing effect and acts as an efficacy booster due to its ability to improve the skin penetration and bioavailability of the active ingredients formulated with it.

Hydrogenated Lecithin products are characterized by high temperature stability and by contrast to the non-hydrogenated they can be stored at room temperature.

Are used in concentrations of approx. 0.5-3.0 %. If particularly high skin-smoothing properties are required, it should be used in concentrations up to 6 %. It is suited for water-based formulations, is water dispersible and tends to form W/O emulsions. It is suitable for hot (max 70°C) and cold emulsifications.

You can apply it to the aqueous and lipid phase or additionally to the finished formulation. Long heat terms are possible because the lecithins are hydrogenated. Solubilizers like ethanol or diols facilitate the application. Alternatively let it soak in the whole aqueous phase for 20 min. at 70°C. Soaking increases the consistency-forming properties. Fractionated lecithins are best suited as penetration enhancer because they tend to form liposomes. To obtain concentrated suspension of liposomes loaded with actives, add in a first step a concentrated solution/suspension of active ingredients in demineralized water. Simultaneously prepare the pre-solution of liposomes at 65°C consisting of aqueous ethanol and/or glycerin and phospholipids. In a second step add the active pre-solution to the proliposome solution at 65°C.

The ratio of the amount of proliposome solution to the aqueous active solution must be kept by

1:1 or maximum 1:2. In a third step gradually dilute the obtained concentrate to the final volume with demineralized water or aqueous solution (ratio 2:8 or 3:7 respectively) at room temperature.

Toxicity[21]

Nonocclusive application of Lecithin-containing liposomes to murine skin resulted in 30% penetration to the subdermis. In piglet skin, the same application resulted in 99% accumulating in the stratum corneum.

Lecithin is virtually nontoxic in acute oral studies, short-term oral studies, and subchronic dermal studies in animals. Lecithin is not a reproductive toxicant, nor is it mutagenic in several assays. In an oral carcinogenicity study, brain neoplasms were found in mice exposed to Lecithin.

In a subcutaneous carcinogenicity study, no neoplasms were found in mice and rats exposed to Lecithin. Adverse reactions to Lecithin in a metered-dose inhaler have been reported. Lecithin and Hydrogenated Lecithin were generally nonirritating and nonsensitizing in animal and human skin.

In general, liposomes are considered effective in capturing other compounds inside their spherical structure and delivering any such captured compound through the skin barrier. As a result, caution should be exhibited in formulating cosmetic products that contain these ingredients in combination with other ingredients whose safety is based on their lack of absorption or where dermal absorption is a concern.

Because of the possibility of formation of nitrosamines, these ingredients should not be used in cosmetic products in which N-nitroso compounds may be formed.

Based on the available data, Lecithin and Hydrogenated Lecithin are safe as used in rinse-off cosmetic products; they may be safely used in leave-on products at concentrations up to 15%, the highest concentration tested in clinical irritation and sensitization studies; but the safety of use could not be substantiated in cosmetic products likely to be inhaled.

Formulations

Organic Anti-ageing Cream

A	63.750	Aloe vera Juice
	3.000	Propanediol
	0.100	Sodium Phytate
B	0.300	Guar Gum
	0.300	Xanthan Gum
C	12.500	Vegetable Oil
	5.000	Organic Butters
	4.000	**Hydrogenated Lecithin & C12-16 Alcohols & Palmitic Acid**
D	2.500	Preservative
E	5.000	Active ingredients/extracts
	2.500	Sodium Hyaluronate
	0.500	Essential Oils
	0.500	Natural Tocopherols (alpha/beta/gamma/delta)
	0.050	Rosmarinus Officinalis [Rosemary] Leaf Extract

Next Issue – Part 46 – Mild or Unique Surfactants *continued*

Diving into skin microbiota to develop new generation of skincare products

by Robe P[1], Jarrin C[1], Vilanova D[4], Dupont J[1], Chapuis E[2], Venera E[3], Auriol D[1], Lefèvre F[1] and Reynaud R[2]

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Abstract

Metagenomics aims to characterise the diversity, the genetic complexity and the metabolic potential of a microbial community in a particular environment by analyzing the global nucleic acid composition without the need to cultivate the individual members of the community. The present study first aims to establish and experiment the whole technical workflow when considering the left and right forearm of a panel of 19 healthy volunteers. The bacterial diversity in the forearm area and the level of interindividual variability is characterised and compared with existing data. This study inaugurates an intensive set of actions to determine the impact of active ingredients containing cosmetic formulas on the skin microbiota.

