



# the science of beauty

Vol 10 No 2

November/December 2020



# ULTRAFINE ZINC OXIDES FOR SUN & SKIN CARE

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Refer to our article “Ultrafine Zinc Oxides For Sun & Skin Care” in this issue.  
Learn more about the A S Harrison & Co range of personal care ingredients –  
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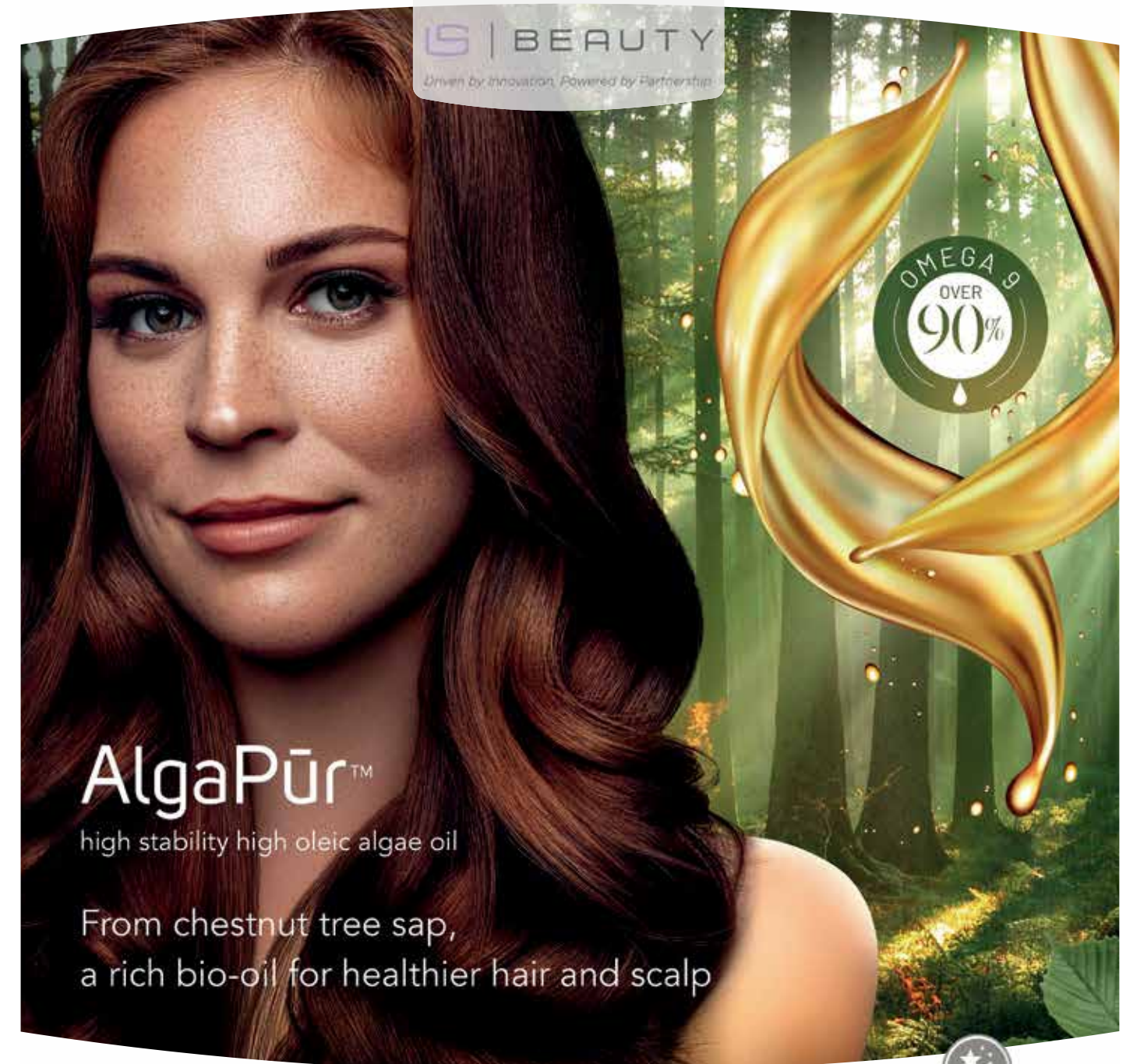
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**ASCC**  
**2021**  
11-13 MAY



**JOIN US AS WE RIDE THE  
ROLLER COASTER OF A-BEAUTY  
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## KEYNOTE SPEAKER



**Professor  
John Warner**  
*Founder in the Field of  
Green Chemistry*

## PLENARY SPEAKERS



**Ben Lazzaro**  
*CE of Australian Made  
Campaign Ltd,  
Certifying your Beauty Products*

**Sharon Kwek**  
*Mintel Expert Analyst,  
Beauty's Effect on Emotions*

**Dr. Patrice Bellon**  
*President at Cosmetoscent,  
Neurocosmetics, the Connection Between  
Psychology and Personal Care Products*

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More information at  
[www.ascc.com.au/annual-conference/](http://www.ascc.com.au/annual-conference/)





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The viewpoints and opinions expressed in the articles appearing in this magazine are those of the authors. The Publisher takes no responsibility for the information supplied.

# meet the team...



**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 auditing, 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.

**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.



**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.

**MICHELLE KANE** is the managing director of PharmaScope Pty Ltd, a privately owned contract manufacturer established in 2004. Michelle has over 30 years experience in the pharmaceutical and personal care industry, being involved at many levels from procurement, product development, manufacturing, financial management and staff training and development, to name a few... Being based on the West Coast always brings the added challenge of seeking niche product development solutions and working creatively to achieve manufacturing outcomes in a competitive marketplace for our clients global demands.



**PAM JONES** has worked in the Personal, Homecare and Pharmaceutical markets for more than 30 years. She has been working out of Asia since 1996 and is well versed and connected with the Asia Market. Her experience covers technical, sales, marketing, management and training roles. She has qualifications in Chemistry, Marketing and Management. Her company PCA Consulting is well known for its training programmes. Pam has worked with and consulted to companies such as ICI, Croda, Ashland, Huntsman, Reed Exhibitions (in Cosmetics) and Connell to name a few. She is currently serving on the ASCC Technical Committee and volunteers as Technical Editor for this magazine.



**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.

**JEN SEMPLE** is Innovation & Education Manager at Accord Australasia, the peak national body for formulated chemical products. She is passionate about communicating the benefits of our industry's products to wider society and has authored a number of public education websites such as furphies.org.au, sunsible.org.au and hygieneforhealth.org.au. Jen also manages Accord's sustainability initiatives and seeks opportunities to build relationships between industry and academia. She has a PhD in Chemistry and Graduate Diploma in Education, and is a member of the Royal Australian Chemical Institute.



**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.

**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.



**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.

**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.

**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





# President's Christmas Message

by Michelle Kane



At this time, one year ago, who could have even imagined what lay ahead for the year 2020?

In what started out as a year full of anticipation for the ASCC, like every other organisation, company and individual in the country, we were suddenly faced with the reality of Covid19 and having to find a path through uncharted waters.

We stood back in Australia and watched as the world seemed to falter. The initial uncertainty for our industry, the immediate impact on brand owners, disruption of raw material and packaging supply chains and the repurposing of manufacturing facilities all meant that concerns

were genuine for what the impact would be on our society and our members.

The events that were usually so well attended and promoted growth, networking and brought us all together including suppliers' days, educational workshops and lectures were immediately halted and our showcase event, our annual conference sadly had to be postponed and then ultimately cancelled.

Many months of work had already been volunteered for these events by dedicated members, and I think it fair to say there was a heavy weight that went with making those decisions, particularly for the 2020 Melbourne conference

committee. There was also a feeling of unfairness, as we see some of our members experiencing more difficult times with tighter restrictions due to location, or those with family overseas or other difficulties created by hard borders.

However, through all of this there has emerged a defiance to be held back, an enthusiasm to engage new ideas and optimism for 2021 to be something truly special for the ASCC.

We tackled our first online AGM, held three sold out webinars, and some States have been able to hold their first face to face events towards the end of the year.

During 2020 our membership

has continued to grow, with numbers now heading towards 800. More companies are joining our benefactors' program, we have over 18,000 followers on Facebook and a growing presence on LinkedIn and Instagram.

Most notably, we have received a tremendous amount of support from companies and members transferring their 2020 conference commitments to 2021. We also have eight new companies exhibiting at the Gold Coast for the first time. It is with a sense of optimism that we look forward to meeting face to face once again for our 53rd Annual Conference.

Work is progressing in the background to improve and

evolve areas of the ASCC and we hope these initiatives will add meaningful value to your membership in the future. My thanks to the various committees and contributors who volunteer their time to turn ideas into reality. We will be asking for membership involvement by way of a questionnaire, so please make sure you have your say when this arrives in your in box.

Although Christmas this year may not look like it normally does for many of you (who knows what will have happened by the time this goes to print) I would like to take this opportunity to wish you and your families a safe and enjoyable festive season, in the

best possible way you can. As we welcome 2021, let's focus on all the positives that lay ahead.

Thank goodness there are no travel restrictions applicable to Santa.

**Michelle Kane**

ASCC President



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# The Drive to Create!

by Julian Jones



We've all been there. Out of the blue an idea pops into our mind and we briefly wonder if it's a good enough one to pursue. An Anti-Gravity machine or a never-ending source of renewable energy or the answer to traffic jams! Who knows where the ideas come from? But it's what happens next that defines you as a creator or a dreamer!

If you're like most people, you think about your idea for a few moments and then convince yourself it's stupid or impossible or, if not impossible, probably already been thought of by someone else. Most of us have lots of ideas but don't follow them up with actions or at least some initial investigation. Creativity takes effort, persistence, stubbornness and a crazy belief that an idea is worth pursuing.

Elon Musk co-created PayPal, a crazy idea for simplifying online payments, way before buying things on the internet became the phenomenon it is today. He sold his share in it to eBay for US\$180,000,000. Not a bad return for an idea he developed from nothing! But the story doesn't end there. Because Elon is a creator, rather than retiring and living very comfortably for the rest of his life, he went on to create Tesla Motors – arguably the world's first successful electric car company, and then SpaceX, arguably the world's first and most successful

private space company. Oh, and along the way SolarCity solar roof tiles, The Boring Company Tunnelling company, Hyperloop transport and a bunch of other start-ups, conceived from crazy ideas.

The point is, creative people rarely stop after one creative success.

They are driven to think creatively and then develop those ideas into plans, actions and results.

As a species, we champion people who stand out for their creativity and success. Be it serial entrepreneurs like Musk or song writers and performers like the Beatles and the Rolling Stones, or political leaders, such as Nelson Mandela, who have the courage to stand up and fight for creative ideas and ideals, we recognise and celebrate them wholeheartedly.

What we don't recognise, in many cases, is the blood sweat and tears these creative people put in, usually over years and years to earn their success. All the hurdles of self-doubt, financial hardship and personal sacrifice they have endured are pushed aside as they become "overnight successes".

The drive to create may be hard wired into some people and not others but the effort those people put in to being creative and then delivering on that potential is what really separates them from those of

us who dream rather than create.

Next time you, or someone you know has a crazy idea, spend a bit longer thinking about it and maybe decide to put in some hard work to see if you could become the next Elon, Paul, Mick or Nelson!

Till next time...