Introduction

In the wake of the numerous studies devoted to the intestinal microbiota and the demonstration of its major contribution to the human health, the study of cutaneous microflora has grown considerably over the last 10 years and the awareness of significance of skin microbiota today greatly exceeds the academic sphere of microbial ecology. Curing skin diseases such as acne, atopic dermatitis or psoriasis has long been a driving force to investigate the skin microflora. Understanding the complex interactions between the human skin and its inhabited microorganisms promises major developments in the field of dermocosmetics. Another major concern is also rising in the cosmetics field through the development of formulations preserving the natural microbial balance of healthy skins. Although highly acute today, the consideration of the skin bacteria is not a new approach. Already in 1956 the cutaneous bacteria responsible for axillary malodor were investigated (1) and in 1963, Shehadeh and Klingman (2) studied the impact of the topical application of antibacterial agents on the axillary flora. For decades, the study of human bacterial flora relied on a cultural approach, targeting the only microorganisms that could be cultivated in the laboratory. In the 1980s, scientists realised that microbes were much more ubiquitous, diverse and numerous than previously thought (3). Staley and Konopka (4) referred to the "great plate count anomaly", observing that count of cells obtained by cultivation were orders of magnitude lower than those directly observed under microscope. Since then it has become clear that a vast part of the bacterial diversity was underestimated by the cultivation approach. In the meantime, this cultivability limitation to have access to the global community of a defined environment was overcome thanks to considerable technical advances. After Sanger et al. revolutionised the sequencing technology (5), Woese and Fox (6) pioneered the use of the small subunit of the ribosomal RNA gene (so-called 16S rRNA gene) as an evolutionary chronometer, and Pace et al. (7) laid the foundations for molecular microbial ecology by analyzing naturally occurring microbial populations through ribosomal sequences. A tremendous acceleration of data acquisition first benefited to the study of intestinal microbiota, supported by the next generation of sequencing techniques (NGS). During the last 12 years, sequence-based profiling studies were applied to the skin and allowed to identify the main structuring factors of skin bacterial communities. Two founding studies clearly demonstrated that the composition and structure of the cutaneous bacterial communities are primarily determined by the skin location, whether a dry, moist or sebaceous area is

considered (8, 9). Many studies targeted specific areas including forehead (10, 11), palms (12), forearms (11, 13, 14), armpits (15, 16) or scalp (17). A second major point highlighted in all these studies was the very high level of inter-personal variability, which exhorts that clinical study should include a sufficient number of subjects. Fierer and co-workers (12) also shown a gender effect, women harboring a significantly higher bacterial diversity than men. Finally, the studies published to date have been produced across widely varying technical routes, in terms of sampling (swabbing, scrubbing, scraping), DNA extraction (DNA extraction kits), amplification of rDNA 16S gene (16S variable region, primers pair) and sequencing (Sanger technology, Roche 454 FLX pyrosequencing, Illumina® sequencing technology). Although this amount of knowledge provides a valuable reference on the resident and transient skin microflora and what bacteria are expected on the skin, no study can claim an absolute definition of the typical profile of a healthy skin microbiota.

In this work, we focused on the study of skin microbiota in the dry zone of forearm of a panel of 19 women enrolled on a dry skin criterion. In the absence of technical consensus, the first objective was to establish the whole technical workflow, from sampling to bioinformatics analysis, and to assess the ability to produce reliable sequencing data. The second objective of this work, carried out under controlled clinical study conditions, was to characterise the bacterial diversity in the forearm area, to measure the level of inter-individual variability and to confront these data with the prior art. The third objective was to build a proprietary database relying on our specific workflow, allowing comparisons with incoming studies, and thus providing a deep characterisation of the healthy skin microbiota. Then, this study is the preliminary step towards the implementation of future interventional and longitudinal studies to determine the impact of cosmetic formula or active ingredients on the cutaneous microbiota.

Experimental section

Sample Collection. A total of 19 healthy women ranging in age from 18 to 50 years (mean age: 39.5±1 years) with a skin color ranging from I to IV according to Fitzpatrick's phototype scale and satisfying the inclusion criteria of dry forearm, i.e. Corneometer® (Courage – Kazaka electronic GmbH, Köln, Germany) values lower than 40 a.u., were recruited the last week of April 2016 at the Givaudan Research Center (Pomacle, France). Exclusion criteria included history of allergy and/or particular reactivity to cosmetic products, exposition to the sun or UV rays in an excessive way one month before sampling, current cutaneous affection (eczema, inflammation, scars ...), a surgical intervention one month before sampling, pregnancy or breastfeeding during the last 6 months or ongoing.

All volunteers provided a written informed consent before the start of the study. The skin bacteria were collected from the right and left volar forearms of the 19 volunteers (50 cm^2), by a non-invasive swabbing method, using sterile swabs moistened with a sterile solution of 0.15 M NaCl. Swabs were transferred at –20°C and kept frozen until DNA extraction (38 samples).

DNA extraction. DNA extraction was performed using the PowerLyzer® PowerSoil® DNA Isolation Kit (Mobio Laboratories, Inc., Carlsbad, USA), with the following modifications. The tip of each swab was detached with a sterile surgical blade and transferred in a 1.5 mL tube to which 750 µL of Bead Solution has been added. The sample biomass was suspended by stirring and pipetting and the biological suspension was transferred to a bead beating tube. The remaining steps were performed according to the manufacturer instructions. Concentration of DNA was determined using the QuBit dsDNA HS fluorometric quantitation kit (Invitrogen, Carlsbad, USA) according to the manufacturer instructions.

DNA amplification and sequencing. 16S rRNA gene sequencing was performed with the MiSeq device (Illumina, Inc., San Diego, CA, USA) through a 500 cycle paired-end run. The V3V4 16S variable regions were targeted using the primer set 16S-Mi341F (5'-CCT ACGGGN GGCWG CAG-3') / 16S-Mi805R '-GACT ACHVG GGTAT CTAA TCC-3'), producing amplicons of about 460 bp.

PCR1s were performed as follows: 8 µL of template DNA (0.2 ng) were mixed with 5 µL of each reverse and forward primers (1 µM), 5 µL of KAPA HiFi Fidelity Buffer (5X – Kapa Biosystems, INc., Wilmington, MA, USA), 0.8 µL of KAPA dNTP Mix (10 mM each), 0.7 µL of RT-PCR grade water (Ambion®; Thermo Fisher Scientific, Waltham, MA, USA), and 0.6 µL of KAPA HiFi hotstart Taq (1 U/µL), for a total volume of 25 µL. Each amplification was duplicated, and duplicates were pooled after amplification. PCR1 cycles consisted of 95°C for 3 min and then 32 cycles of 95°C for 30 s, 59°C for 30 s, and 72°C for 30 s, followed by a final extension at 72°C for 3 min, with a MJ Research PTC200 thermocycler (Bio-Rad; Marnes-la-Coquette, France). Negative and positive controls were included in all steps to check for contamination. All duplicate pools were controlled by gel electrophoresis, and amplicons were quantified using fluorometry.

Libraries ready for analyses were then produced following the Illumina® guidelines for 16S metagenomics libraries preparation. Briefly, the PCR1 amplicons were purified and controlled using an Agilent 2100 Bioanalyzer (Agilent Technologies, Santa Clara, USA). To enable the simultaneous analysis of multiple samples (multiplexing), Nextera® XT indexes (Illumina®) were added during PCR2 using between 15 to 30 ng of PCR1 amplicons. PCR2 cycles consisted of 94°C for 1 min and then 12 cycles of 94°C for 60 s, 65°C for 60 s, and 72°C for 60 s, followed by a final extension at 72°C for 10 min. Indexed libraries were purified, quantified and controlled using an Agilent 2100 Bioanalyzer. Validated indexed libraries were pooled in order to obtain an equimolar mixture.

The run (500 cycles) was achieved on MiSeq sequencer (Illumina®) using

the MiSeq Reagent Kit v3 600 cycles (Illumina®). The libraries and the MiSeq run were performed by the GeT-PlaGe platform (INRA, Auzeville, France).

Data analysis. After the MiSeq run, raw data sequences were demultiplexed and quality-checked to remove all the reads with ambiguous bases. Indexes and primers sequences were then trimmed, and the forward and reverse sequences were paired. The paired-sequences were then treated using in-house pipeline first to remove chimeras and reads with PCR errors and second to split sequences into Operational Taxonomic Units (OTUs, a cluster of similar sequence variants of the 16S rDNA marker gene sequence which is intended to represent a taxonomic unit of bacteria species or genus depending on the sequence similarity threshold) at a 1% dissimilarity level. Good quality binned paired-sequences were mapped to the SILVA SSU Ref database (Release 123; https://www.arb-silva.de/) for taxonomic assignation. Data normalisation and analyses were done using R statistical computing environment (v3.2.0 available at https://www.r-project.org/ – R core team (2014)) using Bioconductor package (mainly Phyloseq and Deseq2 libraries, available at http://www.bioconductor.org/) and STAMP v2.1.3 (18).

Results and Discussion

Sequencing depth and diversity estimates. The implementation of the MiSeq sequencing on the 38 samples generated 6.5 million of paired-end reads of 250 bases corresponding to 1.6 Gigabases (Table 1). After trimming, merging of reads pairs, filtering and binning, 1.9 million of qualified sequences were retained for downstream analysis (about 58.5% of raw reads). The average length of amplicons varied between 413 and 420 base pairs (mean ± standard error=416 ± 0.4). For the three volunteers S001, S011 and S018, the number of qualified sequences for the right forearm sample was lower than 3,000 and these three data sets were therefore excluded. The downstream analysis was then produced on at least 43,916 sequences per sample (mean ± s.e.=53,808 ± 855). This substantial sequencing depth, allowed herein by the MiSeq sequencing technology, is unparalleled compared to the studies previously devoted to the forearm microbiota profiling, with only 203.5 ± 2.7 sequences per subject using Sanger technology (8) and 19,123 reads per sample through 454 sequencing (14).