Cheers,

Julian

# VALE

## Francis Anthony (Tony) Clauzel

*It is with sad news I inform you that Francis Anthony Clauzel, Tony to his friends, passed away October 7th 2020, after a 5-year battle with cancer.*

*With a Degree in Agriculture, Tony first came to Australia, 47 years ago from his Aruba/St.Lucia upbringing and Dutch heritage, to work for Schering, a German company that made many agricultural chemicals. In the early years he was working with the spraying of cotton and broad acre crops in outback NSW. Tony was the last of his original group that had not yet succumbed to cancer. He said he always knew that eventually he would have to fight it and fight it he did for these last five years.*

*He was General Manager for about 10 years at Aeropack (Sydney) that filled a number of aerosol products in the personal care area, in particular hairsprays and antiperspirants.*

*In 1996 Tony established CP Technologies (Brookvale), a contract manufacturer of various aerosol products ranging from personal care to automotive, for a number of leading brands (e.g. Wella, Fudge and Nulon) The company had particular success with post foaming gels, using Bag-in-Can technology. In 1997 CP Technologies,*

*under Tony's leadership, won an industry award with the Aerosols Association for using PECAP technology, which helped overcome the problem of premature pressure reduction in aerosols using compressed gas propellents.*

*In 2006, Tony joined with David Jacobs to form the companies, Natural Extracts/Natroceuticals, where he developed a number of products utilising the mineral Zeolite, which Tony heavily promoted until the end. He often went out of his way to explain to many customers and friends the medical benefits of using Zeolite to resolve medical problems.*

*He was very intelligent (spoke at least five languages), careful, organised, had a good sense of humour, was a good cook and cared for many others often going out of his way to help those he met, whether business related or not. Tony was always very accommodating with customer requests and was never afraid of a challenge. He will be sadly missed.*

*Contributions by Ric Williams, George Orban, David Jacobs*



# Manufacturing and the Humble Art of Mixing.

by Michelle Kane



As a manufacturer we make many different product formats from liquids and gels, waxes and balms, pastes and powders. Despite these being very different product types, often there is commonality in ingredients and similar procedures, but we must always respect what equipment is designed to do when producing a finished product. One key process when manufacturing any product is mixing. Which mixer you chose can be the difference between having a good day or having a long day.

Clearly a deodorant, lipstick, shampoo or toothpaste are completely different types of products. What are the challenges in mixing these varying product formats and what can we do to ensure we are using the best option to maximise raw material and energy efficiencies? I know it's a question you've always wanted to ask

Let's start with shampoo as an example. A typical formula might include water, surfactants, conditioners such as fatty oils or waxes, actives, silicones, viscosity modifiers and lastly pH adjusters, preservatives, colours and fragrances.

When using a conventional propellor agitator, a number of issues can be

encountered.

- Aeration must be avoided as this can lead to clouding of clear shampoos and issues where packaging is filled by volume rather than weight.
- Silicones are immiscible with water and can be chemically incompatible with some surfactants, making them difficult to emulsify
- Agitators do not generally produce sufficient sheer to reduce silicones to the smallest droplet size to obtain a stable emulsion / suspension. They tend to vortex, increasing aeration.
- Many ingredients have a much higher viscosity than water and when trying to blend the higher viscosity materials they can form globules which then are just moved around the vat without actually being properly dispersed.
- Some thickening agents require very high sheer to be activated.
- Sodium Chloride is often used to thicken shampoos however as the viscosity increases it becomes more difficult to adequately mix without aeration.

Now let's look at a toothpaste, which is typically either an abrasive paste or a gel. A large percentage of a paste formulation contains powders, the fillers and abrasives such as calcium

carbonate, sodium bicarbonate and hydrated silicas. Here our mixing issues can be:

- Ingredients like hydrated silicas have a low density and are very difficult to incorporate and wet out
- Abrasives can be incorporated as a slurry but this mix may require deagglomeration
- Aeration is a major problem when manufacturing toothpastes especially when incorporating the powders

Different types of mixing equipment are utilized in the various stages of toothpaste production. Proper mixing at every step is required to achieve consistency and ensure that each ingredient fully imparts its intended functionality. Viscosity, yield, value, thixotropy, density, taste, stability and appearance of the final toothpaste are characteristics directly affected by mixing.

Taking now a lipstick, product quality and consistency can be improved and batch processing times reduced in we pay attention to the type of mixer used. Dispersing the powdered pigments is critical to obtain the required consistency and homogeneity. High viscosity wax formulations often use multi agitator



equipment and planetary style mixers depending on their flow characteristics. Using an agitator with side scrapers for wiping the bottom and sidewalls of the vats allows for more accurate temperature control.

There are various types of mixers available, all with strengths and weaknesses for specific product types. Sweep mixers, propellor mixers, cavitation disks, pitch bladed paddles,

ribbon mixers, emulsifiers both inline and batch and high sheer mixers, bottom entry mixers, to name a few.

When a manufacturer has issues such as long mix times, unstable emulsions, fisheyes, inadequate dispersions, overshearing or inconsistent product quality then a review of the mixing equipment and mixing procedures can often provide solutions. By choosing the correct mixing solution directly

MICHELLE KANE is the managing director of PharmaScope Pty Ltd, a privately owned contract manufacturer established in 2004. Michelle has over 30 years experience in the pharmaceutical and personal care industry, being involved at many levels from procurement, product development, manufacturing, financial management and staff training and development, to name a few... Being based on the West Coast always brings the added challenge of seeking niche product development solutions and working creatively to achieve manufacturing outcomes in a competitive marketplace for our clients global demands.

improves process efficiency. This can deliver benefits in less energy consumption, increased through-put and most importantly greater product quality, consistency and stability.

Now when you go to make your Christmas cake, you'll just might be thinking a little more about how you mix it, what you use to mix it, and how long you mix it for! # Go Aussie manufacturing!

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## Making sure your Goods are Insured in Transit

Usually known as Marine Transit Insurance (which often confuses because it covers transit by sea, road, rail, or air.)

In the Beauty Industry, whether you are a contract manufacturer, wholesaler, importer, exporter, distributor, or retailer, at some stage your goods in stock, materials, packaging, parts, finished goods, etc. are likely to be in transit. By sea, air, land, or rail. If you have arranged transport or a 3rd party is transporting your goods from one or multiple locations to others you should check to ensure the right insurance cover is in place.

Ask yourself, am I covered for events like the destruction, loss, theft, damage, etc to my goods whilst in transport. If these types of events occur who will bear the brunt of the financial loss and cost? Can my business afford to wear such a cost?

For peace of mind it is worth the exercise of finding out when your goods

are transported, if they are insured—check with your couriers, and other 3rd parties such as those who are supplying the goods. Likewise, if you are sending goods out, absolute agreement needs to be in place, who is responsible whilst in transit.

Marine Transit Insurance is designed to minimise the financial loss incurred by you in the event of an accident, natural hazard, or other mishap.

In fact, to dig a bit deeper, Marine Transit Insurance generally covers you for such events as:

1. Physical loss, destruction or damage caused by an accident or the deliberate act of a third party for your goods transported.
2. Defined events causing damage & loss to your goods such as:
  - Fire, flood, lightning, hail, or



by James Gillard

- explosion
  - Collision, jack-knifing, overturning and/or derailment.
  - Impact, malicious damage
  - 3. Delays caused to transported goods.
- Insurers can offer cover for one off single transits or annual policies. Cover can also be selected for insurance within Australia and/or overseas for imports & exports

### Completing the Insurance Proposal form

When seeking a quote for Goods in Transit/Marine Transit Insurance you will need to complete a proposal form where the following details are typically asked for.

1. General details such as business to be insured, contact details, website address, when cover is required to/from
2. A clear description of the goods being transported
3. What transits are taking place within Australia, maximum value of any one conveyance and annual value of transits?
4. What transits relate to imports, maximum value of any one

conveyance and annual value of transits?

5. What transits relate to exports, maximum value of any one conveyance and annual value of transits
6. For international transfers of goods list the principal countries goods are being transferred from and /or to
7. Some insurers will ask how the goods are being transported such as road (own vehicles), road (professional carrier), rail, parcel post, sea, or air and whether there are special conditions such as refrigerated goods.
8. Past insurance claims history

### Insurance Claims Example

- An importer of goods had arranged for their goods to be transported by truck from the international airport

to their premises and the transport company held the goods in their depot overnight. During the night, the depot was flooded.

The claims cost for the damaged goods was \$50,000 less the excess of \$250.

### Here to help you

If you would like to learn more about Goods in Transit/ Marine Transit insurance or discuss your current insurance coverage and need a professional advisor to review your policy or risk, and to discuss your own individual circumstances, please contact me on Ph. 0418341260 or Philip Watson Ph. 0423791368 to assist you with any insurance enquiry you may have.



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# Why work with an **Australian** Packaging Supplier?

During these current times, we have seen a lot more Australian brands start turning to local suppliers for their packaging requirements. With COVID-19 we have seen countless companies let down and out of stock of packaging, which leads to them failing to sell their products. These brands have now been coming to us at Weltrade Packaging for help. We have heard some horror stories of packaging getting delayed by 3-6 months, packaging turning up damaged, incorrect sizing, mis-printed, terrible quality and much more. As a supplier that prides itself on service and quality, we take over all your hassles and make sure you receive packaging on time and to what you expect.

At Weltrade Packaging we specialise in beauty and wellness packaging and in particular we supply made to order bottles, jars, tubes, pouches and dispensers. With both onshore and offshore manufacturing capabilities we offer custom colouring/printing and a range of different sizes and shapes to suit

every need.

There are countless reasons why I believe you should deal with us for your packaging requirements, however I have made a short list of 4 below:

## 1. Experienced

We have been in the business for a long time, personally I have been in the packaging industry for over 26 years. Weltrade Packaging is Australian owned and has been running since 2005 and we have a well established trained team who are experts in this field. We will guide you along the whole process from pre-production phase right through to delivery of goods. Packaging your product can be a daunting experience, especially if you have not done it before. Through our experience, our team will guide you with the correct packaging that functions well and looks great.

## 2. Stress-Free Personalised Service

You no longer have the stresses of worry about what packaging to order,



by Steve Welsh

lead times, freight and logistics. We will deal with everything regarding your packaging right from the get go and deliver directly to you or your manufacturer so that you can focus on making more sales, rather than worry about your packaging.

We will be there for any questions regarding your packaging and keep you updated along the way. We believe in providing exceptional customer service with our team available via phone, email, online zoom calls as well as in person, we want you to feel comfortable and receive the type service you deserve. We will also give you access to our online customer portal that allows you to keep track of all your orders, quotes, accounts and more.

## 3. Quality Packaging

We pride ourselves on supplying you with packaging that is up to our standard. We have been dealing with the same factories for many years and have various quality procedures in place. We schedule annual audits of our offshore factories and have a team in Asia who regularly audits and approve finished

goods.

We are an ISO 9001 approved company which means that we adhere to a well-known set of quality management standards put forward by the International Organisation for Standardisation (ISO)/ISO Compliant, that covers processes to maintain quality and strive for better service in both the offshore and Gold Coast based manufacturing plant.

## 4. Education

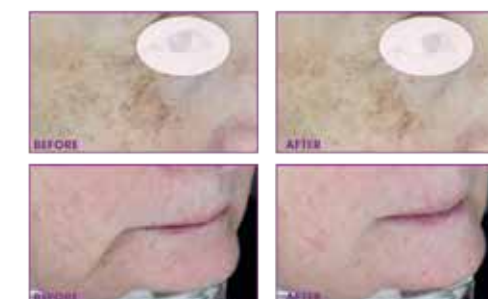
With hundreds of different resources available at the tip of your fingers we supply packaging education through online videos, articles, social media, our website and much more. We are available throughout the working week to answer any questions you may have regarding your packaging and help educate you, so that you learn about what is suitable for

your product.

If you would like to start your packaging journey with Weltrade Packaging, please do not hesitate to get in touch with one of our team members on 07 5597 0102 or email us at [info@weltradepackaging.com.au](mailto:info@weltradepackaging.com.au)



Officinol™ is a natural plant extract from Australian sugarcane extract (*Saccharum officinarum*). Rich in polyphenols, anti-oxidants, minerals, nutrients, organic acids (AHA's) and essential amino acids. Officinol™ reduces the signs of ageing and breakdown by inhibiting many of the enzyme pathways that cause skin damage.



### BENEFITS

- ✓ Anti-Wrinkle
- ✓ Anti-Oxidant
- ✓ Moisturising
- ✓ Exfoliating
- ✓ UV Protection
- ✓ Dark Spot Reduction
- ✓ Anti-Bacterial

### APPLICATIONS

- ✓ Face & Body Creams
- ✓ Face Serums & Gels
- ✓ Bar & Liquid Soaps
- ✓ Hair Products
- ✓ Sun Care Products
- ✓ Oral Hygiene
- ✓ Shower & Bath Products

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# Lubrizol Introduces AlgaPur™ High Stability High Oleic Algae Oil

CLEVELAND, November 2020 – Lubrizol Life Science – Beauty (LLS Beauty) introduces AlgaPur™ High Stability High Oleic (HSHO) algae oil, a bio-based oil

derived from microalgae originally sourced from a chestnut tree sap with a high sustainability profile and proven efficacy, delivering multiple benefits for hair and scalp care.

For centuries people have used oils to care for their hair because of their conditioning and nourishing properties. AlgaPur™ HSHO algae oil is the newest evolution in that tradition: It is a natural ingredient produced through fermentation, is readily biodegradable, and has a low environmental footprint in the water, carbon, and land use

AlgaPur™ HSHO algae oil contains over 90% of beneficial Omega 9 in a highly stable, liquid-based formula that protects the hair fiber from breakage, repairs split ends, provides shine, controls frizz, improves manageability and conditions. Tests on multiple types of hair showed, among other things, hair breakage was 83% less likely to occur in hair treated with AlgaPur™ HSHO algae oil than with untreated hair. It also repaired split ends 16% better than argan oil.

Benefits for the scalp include an anti-aging effect, repair of photodamage and moisturization. Its benefits include an increase in type 1 collagen synthesis in

vitro, a decrease in signs of UV-induced cell damage in vitro and immediate and long-lasting moisturization and improved skin barrier function in vivo.

“Throughout history, women have relied upon oils to protect and beautify their hair and scalps. AlgaPur™ HSHO algae oil takes that beauty practice to the next level in delivering healthy and lustrous hair,” said Juliana Mancini, Global Hair Care Marketing Manager, LLS Beauty.

Whether it’s in a shampoo, conditioner, treatment, or styling product, AlgaPur™ HSHO algae oil will make the product perform better while delighting consumers. To learn more, click here.

Lubrizol has a global collaboration agreement with Corbion for AlgaPur™ HSHO algae oil in the beauty and personal care markets.

## About Lubrizol Beauty

The Beauty business team at Lubrizol Life Science partners with customers to deliver a beautiful skin experience, providing consumers with trending solutions, substantiated benefits and superior sensory enjoyment.

## About The Lubrizol Corporation

The Lubrizol Corporation, a Berkshire Hathaway company, is a market-driven global company that combines complex, specialty chemicals

to optimize the quality, performance and value of customers’ products while reducing their environmental impact. It is a leader at combining market insights with chemistry and application capabilities to deliver valuable solutions to customers in the global transportation, industrial and consumer markets. Lubrizol improves lives by acting as an essential partner in our customers’ success, delivering efficiency, reliability or wellness to their end users. Technologies include lubricant additives for engine oils, driveline and other transportation-related fluids, industrial lubricants, as well as additives for gasoline and diesel fuel. In addition, Lubrizol makes ingredients and additives for home care, personal care and skin care products and specialty materials encompassing polymer and coatings technologies, along with polymer-based pharmaceutical and medical device solutions.

With headquarters in Wickliffe, Ohio, Lubrizol owns and operates manufacturing facilities in 17 countries, as well as sales and technical offices around the world. Founded in 1928, Lubrizol has approximately 8,700 employees worldwide. Revenues for 2018 were \$6.8 billion. For more information, visit Lubrizol.com.

# Two New Products From Schuelke

Schulke has launched two products, Euxyl ECO 910 (incl: Benzyl Alcohol and Cymbopogon Flexuosus (Lemongrass) Oil and Tocopherol) and effisin LA natural (INCI’s: Levulinic Acid and Water (Aqua)), expanding the company’s line of safe and effective preservatives for natural cosmetics.

Euxyl ECO 910 is suitable for certified-natural cosmetics and effective in anionic cationic and nonionic systems. Its fresh scent is a bonus for leave-on and rinse-off applications. Euxyl ECO 910 is broad-

spectrum, biodegradable and effective up to pH 8, making it effective in a wider range of products compared to other natural preservation options.

Effisin LA natural protects against bacterial contamination. It is sourced from non-GMO corn and can be used in a wide variety of personal care products. Effisin LA natural is not only highly water-soluble and biodegradable, but it may also mask unwanted odours of other formulation components.

The two new products are EcoCert-verified COSMOS-approved.



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# Promoting the STEM\* in personal care and hygiene

*\*Science, Technology, Engineering,  
Mathematics*



by Jennifer Semple

Have you ever tried to explain what you do for work to someone outside our industry?

The word 'cosmetics' is readily understood, at least in a general sense.

But throw in terms like 'formulation' and 'chemist' and uncertainty can rapidly increase. 'Oh! So you work in a pharmacy?'

Formulation chemistry is not well understood, even by many trained chemists. Most undergraduate courses do not include any specialised training in chemical formulation and, consequently, many graduates have little knowledge of the field and its widespread applications. Similarly, regulatory science is poorly understood by those outside the field.

Yet these roles are fundamental to our industry and underpin the safety and efficacy of products used every day by millions of people.

Careers in our industry

Accord developed 'Careers in our industry' to help increase understanding of our industry's strong STEM foundation and the STEM opportunities within our industry.

This webpage explains formulation chemistry and what product developers

do. It describes the kinds of roles that are typically filled by STEM graduates, including how these differ between large and small companies. And video interviews provide direct insight into the working lives of four industry members.

The webpage has prompted direct contact relating to careers in formulation chemistry.

Upskilling industry

Whilst 'careers in our industry' is to help increase external understanding of the STEM our industry depends upon, continuing STEM education is also important for industry insiders.

With COVID-19 prompting a rapid shift in communications and events, a wide range of web-based training programs are now accessible. For example, a range of training webinars for cosmetic product risk assessors have been developed by Accord's international cosmetics association counterparts. Accord also holds regular member Insight Hours on topics relating to the cosmetic and personal care industry and is about to expand our online regulatory training offer.

Another institution that is actively providing training in industry-relevant

skills for the formulated chemical industries is Monash University.

For example – in a Southern Hemisphere first – Monash has just launched their Master of Green and Sustainable Technologies. This aims to address the increasing demand for green chemistry expertise in chemistry-based industries, and also caters to industry by enabling modules to be taken individually. Another established Monash initiative is the Graduate Research Industry Partnerships (GRIPs) program, which brings together PhD researchers and academic leaders to find innovative, interdisciplinary approaches and solutions to industry-led projects. And their Bachelor of Pharmaceutical Science is one well-established exception to the lack of specific training in formulation chemistry.

For more information on these initiatives, please see the links provided. Accord would love feedback on 'Careers in our industry' to [jsemple@accord.asn.au](mailto:jsemple@accord.asn.au).

Accord Australasia is the peak body representing companies operating in the cosmetic, fragrance, personal care and toiletries sector – from multinationals to small Australian-owned businesses, importers to local manufacturers. [www.accord.asn.au](http://www.accord.asn.au)

# Sweet Solution for an Aging Population

Matthew Flavel, Julian Neoh, Mae-Ling Bowen, Lucky Procopiou, Barry Kitchen

The Product Makers Australia Pty Ltd

New ingredients often enter the cosmetics market with a flurry of marketing buzz, but minimal scientific evidence supporting the claims made by the product. Recently, we published a manuscript in *Cosmetics*<sup>1</sup>, examining the biological properties of our latest natural extract, Officinol™ (patent # WO2019028506A1) and the science behind its mode of action, now proven via in vitro and human clinical trial experiments.

Sugarcane (*Saccharum officinarum*) extracts have been used in masks, face creams and serums to care for the skin for decades and has mainly been positioned as a moisturizer, humectant, exfoliant and scrub. Other properties extend to sunburn protection<sup>2, 3</sup>.

From an analytical viewpoint, these extracts are usually marketed on Alpha

Hydroxy Acids (AHAs) which are suggested for dry skin and act on the skin surface to assist in exfoliation. Such AHAs include glycolic, citric, lactic, malic, succinic, tartaric and fumaric acids are found in several fruits and plants such as sugarcane.

Sugarcane, because it fixes carbon dioxide by the C4 Pathway which is affected by environmental conditions accumulates unique metabolites in its vascular cells, and is rich in many organic acids such as trans-aconitic, cis-aconitic, malic, oxalic, citric, gluconic and succinic acids. But our paper demonstrates there is much more to our sugarcane extract than just organic acids.

Officinol™ is a polyphenol-rich extract from Australian grown sugarcane with a well defined biochemical profile that delivers a potent antioxidant

cocktail. These include organic and amino acids, minerals, salts (anions and cations), polyphenols, flavonoids and sugars. Together these work synergistically to drive the mechanism of action of Officinol™.

The major finding of this study was the clinical trial outcomes produced by the extract. This trial followed participants over 12 weeks using Officinol™. The extract was loaded at 5% w/w into an inert gel and applied to the face, morning and evening. Skin was assed for parameters such as roughness, wrinkle depth and colour. Skin roughness reduction reached statistical significance by 8 weeks with a 17% reduction in roughness. This improvement continued to reach a 20% reduction in roughness after 12 weeks. At 12 weeks there was a 20% reduction in the depth of wrinkles



and a 2% reduction of pigment. This reduced pigmentation was associated with a visible change in the aesthetic of skin blemishing typical of birth marks or sun spots.

These results are supported by multiple lines of laboratory-based evidence, indicating the mode of action for Officinol™. These include data with broad application, such as the antioxidant capacity of the product and also specific pathways that have been targeted due to the clinical results. The free radical scavenging potential of Officinol™ was studied against 6 different free radical species and shown to have bioactivity. Many products claiming antioxidant capability only have data on a single radical.

A cellular antioxidant assay was also conducted, demonstrating the ability of Officinol™ to cross the cellular membrane and act as an antioxidant inside human cells. This result is a demonstration of the bioavailability of this extract, further supporting the

positive clinical results.

It is difficult to attribute the reduction of wrinkle depth and skin roughness to one single biological factor. However, this study targeted the known biomarker for wrinkle formation elastase. This enzyme was inhibited in a dose dependent manner by Officinol™, suggesting that the inhibition of skin elastin is involved in the excellent clinical results. The expression of genes encoding enzymes such as Matrix metalloproteinase-1 (MMP-1) which is involved in the production of collagenase was also inhibited. This inhibitory process of MMP-1 is likely to have a protective effect on skin health.

It is important to note, not all enzymes are inhibited by Officinol™. Enzymes that have an underlying role in healthy aging and protection from reactive oxygen species such as telomerase were activated with the addition of the extract.

This publication is only the beginning of what could be possible with this

unique sugarcane extract. Follow up studies exploring how this natural extract could be utilised for wound healing formulations, support a healthy skin microbiome and beauty from within concepts are planned. However, this ingredient is now fully commercialised and ready to be incorporated into skincare products and would be particularly suited for consumers with sensitive skin and seeking a natural ingredient with scientific merit.

References

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2 Saric, S., & Sivamani, R. K. (2016). Polyphenols and sunburn. *International journal of molecular sciences*, 17(9), 1521.

3 Tang, S. C., & Yang, J. H. (2018). Dual effects of alpha-hydroxy acids on the skin. *Molecules*, 23(4), 863.



clinical trials



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- ✓ Hair Products
- ✓ Sun Care Products
- ✓ Oral Hygiene
- ✓ Shower & Bath Products

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Taking part in trials in 2020 and *beyond*

by Emanuela Elia

At the time of writing this article, on Sunday the 1st of November 2020, Australia has recorded no new cases of locally transmitted coronavirus infection for the first time in five months. Although this is an important milestone for our country's fight against COVID-19, we must remain vigilant to ensure these results continue well into the future. Nonetheless, it is certainly a privileged situation to be in right now, especially in comparison to the daily struggles of other countries in managing the pandemic.

For an industry that deals in face-to-face visits with both healthy and sick individuals, it is important to assess and manage the effect of the current situation on research and clinical trials. One could easily be persuaded to think that the impact of the virus on activities, like most clinical trials, that require in-person visits is largely negative. Even more so, when such activities are deemed non-essential (such as most cosmetic trials). Under these circumstances, research sites and trial sponsors should be concerned about

recruitment of study participants and strive to approach this in a manner relevant to the current situation. However, there are also some considerations to be made that actually prove to be quite favourable.

Importance of research

Although sometimes undercut by the spread of misinformation, the importance of research during the pandemic has been greatly emphasised. People have become more familiar with some basic concepts around what



clinical trials are, how they work, and why they are important in modern society. As a result, the public’s interest towards understanding more about them has increased.

Change of pace and lifestyle

In the last few months, many people have had their daily routines impacted in some regard. Working from home, less commuting to and from work, sadly also job losses, have all contributed to people:

- suddenly having more spare time and/ or more flexibility
- looking for something to do and be involved in
- taking interest in new things (i.e. learning new skills, fixing the house, cooking, improving their physical appearance, testing cosmetic products!)