Three metrics were addressed to estimate the within-individual diversity (Table 1). The observed species metric is the number of OTUs identified at a 1% dissimilarity level. The number of OTUs (mean ± s.e.=951 ± 40.2) has varied consistently among the samples, ranging from 319 to 1430 detected OTUs. This observed diversity exceeds the average number of 182 and 133 species-level OTUs previously detected on forearm skin by Gao (13) and Staudinger (11), respectively. The Chao1 non-parametric estimator uses the frequency of rare species and is commonly taken into account to estimate the number of undetected species. Sensitive to the number of singletons (species captured once) and doubletons (species captured twice), the Chao1 estimator will estimate greater species richness than it would for a sample without rare species. The Chao1 estimator (mean ± s.e.=1190 ± 49.1) also varied among the samples, ranging from ≈ 435 to 1789 estimated species (Table 1). The number of observed OTUs in our study therefore represents about 79.9% of the Chao1 estimated richness. This result means that, despite the sequencing effort produced in this study, stronger than in previous studies on the forearm, rare OTUs are still abundant and a greater sequencing effort is therefore necessary for an exhaustive description of the microbiota.

The Shannon's index is a widely used index of diversity, which accounts for both abundance and evenness of the species present in the community. The Shannon index varied to a lesser extent between the samples, from 2.55 to 4.92. It is commonly admitted that the Shannon index varies between 0 and 5. Thus, samples with a Shannon index of 2.5 have moderate diversity, and those with index close to 5 have high diversity.

These indexes revealed a gradient of bacterial diversity from moderate (volunteers S018, S019) to high (volunteers S005, S007, S013), in agreement with the previous report of Grice et al. (19) who stated that the dry body sites are the most diverse.

Symmetry of left and right forearms. The hypothesis of a laterality effect was first examined through the comparison of the diversity level. No comparison between the left and right forearms (16 volunteers) was statistically significant by a Wilcoxon-rank sum test (a non-parametric test alternative to the Student's t-test for matched pairs when the population is not assumed to be normally distributed) considering the Chao1 estimator ($P=0.776$) or the Shannon Index ($P=0.979$). A scatter plot showing the relative abundances of genera with a relative abundance higher than 0.1% within the left and right forearms was produced using the STAMP statistical software (Figure 1). The left and right forearms appear highly correlated (Pearson Correlation, $P<0.0001$, $R^2=0.987$), which was confirmed using the White's non-parametric t-test (P value ranging from 0.063 to 0.998) (20). This absence of significant difference between the left and right forearms is in agreement with the conclusions of Gao's work (13) and is a valuable information for the implementation of interventional studies relying on the application of distinct formulas on both forearms. For the downstream analyses, normalised data were averaged on left and right sides (16 data sets) and the three data sets available on the only left side (subjects S001, S011 and S018) were also retained.

Taxonomic profiling of forearm microbiota. Twenty-six phyla were detected across all data sets, far exceeding the 8 phyla (the hierarchy of biological classification is as follows : domain, kingdom, phylum, class, order, family, genus and species) previously detected on forearm (11, 13). This confirms that increasing the sequencing depth provides access to a much wider diversity. Only nine phyla were shared by the 19

subjects and 18 phyla were shared by at least half of the subjects. Most of the sequences were attributed to four phyla; Actinobacteria (36.8%), Proteobacteria (28.4%), Firmicutes (24.6%) and Bacteroidetes (8.2%) representing 98.1% of the overall assigned sequences, in agreement with previous reports. A Principal Component Analysis (PCA, a procedure for identifying a smaller number of uncorrelated variables called "principal components" from a large set of data) based on the relative abundance at the phylum level was then performed to visualise the dispersion of the forearm samples and the relatedness among subjects (Figure 2). With 64.6% and 21.8% of variation explained on the two first axes (the two principal components), PCA reveals an apparent clustering of samples in four groups. The relative abundances of the four main phyla were reported and averaged, based on the sample PCA clusters (Table 2). A first cluster (4 samples) is dominated by the phyla Proteobacteria and Bacteroidetes and was named cluster PB. A second cluster (4 samples) is dominated by the phyla Proteobacteria and Actinobacteria and was named cluster PA. The FA cluster contains two samples and is highly dominated by the phyla Firmicutes and Actinobacteria. The A cluster contains 9 samples and is mostly dominated by the phylum Actinobacteria. This clustering approach reveals a strong level of interindividual variation already observed from the phylum taxonomic level.