In Australia, a number of provisions should be taken into account when considering a new clinical trial project during COVID:

Ethical considerations

During the pandemic as well as any other point in time, it’s important to continue considering weighing the benefits against the risks when taking part in a trial. According to international standards for Good Clinical Practice (GCP), as long as the risks does not outweigh the benefits, the project should be fine to go ahead. How this is assessed is constantly changing, and will depend on the specifics of your study and the restrictions (or lack thereof) in the locations you wish to run a clinical trial.

Following local government advice

Temporary restriction imposed from local government might be in place at any given time to reduce the spread of the virus. This may include curfews, protective gear, training, gathering restrictions and other preventative measures. These need to be followed to protect staff working at clinical research sites, as well as study participants and their close contacts. It is important to

design your clinical trials with these in mind, and discuss current best practices with your local trial sites.

Excluding vulnerable demographics

In the last few months, we have learned that the virus can prove particularly dangerous for people aged over 65 and those with pre-existing health conditions – especially those involving the respiratory system. Therefore, it would be advisable to refrain from enrolling people that match those characteristics to take part in non-essential research projects.

COVID safe research sites

Sites involved in clinical trials should be particularly meticulous about following recommended COVID safe procedures to reduce the risk of spreading the infection. Screens, distancing, sanitization, facial masks, disposable material, should all be used as appropriate to allow conducting study visits in the safest way possible for all people involved.

Appropriate measures in case of exposure

Both sites and sponsors should be prepared to deal with situations where exposure to the virus has occurred and collaborate with local health authorities to protect everyone involved. This also means that projects could be temporarily interrupted or permanently stopped at any given time for the safety of staff, volunteers and their families. Extra time and budget should be built into studies in case of such an event, such that the study results are not overly affected or delayed.

Provided the above aspects have been properly addressed and taken care of, it is currently possible in Australia to conduct cosmetic trials successfully. We hope that the situation will continue to improve until the global emergency is over.



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# Ultrafine Zinc Oxides for Sun & Skin Care



A S Harrison & Co and EverCare have combined their strengths and expertise to promote the importance of high-quality mineral sun filters in Australia.

## WHO IS EverCare?

Previously part of the Umicore group, EverCare developed an in-house technology to produce ultra-fine zinc oxide 20 years ago. Still today, EverCare is exclusively active in the production of zinc oxide (mostly for personal care applications). This focus allowed them to develop expertise over the years in terms of product knowledge and quality control and also in terms of the formulation expertise and regulatory support they offer to their customers.

Their (GMP approved) production plant still lies at their historical site in the Netherlands (Europe), but their operations have spread worldwide and this is why they installed their technical

knowledge centre and application lab in Raleigh, North Carolina (USA).

Today, EverCare is recognised as one of the leaders in the field of UV protection supplying their Zano® and Xperse® ranges to most of the major brands worldwide. Their business philosophy to remain the leaders in their industry by putting the client's developments first is well summarised by their 3 keywords: Innovate, Enable, Protect.

## WHY ZINC OXIDE?

Zinc oxide has been used as a UV filter for a long time in Australia, but it is currently gaining more attention in the sunscreen market worldwide. A focus on reef-friendly ingredients and the revised proposal for the US FDA sunscreen ingredients monograph have found ZnO to emerge as one of the safest options.

Many formulators are identifying this demand from the market and are

shifting to develop more ZnO based sunscreens. However, there is still some bias that mineral sunscreens lack sensorial benefits having a heavy texture and whitening effect. Fortunately, with the right choice of ZnO and dispersing agent, today's ZnO based sunscreens deliver efficacy with a high level of transparency and consumer desired textures.

## Regulatory Aspects Are Shifting Consumer Awareness

Beginning this year, the Pacific island state of Palau was the first nation to enact a ban of some synthetic chemical filters that have been found to contribute to bleaching of coral reefs. Other regions such as Hawaii and Key West in the US have enacted similar bans to start in 2021 and more are expected to follow. Increased media coverage and visibility by social media influencers has brought to the consumer's attention that ZnO is

amongst the best filters that can be used in reef safe sunscreens and thus affecting consumer demand.

Moreover, the alternative solutions in terms of UV filters are under scrutiny after the FDA published a study showing that most of the organic synthetic filters used in sunscreens were found in the bloodstream of the end users. The recent proposal by the FDA for the sunscreen monograph has listed ZnO and TiO<sub>2</sub> as the only GRASE ingredients and approved as Category I filters. The recent classification of TiO<sub>2</sub> as CMR in Europe further reduced the panel of UV filters and increased the attraction of ZnO in sunscreen formulations even more.

## Zano as a non-penetrating and safe UV filter

Zano® and Zano® Plus are safe UV filters, cGMP compliant and considered GRASE by the FDA in the 2019 proposed sunscreen monograph. Zano®

are safe filters that do not penetrate the skin, which was reconfirmed in 2018 by studies by A. Holmes et al.<sup>1</sup>. The same study also showed that no cellular toxicity was caused by repeated application of ultra-fine zinc oxides on volunteers.

Zano® filters are very mild on the skin and have been tested to cause no irritation and sensitisation and are non photo-allergenic. Zano® combines all other skin benefits of zinc oxide, such as anti-inflammatory, anti-microbial and skin healing properties.

<sup>1</sup> "Support for the Safe Use of Zinc Oxide Nanoparticle Sunscreens: Lack of Skin Penetration or Cellular Toxicity after Repeated Application in Volunteers", A. Holmes et al, Journal of Investigative Dermatology, 2018.

## Natural and photostable

As a mineral product abundantly present on the globe, zinc oxide is considered as a natural UV filter. All uncoated Zano® are Cosmos and Ecocert certified. Zano® products are

photostable without the use of stabilisers and do not lose their performance upon sunlight radiation.

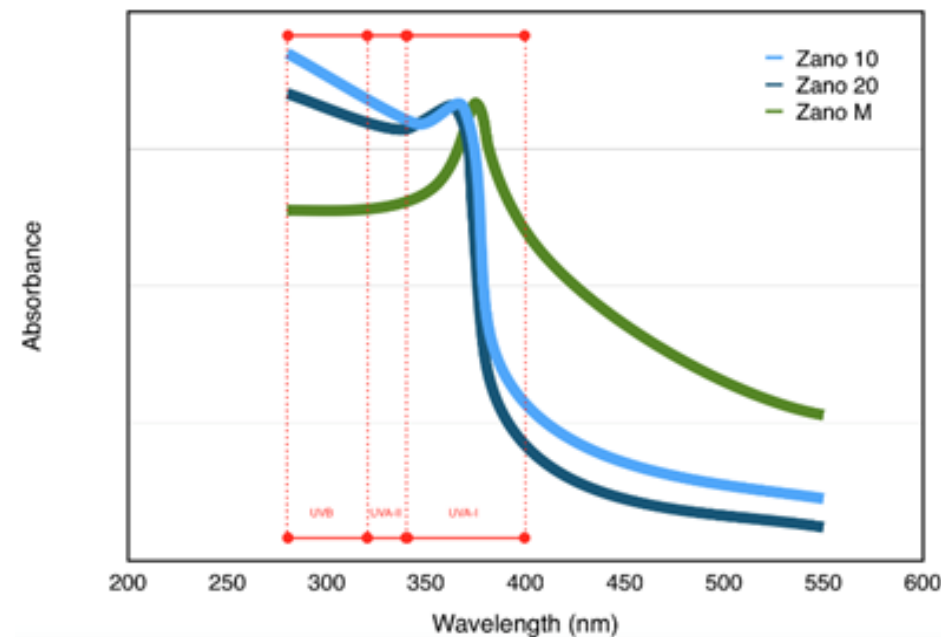
## OUR PRODUCT RANGE: THE ZANO® GRADES

Tailored products for UVA, UVB and transparency:

The Zano® portfolio consists of three different grades of zinc oxide powders that each have been designed to exhibit distinct tailored performance in UVB, UVA and transparency. As such, there is a Zano® grade that will cover the specific performance needs in designing sunscreen performance. Each Zano® product is available in uncoated pure form and a triethoxycaprylyl silane surface treated version.

- **Zano® 10 & Zano® 10 Plus**  
Offering balanced protection in UVB, UVA and transparency
- **Zano® 20 & Zano® 20 Plus**  
Offering the highest levels of transparency





- **Zano® M & Zano® M Plus**  
Offering the highest levels of UVA protection

#### Designing performance of Zano®

When used as single UV filter, the Zano® (Plus) products will each provide specific SPF, UVA and transparency levels that will all comply to international UVA regulations and broad-spectrum claims.

When used as a single UV filter, SPF values of 30+ are easy to achieve and when designing SPF 50+ products, Zano® can be combined with different boosters or other UV filters.

These figures are given as reference only. Responsibility for the performance or adequate testing of any product prior to sale or use lies within the manufacturer thereof

#### HOW CAN A S HARRISON & CO AND EverCare ASSIST SUNSCREEN PRODUCERS?

Innovate, Enable, Protect. These are the 3 keywords defining the actions of EverCare in its day to day business. Indeed, together with A S Harrison & Co, they continuously innovate and propose new products but also modify formulas to obtain the best combination possible and highest performance in final products. Over the years, and even more so since EverCare built their own lab, they developed a knowledge centre to advise and orient formulators in their search for optimal formulations. When specific technical questions arise, they are happy to help.

This continuous innovation will enable you to formulate new products easily and with confidence. When

the formulation is done, one of the major problems in Zinc oxide-based formulation is testing, as the in vitro testing measures have been developed for organic filters and do not always correctly predict the protection factor of mineral sunscreens. Here again, thanks to their experience, EverCare developed specific solutions to this problem, allowing A S Harrison & Co to direct customers to reliable assessment of their formulations.

Last but not least, a dedicated regulatory department allows EverCare to help A S Harrison & Co assist their customers in the ever-changing regulatory landscapes. This is part of the protect keyword, also referring to the safe sun protection obtained thanks to the Zano® products and their commitments to protect marine environment through their positive reef initiative.

#### THE POSITIVE REEF INITIATIVE

Even though Corals are one of the most important ecosystems on the planet, they are disappearing at an alarming rate. While scientists agree that the major contributor to coral reef bleaching events is due to rising temperatures of sea water, there is continued interest in understanding the direct impact humans have on local coral reefs. Of particular attention has been the environmental impact of UV filters used in sunscreen ingredients, especially for coral reef tourist locations.

Concern over sunscreen pollution and its potential impact on coral reefs, particularly in high-traffic tourist areas,



has led to legislation that prohibits the use of particular UV filters that are thought to contribute to coral reef bleaching.

Through the Positive Reef Initiative, EverCare intends to actively contribute to influencing coral reef restoration. EverCare's commitment is to offer ingredients that allow for the creation of reef-friendly sun care products, while at the same time making a positive contribution to stop coral reef damage and promote its restoration.

The Positive Reef Initiative is

committed to helping consumers make informed decisions on their sunscreen purchases, to researching and restoring coral reef populations, and reducing our global carbon footprint to reduce our impact on climate change which affects coral reef habitats. With increased awareness of the impact of sunscreen on coral reefs, consumers are not only looking for natural, reef-safe ingredients for their sun care products, they are also looking for brands committed to protecting the environment.

You can find information on the

Positive Reef Initiative at:  
<https://www.linkedin.com/showcase/positive-reef-initiative/>  
<https://www.instagram.com/positivereefinitiative/?hl=fr>  
<https://www.facebook.com/Positive-Reef-Initiative-130063771817959/>

Feel free to get in contact with the team at A S Harrison & Co for a hand with samples, formulations and other suggestions: call us on +61 (0)2 8978 1000 or email [performanceingredients.ash@harrison.com.au](mailto:performanceingredients.ash@harrison.com.au)

	SPF 1% adds	UVA-PF 1% adds	UVA-PF/ SPF	Critical Wavelength	Transparency
Zano® 10 & Zano® 10 Plus	~1.6 units	~0.75 units	~0.5	373nm	Very good
Zano® 20 & Zano® 20 Plus	~1.5 units	~0.6 units	~0.4	371nm	Excellent
Zano® M & Zano® M Plus	~1.5 units	~1.5 units	~1.0	385nm	Good

These figures are given as reference only. Responsibility for the performance or adequate testing of any product prior to sale or use lies within the manufacturer thereof

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about that impurity.....



On the 12th February, 2002 Donald Rumsfeld, the then US Secretary of Defense(sic) stated:  
*Reports that say that something hasn't happened are always interesting to me, because as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns—the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be the difficult ones.*

So what do you know about Impurities?

The Oxford Dictionary tells us that impurity is “the state or quality of being impure”.  
More useful perhaps is Wikipedia:  
*Impurities are chemical substances (ok that's the first issue) inside a confined amount of liquid, gas or solid which differ from the chemical composition of the material or compound.*  
*Impurities are either naturally occurring or added during synthesis of a chemical or commercial product. During production, impurities may be purposely, accidentally, inevitably, or incidentally added into the substance. The levels of impurities in*

*a material are generally defined in relative terms. Standards have been established by various organizations that attempt to define the permitted levels of various impurities in a manufactured product. Strictly speaking, then a material's level of purity can only be stated as being more or less pure than some other material.*  
As cosmetic industry professionals, I think we can agree (perhaps for once) that “Impurities are undesirable”; whether or not they are ‘undesirable number one’ aka ‘chemicals’ or toxins, residues or naturally occurring ‘things’ that can cause irritation, cross reactivity, or other issues.

Back to Basics ...

Even 100% is not always 100%....It could be 100.0001%, and we just haven't measured this far. There are reasons for this, including

- We don't need to worry about that small a difference
- We don't have the equipment/ processes detect that sort of difference and/or
- We don't know that it might be important
- This is where Donald (who is neither Trump nor Duck) comes in, we



by Wendy Free

can have unknown unknowns, and sometimes these are very important.

- So let's look at some common raw materials and their potential impurities.

**PVP** also known as N-Vinyl pyrrolidinone polymer; Polyvidone; Povidone; 2-Pyrrolidinone, 1-ethenyl-, homopolymer; CAS 9003-39-8, is used as an anti-static, binding, emulsion stabilising, film forming, hair fixative

	COSMETIC GRADE	TECHNICAL GRADE
Total acid	70.0% minimum	70.0% minimum
Sulfates (ppm)	< 25	<150
Formic Acid (ppm)	< 150	< 3800
Formaldehyde (ppm)	< 15	< 750 (= 0.75%)
Ammonia (ppm)	< 4	< 110
Diglycolic acid (ppm)	<140 ppm	< 1100 ppm (= < 1.1% )
Methoxyacetic acid (ppm)	< 190 ppm	<1900 ppm (= < 1.9%)

and /or viscosity controlling agent. (It's also approved for oral use in tablets and on some foods)  
As the polymer; its stated by Cosmetic Ingredient Review and most Pharmacopeia as being safe for human use, however the monomer, (that is the unpolymerized starting material) IS toxic as declared EU's CMR , Australia's and most authoritative sources.

So how much residual starting material is too much?

*In their priority existing chemical report of February 2002, NICNAS (now AICIS); stated that In the absence of analytical data on the level of NVP in cosmetic products and reliable dermal absorption data, it is recommended that the Department of Health and Age Care establish a maximum level of 200 ppm NVP present in PVP for cosmetic use.*  
*So, if the level of NVP is less than 200ppm its good to go? - Unfortunately not.*

The manufacture of these polymers can and does result in a by product called hydrazine (which Wikipedia helpfully tells us is a simple pnictogen hydride, (I kid you not!) and is a colorless(sic) and flammable liquid with an ammonia-like odor(sic).  
Now for all us 'Aussies' who now understand that its colourless, and has an ammonia like odour, but not sure if its flammable (Australian Style) or Inflammable (US style); it's important to know that Hydrazine is an S6 scheduled

poison; that is included in the SUSMP and subject to stringent controls.  
**So we're back to how Hydrazine much is too much?**  
• The S6 entry has no qualifications, it's just there; but when you get the chance, read the 'fine print' at the beginning of the schedules and you'll find that there's a statement to the effect that so long as the substance is NOT in schedules 7 and 8, (and by default 10) its excluded from the scheduling' at concentrations of not more than 10 mg/ kilogram, ie 10 ppm.  
• For Hydrazine in starting materials for cosmetics, the rest of the world has a maximum of 1ppm, but qualifies this as also needing to be as low as possible.

So for you PVP polymers, you can't just buy something 'off the shelf' labelled as PVP; and even some labelled as 'Personal Care Grade' don't seem measure up when it comes to these impurities.

★ ★ ★

**Glycolic acid** an alpha hydroxy acid, CAS 79-14-1 has its % and pH restricted around the world for topical cosmetic use<sup>2</sup>; and is associated with a plethora of handling, use and formulation issues (ie its explosively reactive with most metals), so you'd think this would already have enough to be getting on with so far as being a problem child...

If you product spec said 70% glycolic acid and 30% water, you'd most likely

think that was ok...(I did before investigating).  
The 145 page NICNAS report dated April 2002, is filled with information about the chemical, its properties, OH&S issues, metabolism and Kinetics, Human Health Effects, Risk assessment and Recommendations; and this true gem.....  
• Glycolic acid is a naturally occurring substance formed during photosynthesis. Blends of glycolic acid and other AHAs are made by extraction of plant materials but may be standardised by the addition of man-made chemicals. (*Sounds so good, but wait.....*)  
• It is made synthetically by treating formaldehyde with carbon monoxide and water or by hydrolysis of monochloroacetic acid with sodium hydroxide (and here it gets better still!),  
• Compared with **cosmetic grade glycolic acid**, the technical quality has a higher content of process impurities such as formic acid, formaldehyde, diglycolic acid and methoxyacetic acid.  
**Say What?**  
• Formic acid CAS 64-18-6, SUSMP, S5 **CAUTION**, above 0.5%, EU Max 0.5%  
• Formaldehyde CAS, SUSMP S10 **Substances of such danger to health as to warrant prohibition of sale, supply and use** when above 0.05% (in cosmetic products), EU Annex II (1577) Prohibited in cosmetic



- products (CMR 1B Carcinogenic)
- diglycolic acid also called Oxydi(acetic acid), CAS 110-99-6... it's what causes the toxic effects when your liver encounters diethylene glycol, REACH Annex III Substances predicted as likely to meet criteria for category 1A or 1B carcinogenicity, mutagenicity, or reproductive toxicity.
  - Methoxyacetic acid, REACH Annex III Substances predicted as likely to meet criteria for category 1A or 1B carcinogenicity, mutagenicity, or reproductive toxicity.

CIR<sup>3</sup> reports that when comparing the specifications of 70% cosmetic grade glycolic acid to 70% technical grade, the following are possibly of concern.

So to put that in 'plain language' the "Technical Grade" glycolic contains 70% glycolic acid and 3.75% BANNED (in EU) cosmetics impurities.

Even if you are only aiming for 'basic SUSMP compliance' in Australia (and ignoring ACCC's requirement for products to be safe and fit for purpose), you might want this check list

- make sure its' super stable
- make sure there is NO residual formaldehyde in anything
- Ensure NO formaldehyde releasors
- your final glycolic acid concertation

is LESS than 4.6% (ie Formaldehyde is currently 0.75% max, you need it less than 0.05%, so 15x dilution; so a 6.66% maximum addition rate, and its 70% glycolic, so final glycolic % is 4.6%)

CHEMIST JOKE: The opposite of formaldehyde is casualdejekyll.

These types of impurity concerns form the basic difference between 'pharmaceutical / BP/ US etc' grade and cosmetic grade when it comes to most substances. Unfortunately the cosmetic industry doesn't have 'established standards' for the quality of our ingredients, and unless you do a whole lot of research it's difficult to really know what the risks might be. Sometimes the technical grade might be fine, other times, even the pharmaceutical grade might not be right.....

So, now that we have these known

impurities to worry about, it's time question our proposition that the unknown ones might be more troublesome.

Yours in purity,  
Mrs Wendy Free B.Sc M.Tech Mngt  
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<sup>1</sup> Chemical ingredients in cosmetic products classified as carcinogenic, mutagenic or toxic to reproduction according to the chemicals directive 67/548/eec

<sup>2</sup> [https://ec.europa.eu/growth/tools-databases/cosing/index.cfm?fuseaction=search.Details\\_v2&id=34147](https://ec.europa.eu/growth/tools-databases/cosing/index.cfm?fuseaction=search.Details_v2&id=34147)

<sup>3</sup> 1998 Final report on the safety assessment of glycolic acid, ammonium, calcium, potassium, and sodium glycolates, methyl, ethyl, propyl, and butyl glycolates, and lactic acid, ammonium, calcium, potassium, sodium, and tea-lactates, methyl, ethyl, isopropyl, and buty-l lactates, and lauryl, myristyl, and cetyl lactates



# Supplier Extinction

2020 for me is starting to feel like I am in an episode of Survivor or the Hunger Games. For business globally this year has certainly proven to be a tale of "survival of the fittest".

The fittest as described by Charles Darwin's theory would not be the biggest, not the strongest, but the one that could successfully adapt the quickest to their local environment as having the greatest chance of survival.

*"In the struggle for survival, the fittest win out at the expense of their rivals because they succeed in adapting themselves best to their environment."*

**Charles Robert Dawin 1809 - 1882**  
from *On The Origin of Species*

There is no doubt that COVID-19 has had a devastating impact on the world both for the individual, communities and business. Seemingly overnight the world changed. It was no different for the manufacturers and distributors of chemicals and raw materials used in so many different products we all need every day.

Being sympathetic to the environment, I can't help but wonder what the impact will be to an industry that shows

very little innovation in the way things are done. Typically, the model works like this -

- Global manufacturers align with local distributors.
- Local distributors have sales teams that promote their products face to face, trade shows, industry events etc

Yes, I have simplified and acknowledge that there are teams of logistics, QA, R&D, Customer Service behind the scenes to make things happen.

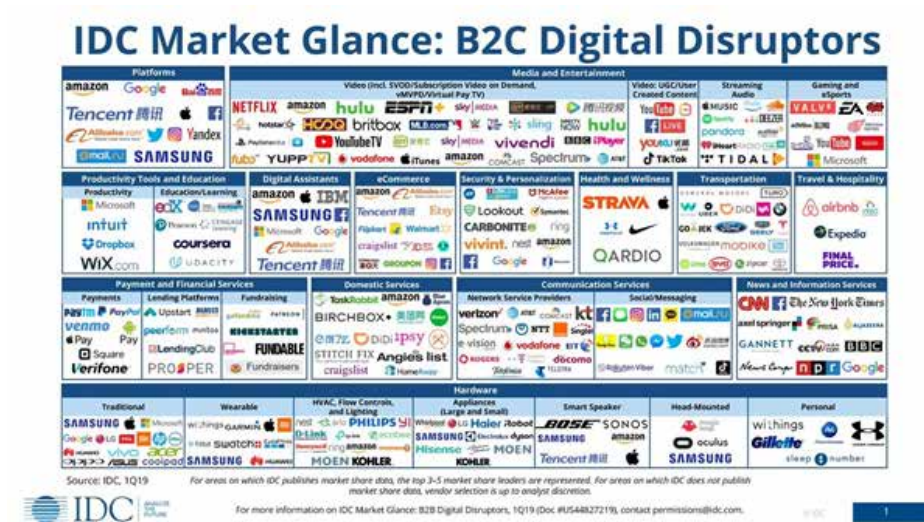
The model above worked best when it was difficult to find information. Yes, I am talking about pre-internet times. Where knowledge was more difficult to come by making the keepers more powerful.

Today though, one simple Google search and you can find almost any information you want in under a second. Looking for an ingredient? Manufacturer? Formula? Freight Forwarder? It's all there. Websites like UL Prospector, Knowde, Alibaba are just some examples of sources of information that make life simple.

Will the chemical distribution industry become like these companies? **(See above)** Once giants and now either extinct or a fraction of what could have been?