In total, 725 genera were detected, among which 72 genera were shared by all the subjects and 141 were only present in one subject. The 20 most dominant genera accounted for 81.2% of the assigned sequences and three genera represented 31.9% of overall sequences: Propionibacterium (12.47%), Corynebacterium (11.93%) and Staphylococcus (11.83%). When comparing with the study of Gao et al. (13), based on a Sanger sequencing, the sensitivity of detection at the genus level we obtained with the MiSeq sequencing technology is much greater; these authors only detected 91 genera on 6 volunteers, among which only 6 genera were shared by all subjects and 15 genera by at least 4 subjects.

A heatmap was constructed on the normalised relative abundances with the STAMP software to visualise the most abundant genera and the clustering of the samples. A hierarchical clustering was performed using the unweighted pair group method with arithmetic mean (UPGMA) method (21) (Figure 3). A high level of interpersonal variation is observed. A first level of variation affects the most dominant genera Corynebacterium, Propionibacterium and Staphylococcus, and would lead to distinguish individuals with low and high abundance for a given genus. As an example, subjects S012, S014, S017 and S018 from the PB-identified phyla group are low in Staphylococcus (mean 5.0%) whereas S015 and S021 from the FA phyla group are high (mean 19.9%). A second level of variation relies on the specific signatures of some subjects for a given genus of secondary rank, as S011, S016 and S18 showing a high proportion of Micrococcus (11.8%), Dietzia (17.9%) and Chryseobacterium (42.1%), respectively. Finally, as observed at phylum level, a clustering of people was observed at genus level (Figure 3). These clusters based on microbiota composition could be comparable to the (although controversial) notion of enterotypes described by Arumugam and coworkers in 2011 (22) for gut microbiota.

Such levels of variation occurring in a recruited panel of subjects must be considered in the frame of interventional studies, when the global and specific impact of a treatment on the skin microbiota is investigated. The recruitment of sufficient volunteer panels is thus confirmed as a critical parameter to be able to describe accurately the profile of skin microbial communities and to monitor their changes following a directed intervention.

Conclusion

After demonstrating during the last thirty years that the gut microbiota (constituted of a number of microbial cells about 10 times higher than the number of the cells of the human body) is a key player for human health and well-being (the second brain), it becomes more and more clear that the skin microbiota impacts not only skin health (pathogenic conditions) but also skin beauty (healthy conditions). Metagenomics is a discipline at the interface between Microbiology, Genomics and Environment that has attracted a large attention at the end of the 90's for the discovery of new substances and new enzymes or pathways (23, 24). Nowadays, with the tremendous progresses in genome sequencing (first of all, the discovery of PCR in the 80's and second, the setting up of next generation sequencing techniques about ten years ago), metagenomics tools are more and more applied in comparative investigations to understand and to characterise precisely the interactions between the environment (for instance, a product), the human body (for example, the skin) and the microbiota (for example the skin microbiota). Nevertheless, at the present date, very few studies are dealing with the study of the relationships between the skin microbiota and the healthy skin (25). Very few studies concern the transformation of active substances by the skin microbiota, the Stratum Microbium®: one of this study (26) states that the skin microbiome contains alpha-glucosidases genes that allow the conversion of Trihydroxybenzoic acid glucoside into Trihydroxybenzoic acid and glucose.

The present study is clearly devoted to establish and experiment the whole technical workflow, from sampling to data analysis through high throughput sequencing at a scale consistent with classical clinical studies. It is addressed to a panel of 19 volunteers and the left and right forearms were selected as the sampling zones (50 cm^2). Such dry zones are particularly poor in microbial content but nevertheless it was possible to isolate sufficient amounts of DNA to carry out the complete process.

The forearms microbiota compositions at the phylum and genus levels confirm and complete the prior art. The absence

of significant difference between left and right forearms microbiota, also already described in the literature, highlights the good repeatability of the analyses. Despite a shared skin physiology between volunteers, an important inter-individual diversity has been rather surprisingly observed, even at the phylum level. This important inter-individual variation imposes to consider cohorts as large as possible in order to lower the effect of this variation.

This study contributes to the global knowledge of the skin microbiome of the healthy skin. It is a part of a more general program which has the ambition to understand in a very deep manner the interactions between the environment (cosmetics ingredients and formulas), the healthy skin and the skin beauty.