We have seen in other markets the impact that digital



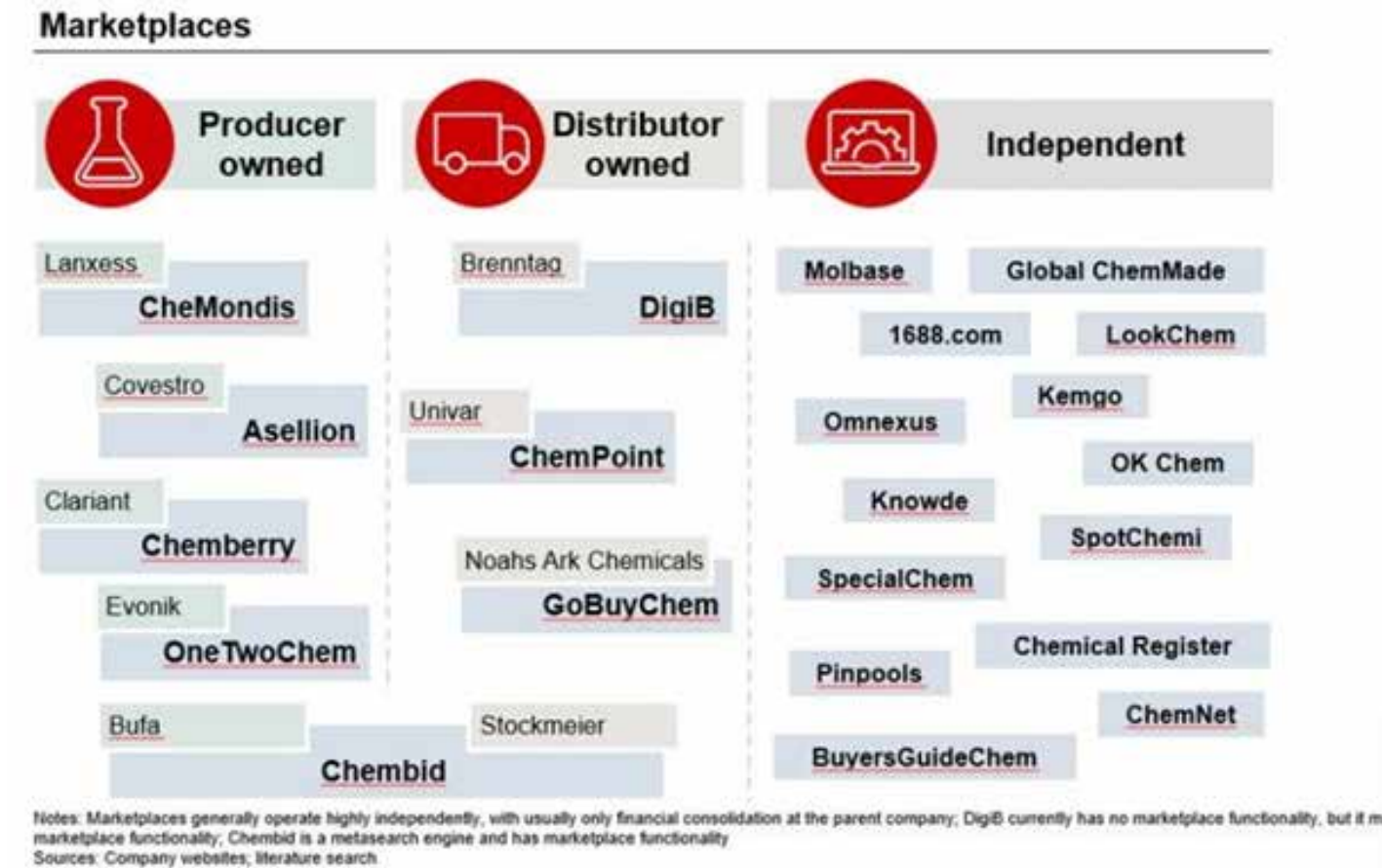


disruptions can have. Did I ever think that I would use a stranger to drive me around? Hell No! Enter Uber and now I have a cheaper alternative and much higher-level service than taxi. Every market has been touched as you can see above.

### Online Marketplaces

A summary produced by Bain & Company of the current online chemical marketplace shows that there are three main streams – producer owned, distributor owned and independent.

As you can see change is coming from all sides and will continue to further evolve over time. With technology advancing at a rapid rate this will happen sooner rather than later.



### End of the distributor as the middle man?

With businesses under financial pressure, cost reductions will once again be in the spotlight. Conversely, the attraction for the manufacturer to go direct to gain lost margin will also become more appealing.

Combine this with online meetings becoming the norm, 3PL logistics/warehouse readily available, AI technology simplifying processes and becoming more intuitive, there are some real threats coming.

### The Distribution Model of the Future

I’ve said before there is a lot that we can learn from the B2C market on making transactions simple, efficient and most importantly customer centric. Online sales have grown exponentially as processes are designed around the consumer.

- The future of distributors will rely on internal processes that must be designed with your end customer in mind –
- What is it that customer most values most? Self-service? Speed? Out of hours support? Sample speed? Is it market specific?
  - Are there steps that can be reduced in processes to increase efficiencies?
  - What can be automated? Are you using the technology available to free up time for your sales teams? eg Calendar



- booking apps for meetings slots, modern CRM.
- Are your online tools such as websites updated regularly? Easy to navigate? A go to resource that is interesting? Search and filter options?

### Stop hiding who you represent!

Chemical distributors are renowned for hiding information on the manufacturers whom they represent. Yes, it makes the information more difficult for a competitor to find, but at the same time you do this to your customers.

Yes, it will mean that sometimes you have difficult conversations with the manufacturers you represent. Maybe there are conflicts or politics involved but realistically they are there anyway. Again, all that is happening is you are making life difficult for those that want to buy. Maybe the transparency will build more trust and benefits outweigh the risks.

The world we live in is one where information is available instantly. Having to wait or search for information is nothing but frustrating and time wasting. You do not have time to waste and nor do your customers.

It is time to focus on the customer and not your competitor.

Focus on finding ways to meet or even better exceed their expectations. Evolve with them and add value to their business so you become a valued extension of their business.

### Focus on Inbound Marketing Strategies for Growth

The team at Hubspot have put together this great diagram on the “how to” achieve sales growth in the modern world. As you can see there is a movement away from hunting sales to attracting opportunities.

Embracing new technology can be daunting and a big change. Often my clients will say “I know I should, but I don’t know where to start”. We sit down together and analyse based on skills, budget, time constraints which piece of the puzzle we can attack first.

It is a big thing to do things differently to your competitors, but the opportunity is there to stand out in what is a very crowded marketplace globally.

If you are wanting to learn more on these methods to help avoid extinction, please do not hesitate to contact me on michelle@goodtradingco.com.au or follow me on LinkedIn.

Michelle Raymond is passionate about manufacturing. With over twenty years’ experience in this space she has channelled her knowledge to the personal care and household product industries.

Michelle has been highly successful as a technical key account manager for several large chemical distributors and more recently using her extensive experience to drive growth and improve processes as GM Sales & Operations for a commercial cleaning product manufacturing company.

Using this broad knowledge and her expertise, Michelle is a thought

leader in the industry focussing on sharing ingredient and product trends, safety tips and market information for others to stay informed.

Michelle is CEO of Good Trading Co, a business that helps others use social media and other tools to strengthen their professional and corporate brands in the B2B space.

Michelle is a Committee member of ASCC – NSW Chapter and Product Development Advisor to Two Good, a social enterprise supporting vulnerable members of the community.



# sunscreen highlights

by John Staton

## In Vitro SPF Testing

### – Through **Thick** and *Thin!*

Methods for the testing of thin films of sunscreen have been around since at least the early 1990s. These are utilised for either SPF or UVAPF determination – in some cases both simultaneously.

Diffey (1) first proposed using Transpore® tape as the substrate for application of a film for measurement of UV absorbance. This evolved to what is now known as the Boots Star® Method 2004 (2)

AS/NZS 2604 1998 (3) version included a “Plate Method” utilising quartz slides with a liquid retaining well incorporated, so that the product could be applied at a thickness of 8 µm (equivalent to around 0.8 mg/sq cm), the film then being sealed with a quartz cover, so that the measurement was performed as a wet film. Current methods have settled on measurement of a dried down film, more in line with

how the product behaves in use on human skin.

DIN (4) was first to develop the method of using PMMA plastic plates as now almost universally utilised.

These and other methods were reviewed during the development of ISO 24443 (5). This now widely used standard was first published in 2011 and is currently at the end of its first review,

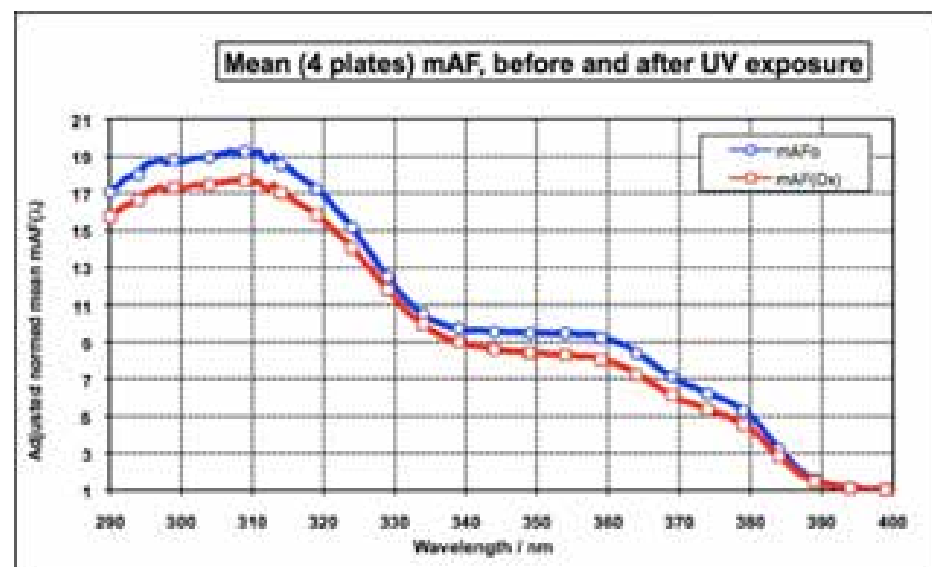


Fig 1. Valid Scan by ISO 24443

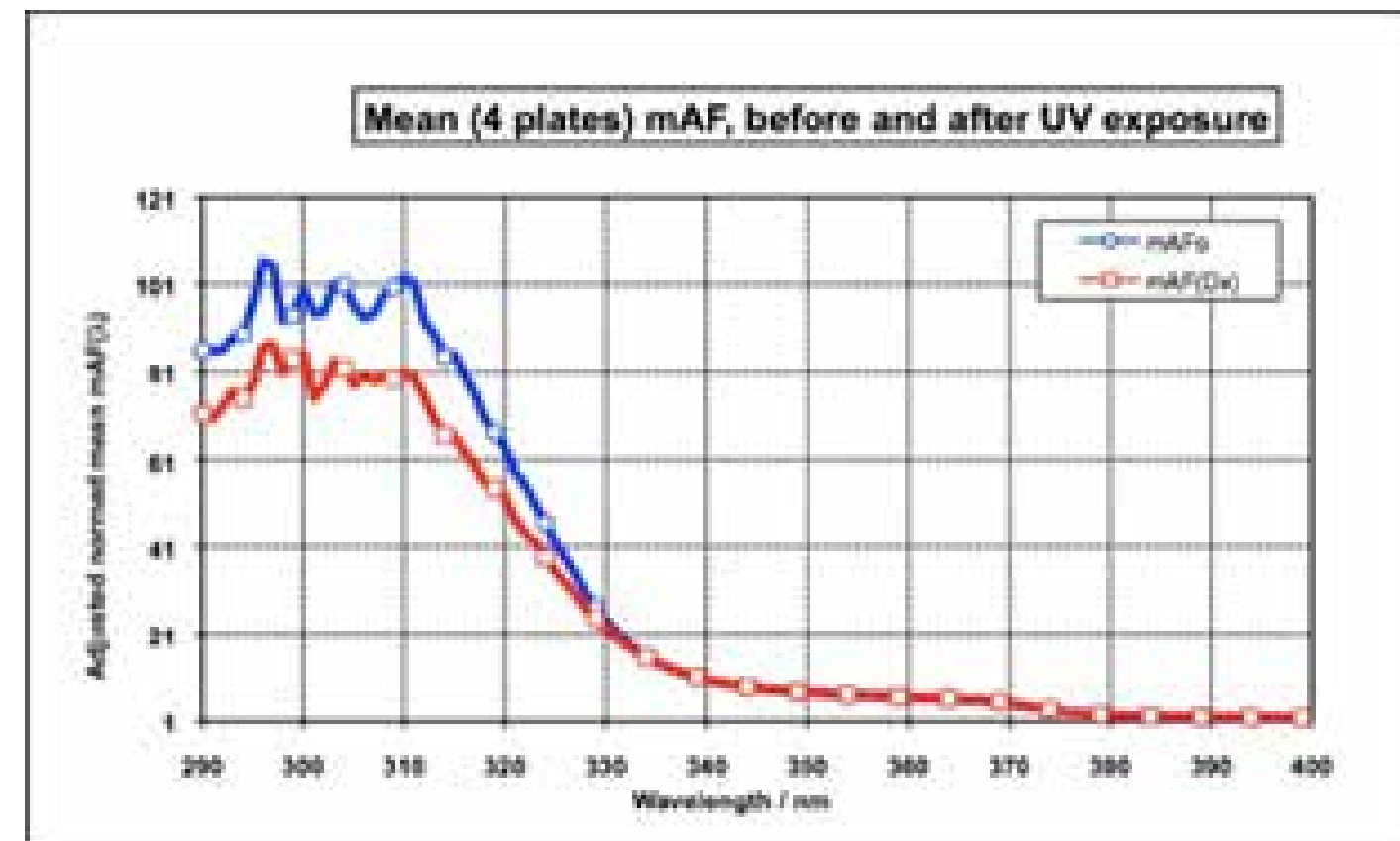


Fig 2. Inappropriate Scan - unsuited product.

with expected publication late 2020 or early 2021.

Several spectrophotometers have been available as customised SPF and UVAPF instruments for in vitro determination. The two in most common use are the LabSphere® and SPF 290®. An alternative is to use a UV-Vis Spectrophotometer fitted with an integrating sphere device. All of these methods were based on the ability of the test sample to absorb UV light. However, the methods all suffer from limitations.

The main issue is that the sensitivity of most instruments can be exceeded by very high SPF sunscreens, since we are dealing with Abs (log scale) values of 3, 4 or above. That is, transmittance of light through the film of less than 1%. This impacts on the accuracy of measurement, particularly for formulations that include ingredients such as higher particle size Zinc, Titanium or Iron oxides which reflect light and thus become opaque to the measurement. The scope of ISO 24443 excludes the use of this method for powder type sunscreens for this reason.

Various thicknesses of sunscreen film have been proposed, ranging from the 2 mg/sq cm using in vivo PF and UVAPF

tests, down to as low as 0.75 mg/sq cm.

For UVAPF, critical wavelength and broad spectrum methods, this can be compensated for by applying a correction factor based on a measured SPF in vivo. In this way, the amplitude of the measured curve is “corrected”. However, the issue still remains where in vitro SPF is being determined.

A recent review by an Ad Hoc group of ISO Experts has reconfirmed that this methodology for ISO 24443 is not perfect, in particular in measuring the Critical Wavelength measurement component of the test. One finding was that the ideal film thickness may need to be varied depending on the surface treatment of the PMMA plastic plates used (moulded or sand blasted).

Soon to join the list of in vitro SPF methods will be ISO 23675 (6) and ISO 23698 (7). The state of the art continues to evolve.

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# Biomemetic and Psychobiological Approaches for a Positive Skin Aging – Effect on Senescence Skin Markers

by Edwige Ranouille<sup>1</sup>, Marion Napoli<sup>1</sup>, Sandie Gervason<sup>1</sup>, Jean-Yves Berthon<sup>1</sup>, Edith Filaire<sup>1,2</sup>

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## Abstract

Senescence is involved in the development of age-related diseases and the loss of tissue functionality with age. Even if senescent cells can have beneficial functions in wound healing, accumulation in relation with aging alters the surrounding tissue. In fact, senescent cells have a secretion pattern called Senescence-Associated Secretory Phenotype that comprises a complex mix of factors including cytokines, growth factors, and matrix metalloproteinases. The cosmetics industry has focused on bioactive substances derived from natural products such as plants and marine algae. Besides these products, bacteria seem to prevent immune-senescence. During the past 10 years, a lot of R&D works have been done to isolate an active ingredient from bacteria strains. *Sphingomonas* strains, which have been isolated from a variety of environments, have the ability to utilize a wide range of organic compounds and to grow and survive under low-nutrient conditions. In order to get more information about the potential benefits of bacteria extract over skin aging, we evaluated the effect of *Sphingomonas* sp (SP) on an aged

full-thickness skin equivalent model. We showed that it attenuates cellular senescence thanks to important markers: inhibition of p21 and p16 transcription factors but also increases the expression of fibrillin-1 and versican. Moreover, it decreases IL-6 and IL-8 concentrations. *In vivo* study in 24 women aged from 60 to 70 years shows that the bacteria extract maintains skin’s beauty after 60 years old by maintaining the cutaneous barrier and by improving the suppleness of the skin. It has the capability to restructure and has and an anti-aging effect. Moreover, application of SP during 56 days has significant benefits on psychological health. Therefore, SP can be used as an anti-aging cosmeceutical agent, suggesting unique properties of proteobacteria for future investigations on topical applications.

**Key words:** senescence, bacteria, positive aging

## Introduction

Aging is the result of a gradual functional decline at the cellular, and ultimately, organismal level, resulting in the development of myriad chronic illnesses including heart disease, stroke and diabetes. On a cellular level, aging

was first described by Hayflick and Moorhead (1961), who demonstrated that somatic mammalian cells have a finite propensity for cell division, after which they enter an irreversible growth arrest termed cellular senescence. Today, senescent cells are characterized by their inability to proliferate, to resist to apoptosis, and to secrete factors that promote inflammation and tissue deterioration (He and Sharpless, 2017). It is now clear that several types of cellular stressors can trigger senescence. These include telomere shortening and dysfunction (Takai et al., 2003), inadvertent activation of oncogenes (Suram et al., 2012), changes in chromatin structure and epigenetic stress (Munro et al., 2004), oxidative stress, mitochondrial dysfunction (Wiley et al., 2016), or persistent activation of DNA damage checkpoints (Rodier et al., 2009).

All these stimuli induce cell senescence through two main pathways 1) a p53-p21 (also called p21Cip1) signaling pathway that is partially telomere dependent 2) a p16 (also known as p16INK4a) – pRb (retinoblastoma tumor suppressor protein) pathway that is independent of telomere dysfunction. These pathways

are dissociated with one another and can individually induce senescence, although there is also overlap and interaction (Van Deursen, 2014). The suppression of cyclin-dependent kinases (CDKs) is produced by both these transcriptional activation. When activated, p53 inhibits cell proliferation via activation of its transcriptional target p21. Both p21 and p16 maintain the protein pRb in its hypophosphorylated and active state. Active pRb suppresses the E2F1 (a member of E2F family of transcription factors, which induce gene transcriptions that are essential for cell proliferation)-dependent expression of genes that regulate progression of the G1/S phase of the cell cycle, and thereby irreversibly blocks cell cycle entry (Gire et al., 2015) (Figure 1).

Removal of senescent cells accumulated in the body during aging alleviates atherosclerosis, tumor development, and functional declines of heart, kidney, and fat tissues, resulting in prolonged healthspan and lifespan (Baar et al., 2017). These effects may be attributable to so-called senescence-associated secretory phenotype (SASP), whereby cells secrete high levels of inflammatory cytokines, chemokines, growth factors, and metalloproteinases (MMPs). The most prominent cytokine of the SASP is interleukin-6 (IL-6), a pro-inflammatory cytokine. IL-6 has been shown to be associated with DNA damage and oncogenic stress-induced senescence of mouse and human keratinocytes, melanocytes, monocytes, fibroblasts, and epithelial cells (Coppe et al., 2008). Generally speaking, the SASP in senescent cells can induce senescence in neighboring cells, alters the behavior of surrounding cells and tissue homeostasis by activating various cell-surface receptors and their signal transduction pathways, and induces tumorigenesis and malignant progression of nearby premalignant cells. Secretion of several pro-inflammatory and tissue-remodelling factors by senescent cells might contribute to the loss of tissue homeostasis and unbalanced tissue structure. While short-lived senescent

cells may act as positive regulators of wound healing, the presence of long-lived senescent cells may exacerbate pathological diseases in the skin. Indeed, the chronic secretion of MMPs by senescent cells might be an important contributor to the degradation of collagen and other extracellular matrix components in the dermal connective tissue, a hallmark of skin aging (Fisher et al., 2013). A persistently elevated number of senescent cells may disrupt cell-signaling responses and prevent wound repair to progress through the different stages of the healing process, one of the main features of chronic wounds.

Expression of β-galactosidase (SA-β-gal) is known to be one of the well-characterized and simplified methods to detect senescence *in vitro* culture cells as well as for aged tissues *in vivo* (Dimri et al., 1995). The expression of inflammatory cytokines (IL-6) or chemokines (IL-8) has been extensively used as biomarkers for measuring senescence in cells and in tissue. Increased levels and/or activity of p16, p53 and p21 have been shown to be associated with cell senescence and are also considered as important biomarkers of cell senescence and tissue aging.

The accumulation of senescent cells with age is thought to contribute to impaired tissue homeostasis and to different age-related diseases. Epithelial tissues in humans are constantly renewing and the skin represents the gold standard example of an epithelial tissue continuously regenerating. Since proliferation of stem and differentiated cells is a major contributor to skin renewal, the accumulation of an excessive number of senescent cells may cause impairments in tissue regeneration with age (Signer et al., 2013). Interestingly, reducing p16<sup>INK4A</sup> expression in these old keratinocytes restored the normal thickness of the epidermis, similar to that formed by young keratinocytes.

Besides deleterious effects on physiological parameters, aging affects psychological state. In fact, it has been shown that aging has negative effect

on mood and Self Esteem, self-esteem being all about how much you feel you are worth — and how much you feel other people value you. It is also seen that many woman attaches self esteem to their body image which is associated with beauty, femininity and youth so with growing age as beauty diminishes many a woman find their self worth low and thus giving rise to a low self esteem Pearlman (1993).

Slow down aging by acting on the senescence process may be beneficial for the overall health, and the development of specific interventions that target senescent cells may serve as a therapy to delay aging, including skin pathologies and mood (Velarde and Demaria, 2016). The cosmetics industry has focused on bioactive substances derived from natural products such as plants, mushrooms, and marine algae. Besides these products, bacteria such as *Lactococcus lactis* strain may prevent immune-senescence and decelerates individual senescence (Tsuji et al., 2018). Another genus, such as the genus *Sphingomonas*, hallmarked by their oligotrophic nature and plasticity in man-made environments, has been intensively exploited for their metabolic properties relevant to biotechnological importance (Gulati et al., 2017). It exhibits a yellow-pigment coloration due to the presence of two enzymes, a catalase and an oxidase, which allow it to produce a carotenoid pigment named nostoxanthin. The precise function of this unique carotenoid in this type of micro-organisms is likely associated with tolerance to environmental stress due to the antioxidant activity of carotenoids. The second specificity of this bacteria is to contain glycosphingolipids (GSLs) instead of lipopolysaccharide (LPS) in their cell envelopes. The GSLs appear to act as a barrier to bactericidal substances (Kawahara et al., 1999). During the past 10 years, *Sphingomonas* strains have been isolated from a variety of environments including both aqueous (both fresh- and seawater), terrestrial habitats and plant root systems (Aylward et al., 2013). The widespread distribution in the environment is due to its ability to utilize



a wide range of organic compounds and to grow and survive under low-nutrient conditions. These bacterial species described in the environment may play a role in skin homeostasis. This is the One-Health concept, which recognizes that the health of humans is connected to the environment (Lee et al., 2001).

Based on its rich and unique composition, *Sphingomonas* sp. represents an innovative source for the development of new skin care solutions. In this study, we firstly aimed to investigate the effect of *Sphingomonas* sp. on expression of p16<sup>INK4a</sup> and p21<sup>WAF1</sup> and SA-β-gal activity using an aged 3D human skin model, a full-thickness skin model engineered with aged fibroblast treated during the tissue reconstruction. Because the SASP is characterized by the secretion of inflammatory signals that resembles a local immune response, the capability of the bacteria extract to modulate the expression of inflammatory cytokine (IL-6) or chemokine (IL-8) were investigated on Normal Human Dermal Fibroblats. Finally, an *in vivo* study was carried out among 24 women aged from 60 to 70 years to evaluate the effect of this bacteria extract on skin and on psychological state. Based on the beneficial properties of microorganisms and the plasticity of bacterial genomes allowing bacteria to adapt quickly to environmental conditions, we put forward the hypothesis that *Spinghomanas* sp. could slow down the cell senescence mechanism.