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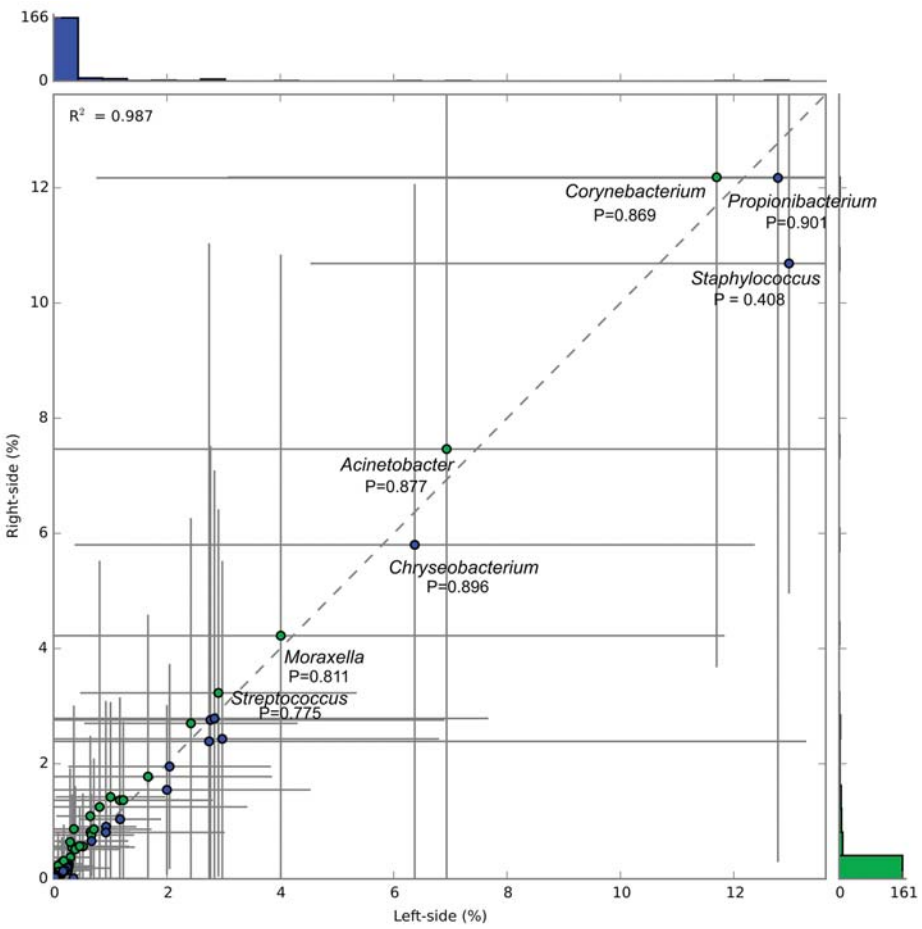

Figure 1 Scatter plot indicating the relative proportion of all 195 genera within the two forearms. The green and blue dots represent the percentages of each genus in the different samples and help visualise the genera that are more represented on the right and left side, respectively. This plot illustrates that the majority of genera within the forearm microbiota are present in low proportions (i.e., < 5%) and are very similar in the two sides. P values correspond to the White's non-parametric t-test

Subject ID	Forearm Side	R1 & R2 Read pairs	Merged pairs	Qualified Sequences	Average Length	Observed Species	Chao1 Index	Shannon Index
S001	Left	87417	58148	52173	419	980.00	1296.25	4.15
S001 *	Right	4987	3150	2878	419	na	na	na
S002	Left	89793	57354	52068	415	1094.00	1394.08	4.35
S002	Right	95972	59668	53725	415	1060.00	1387.01	4.44
S003	Left	91078	58437	50772	413	871.00	1015.24	3.64
S003	Right	104883	68451	55156	413	973.00	1252.84	3.73
S004	Left	99124	65841	59367	416	787.00	980.00	3.56
S004	Right	94380	61910	56766	415	751.00	981.58	3.14
S005	Left	89042	57880	48227	418	1430.00	1778.85	4.53
S005	Right	89398	57396	47974	416	1205.00	1573.04	4.23
S007	Left	79909	53222	45879	417	1395.00	1625.57	4.92
S007	Right	81609	54405	45658	416	1318.00	1619.13	4.91
S009	Left	97482	63696	57027	413	771.00	980.00	3.66
S009	Right	112730	75897	62742	413	800.00	1048.51	3.55
S010	Left	91153	59529	52933	417	994.00	1166.54	4.11
S010	Right	98442	62431	57155	419	971.00	1224.01	4.16
S011	Left	83159	53303	47040	414	981.00	1211.23	3.99
S011 *	Right	1618	1079	676	414	na	na	na
S012	Left	91254	62682	52417	416	1057.00	1307.38	4.34
S012	Right	89150	61152	51099	416	967.00	1194.53	4.40
S013	Left	102750	66545	58841	414	1424.00	1789.53	4.67
S013	Right	99391	66446	54066	413	1140.00	1485.49	4.26
S014	Left	90027	62207	54819	418	874.00	1073.27	3.63
S014	Right	81161	54637	47580	420	931.00	1191.65	3.66
S015	Left	75319	49905	43916	416	786.00	991.06	3.70
S015	Right	91671	59507	54470	414	1148.00	1366.90	3.83
S016	Left	82362	55329	51485	414	764.00	1007.83	3.28
S016	Right	99307	66332	61097	414	1058.00	1346.92	3.41
S017	Left	93837	62442	54060	420	977.00	1224.02	4.22
S017	Right	92251	63767	57600	420	901.00	1118.38	3.67
S018	Left	106298	75174	68147	419	565.00	754.11	2.69
S018 *	Right	4912	3238	2547	419	na	na	na
S019	Left	90323	56051	52342	414	319.00	434.93	2.55
S019	Right	91189	58279	53168	415	635.00	842.29	2.99
S020	Left	94020	59883	54929	413	811.00	1000.84	4.03
S020	Right	95564	62136	56435	414	798.00	935.69	3.88
S021	Left	94683	61583	56368	418	1003.00	1228.53	3.66
S021	Right	98492	61771	55775	420	734.00	837.15	4.36
Mean **		92703	60954	53808	416	951	1190	3.89
Standard Error **		1328.35	946.45	855.68	0.40	40.22	49.06	0.10