Materials and Methods

To conduct such research, skin equivalent model was engineered with aged Normal Human Dermal Fibroblasts (NHDF) and treated with the bacterial extract at different concentrations, in a systemic way for 42 days. As a preliminary evaluation, cytotoxic analysis on cell culture monolayers were conducted to select the highest non-cytotoxic concentrations and to avoid any cumulative deleterious effect on 3D reconstructed skin model. Several histological and immunohistological analysis were made: study of the

elasticity of the dermal compartment by the analysis of the expression of the fibrillin and versican proteins. Finally, the fibroblast senescence was investigated by the analysis of the p16, p21 expression, SA-β-gal, IL-6 and IL-8.

A clinical evaluation of this active ingredient was also performed in France (Lyon) in open, intra-individual study by comparison before and after hemi-face application of this extract twice a day. 24 subjects were involved from 60 to 70 years old. The study was performed during 56 days. Cutaneous hydration rate, Trans Epidermal Water Loss, skin biomechanical properties, cutaneous relief parameters, and orientation of the lines in the cutaneous relief were evaluated.

Besides, self-esteem was evaluated at D0 and D56 using the Rosenberg scale (1965). The scale is a ten item Likert scale with items answered on a four point scale – from strongly agree to strongly disagree. The Profile of Mood States (POMS) which is a psychological rating scale used to assess transient, distinct mood states, was also administered at the same period (Mc Nair et al.1971).

Results

*Sphingomonas* extract treatment at a concentration of 0.1% allowed decreasing p21 expression in the dermis of reconstructed skin. This decrease was about 58% (p<0.001) versus untreated condition (Figure 2). We also noted a significant decrease in the p16 expression. This decrease is respectively 20% versus the untreated condition (\*\*\* p<0.001).

Figure 3 shows the expression of β-galactosidase. Retinoic acid and *Sphingomonas* extract treatment decreased the β-galactosidase expression as compared to the untreated control. These decreases were 78% versus the untreated condition (p< 0.01).

We know that exposure to lipopolysaccharide (LPS) results in the formation of hydrogen peroxide in a concentration-dependent manner and that LPS induce cellular senescence and secretion of IL-8 and IL-6 as noted

in the literature. The bacteria extract induced a significant decrease of IL-8 when compared with LPS (p<0.01) and a decrease of 31% when compared with the untreated condition. This observation was also reported for IL-6.

Efficacy has also been demonstrated on the synthesis of extracellular matrix components (neocollagen, fibrillin-1, versican).

Finally, after 56 days of *Sphingomonas* extract treatment, we noted a significant improvement in average roughness (-9% p=0.025 versus D0, with a positive effect for 68% of subjects) and average relief (-8% p=0.044 versus D0, with a positive effect for 64% of subjects). The skin was also noticeably more supple. In fact, we noted a significant increase in Ue parameter (reflecting the suppleness evaluated using the deformation and immediate extensibility of the skin) of +12% on average (p< 0.001 versus D0), effect observed in 70% of the subjects. At the same time, the placebo induced a non significant increase of 4%.

Using a VISIA from CANFIELD® imaging system, which allows to take pictures with different types of illuminations and a very rapid capture of images, we reported that this active ingredient induced anti-wrinkle effect on crow’s feet (Figure 4).

Concerning the psychological status, we noted a significant increase of self-esteem between D0 and D56 (10.5%, p< 0.001 ; 31.3 ± 0.7 versus 34.6 ± 0.67 respectively). At the same time, the mood state also significantly increased (p< 0.003).

Discussion and Conclusion

Understanding the mechanisms that underlie senescence and skin is of importance not only for cosmetic purposes, but also from a biomedical viewpoint considering to avoid autoimmune diseases, and various malignancies. Considering the aging population, there is a fear of a significant increase in cases in the coming years. Research of natural substances that can delay skin aging has been the object of increasing interest in the last few

years. Recently, probiotic bacterial fermentation emerges as one of crucial processing tools in cosmetic technologies in order to enhance absorption into the skin, improve desirable pharmacological activities. In contrast to probiotic extract, little has been done on other microorganisms.

To our knowledge, we are the first to identify that *Sphingomonas* extract delays intrinsic skin aging process by inhibiting cellular senescence. In fact, it does not only attenuate cellular senescence through inhibition of the p21 and p16 and signaling pathways but also increase the expression of fibrillin-1, implicating in the formation of elastic fibers and elastin. The *in vivo* study showed that this bacteria extract maintains skin’s beauty after 60 years old by maintaining the cutaneous barrier and by improving the suppleness of the skin. It has also the capability to restructure and has and anti-aging effect.

As suggested by Pearlman (1993), physical changes between the ages of 55 and 60 years affect one’s physical and disrupt self-esteem. The present findings showed that the beneficial physiological effects induced by SP has a positive influence on mood and self-estem. Because skin aging causes emotional distress, *Sphingomonas* extract can serve as an anti-aging cosmeceutical agent and help to build a better psychological health.

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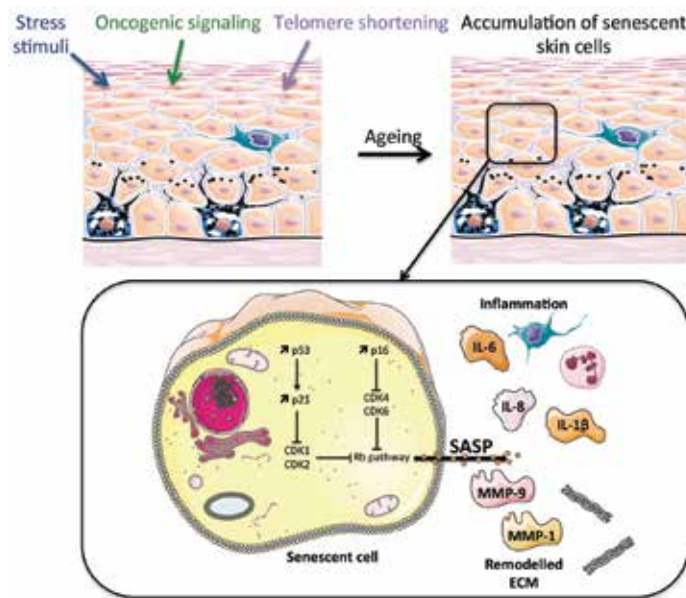
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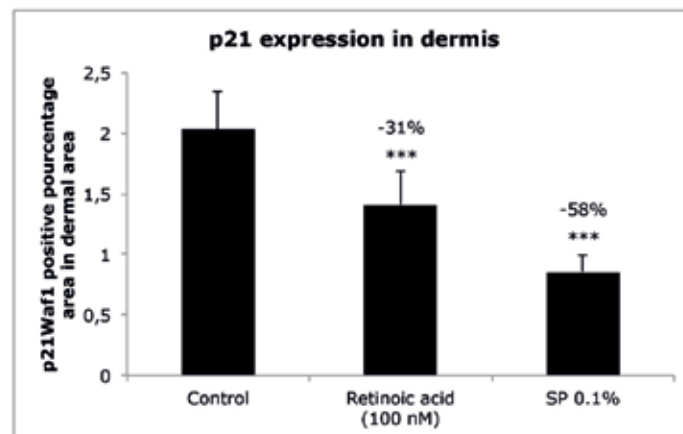
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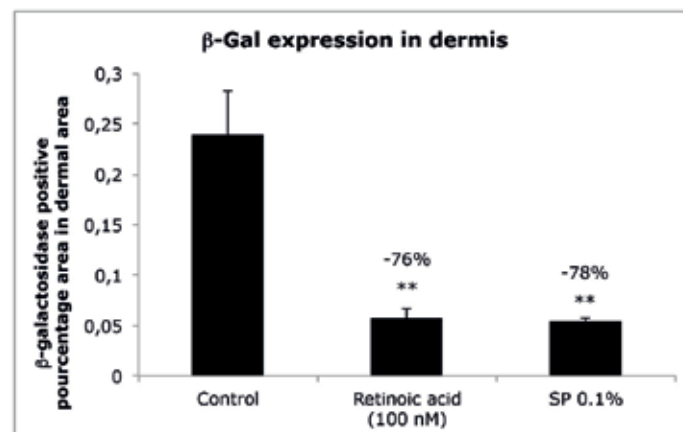




**Figure 1 : Causes and consequences of senescence**  
The senescence phenotype is induced by multiple stimuli which activate p53/p21 or p16 pathways according to the factors that cause stress. p16 is found to be major CDK inhibitor for both CD4 and CDK6 kinases. p21 binds to and inhibits the activity of cyclin-CDK2, CDK1 inducing growth arrest. Senescent cells release proinflammatory agents including IL-6, TNF- $\alpha$  and IL-8, matrix metalloproteinase-9, cyclooxygenase-2...which are prominent sources of ROS and accelerate the ageing process.  
CDK: Cyclin-dependent kinase



**Figure 2 – p21Waf1 expression quantification normalized by the total dermal area.** Automatic analysis of staining with « ImageJ » software. Statistical analysis: t-test. \*\*\* p<0.001.



**Figure 3 – Quantification of β-galactosidase positive cells in the dermis of aging reconstructed skins.** Automatic analysis of staining with « ImageJ » software. Statistical analysis: t-test. \*\* p<0.01.



**Figure 4 – Pictures of volunteer 4 at D0 and D56 with the use of Sphingomonas extract**

# Be authentic with BASF's Care Creations™

by Aurelie Saintigny

Presenters: Helen Costanza and Michele Dalli

The world of cosmetics is shaped by diverse and changing lifestyle trends. But if we look and listen closely, we can draw inspiration from the patterns that emerge – like the merging of authentic, nature-oriented lifestyles and sophisticated beauty. This spirit is reflected in two major beauty trends: Mediterranean Influences and the Experimental Nomad.

Discover our Be authentic concept based on our broad portfolio of ingredients and innovative technologies.

## Mediterranean Influences

All over the world, the Mediterranean lifestyle is admired as the quintessence of joie de vivre. Relaxation and elegance, sunny beaches, exquisite fashions, fine and healthy cuisines and the pursuit of sheer pleasure – Mediterranean living evokes the finer things in life.

Our nutri-cosmetic formulas are inspired by Mediterranean lifestyles and optimum sun protection based on our filter solutions. The formulas focus on hydrating and glamorous textures combined with ingredient traceability.

Dry Sensation Protecting Oil SPF 30  
Gentle Olive Scrub  
Gourmet Body Balm  
Lite Sun Matrix Fluid SPF 50+

Monoï Hair Mask  
Rich Shea Butter Face Cream

## Experimental Nomad

Today's sophisticated urban lifestyles have fostered a new breed of nomad:

The Experimental Nomad yearns for faraway, exotic places and immersion in untouched nature. Journeys of discovery are as much an exploration of the world as of the self.

We develop all-in-one, compact

formulas that are easy to use and fit in a backpack 'for beauty on the go'. A focus on natural ingredients promotes reconnection with the environment.

All Purpose Moisture Fluid  
Nature-inspired 2 in 1 Wash Gel  
Intense Therapy Balm  
Catapasm Water Jelly  
My 3-Step Happy Beauty  
Earthly All-in-Oil  
Sun Matrix SPF 50+

### Helen Costanza

I first entered the world of Personal Care in 2001 when I joined then Henkel, which soon after became Cognis. I worked in the Customer Service role for 6 and half years before leaving Cognis to pursue a role in the Building Industry which is my background as a qualified Architectural Draftsperson. Through my continued relationship with Dr. Teresa Harding I was persuaded to return to the Personal Care Industry in 2013 joining BASF as the Distributor Manager for ANZ.



### Michele Dalli

After completing my Bachelor of Science Degree, I joined Henkel in the Quality Control Department in 1997. In 2001 this division was carved out and became Cognis, my role was then working solely in the lab as Development & Technical Service Chemist. In 2011 Cognis was purchased by BASF, and once again my role changed to Technical Sales Specialist and Account Management.





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