Table 1 Left and right forearms observations, at different steps of the analysis, for the 19 volunteers. Read pairs: raw sequences number; merged pairs: number of formed sequences by merging read pairs; qualified sequences: number of remaining sequences after primers, PCR errors and chimeras removal; average length: average nucleotides number of qualified sequences; na: not applied. Observed species, Chao1 and Shannon indexes: three alpha-diversity indexes calculated after OTUs clustering at 1% dissimilarity level.

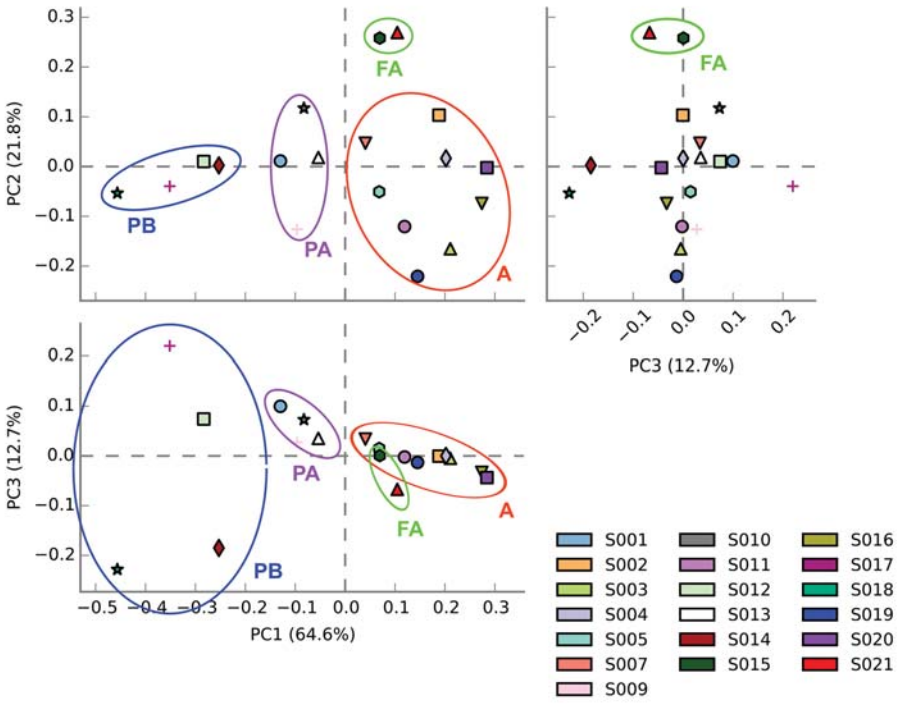

Figure 2 Principal Component Analysis (PCA) of phyla relative abundance of 19 volunteers. Each volunteer is plotted using a specific form and a specific colour on the first three axes (PC1 to PC3) produced by the analysis. The coloured ellipses delineate group of shared microbiota composition profile at the phylum level (A; FA; PA and PB – Table 2).

	Subjects	Phylum			
		Proteobacteria	Actinobacteria	Firmicutes	Bacteroidetes
PB	S018	43.4	6.3	7.2	42.5
	S014	32.5	18.0	16.8	31.7
	S017	63.2	15.9	16.9	3.3
	S012	49.5	17.3	20.5	12.2
	Mean (n=4)	47.1	14.4	15.4	22.4
PA	S001	41.9	28.1	24.3	4.9
	S009	36.5	34.2	10.8	8.4
	S010	34.7	25.7	33.5	4.4
	S013	33.4	32.6	25.5	7.3
	Mean (n=4)	36.6	30.1	23.5	6.2
FA	S015	18.2	29.0	47.7	4.1
	S021	11.4	29.9	47.8	7.6
	Mean (n=2)	14.8	29.5	47.7	5.9
A	S007	26.5	37.2	29.5	3.5
	S005	26.6	44.3	22.1	5.2
	S011	23.4	50.3	16.5	4.6
	S003	19.9	59.9	15.5	2.8
	S019	25.0	58.5	9.7	6.5
	S002	15.2	45.3	37.6	1.5
	S004	16.3	50.3	30.5	1.4
	S016	12.4	59.8	24.2	2.4
	S020	9.3	56.7	30.1	2.2
	Mean (n=9)	19.4	51.4	24.0	3.3
Mean (n=19)		28.4	36.8	24.6	8.2

Table 2 Average relative abundances in percent of the four major phyla observed on the right and left volunteers' forearms. Volunteers are clustered in four groups (A; FA; PA and PB) regarding the microbiota composition at phylum level. A: Actinobacteria, FA: Firmicutes – Actinobacteria, PA: Proteobacteria – Actinobacteria and PB: Proteobacteria – Bacteroidetes.

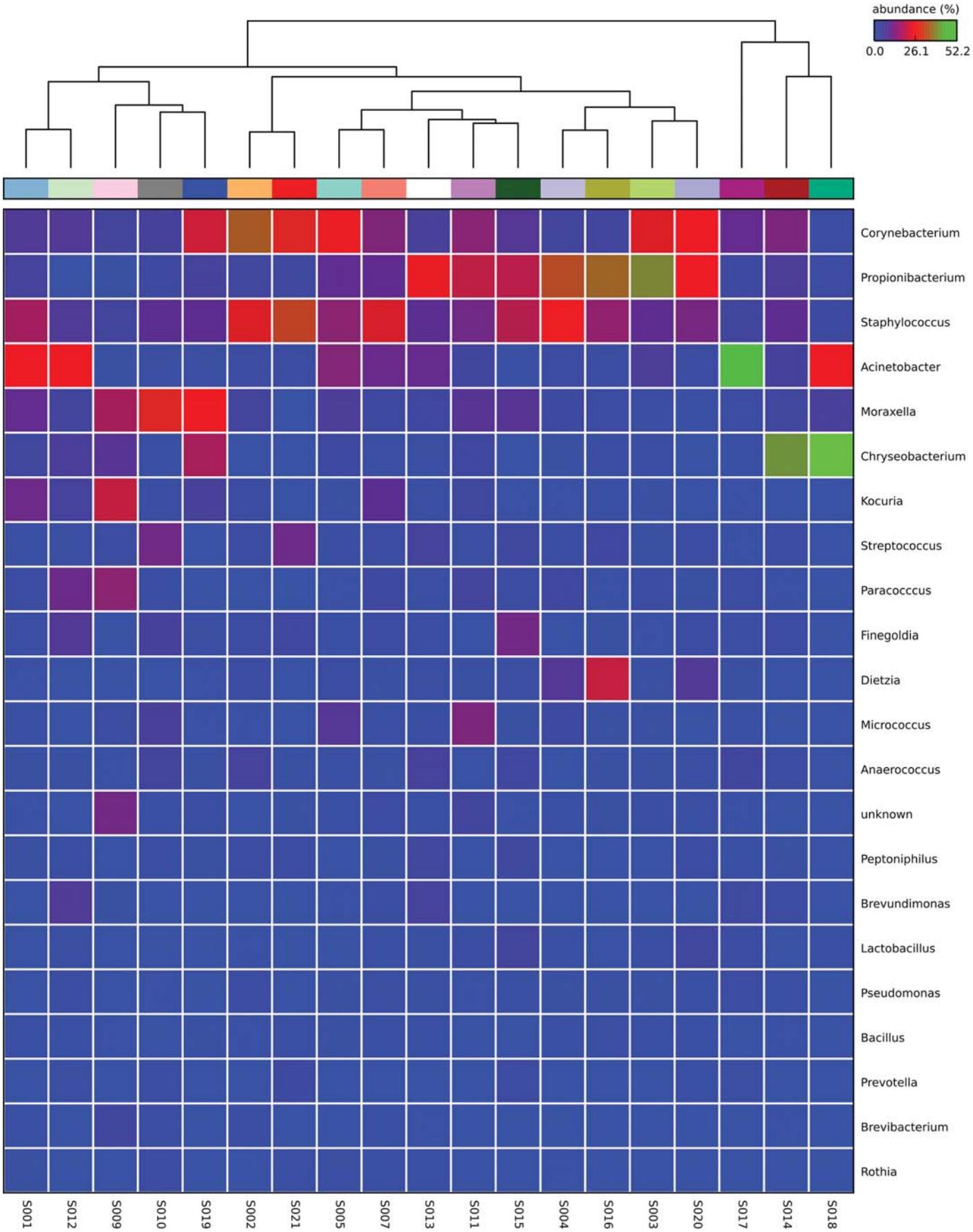

Figure 3 Dendrogram: the upper part represents the clustering of volunteers regarding the average composition of the microbiota forearm in terms of genera, using the Unweighted Pair Group Method with Arithmetic mean method (UPGMA). Heatmap: the lower part indicates the proportion of assigned sequences to each considered genus for each volunteer. The colour, from blue to green through red, highlights the different proportion of assigned sequences.

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