

Feature; Men's Grooming
John Woodruff

According to data published by Euromonitor [Ref 1] sales of cosmetics and toiletries in the UK specifically for men in 2011 approximated a value of £1 billion. Deodorants accounted for nearly 30% of this; bath and shower products about 12.5%, shaving products about 10% and skin care nearly 12%. Surprisingly razors and razor blades accounted for over 32% of total value while men's hair care products were less than 5% of total sales. Market share is dominated by Procter & Gamble UK Ltd with 31% and Unilever with 24.7% and all other companies having less than 5% each.

A review of patent literature over the last decade shows very little activity in products aimed specifically at men except for deodorants and shaving products. A patent granted in 2010 [USP 7,730,551] describes an absorbent pad to be worn in the armpit to absorb perspiration but a search for specific bath, shower and skin care ideas for men only discovered references to masculine notes in perfumery.

A look through titles that have appeared in the International Journal of Cosmetic Science discovered one on the subject of sexual differentiation in sensitivity to male body odour [Ref 2]. It confirmed that more female subjects than male subjects evaluate male body odour as significantly unpleasant.

With the majority of men preferring wet shaving the most popular pre-shave products are shaving foam and shaving gel. Shave foams are an aerosol version of the original shave creams based on soft soaps such as TEA-palmitate and TEA-myristate and likely to contain alkoxyated alcohols such as oleth-20 to improve foam. Glycerine may be included to soften hair and condition skin in order to deliver a smooth razor glide and a shave that's close and comfortable.

Other additives to improve razor glide may be esters, vegetable oils or silicone compounds and many will include botanical extracts to conform to modern trends in natural ingredients. Shave gels are similar in composition but instead of a propellant to foam the product they contain a volatile hydrocarbon, typically isopentane, which foams the gel on application.

Two patents illustrate these products USP 6,165,456 describes a self-foaming shaving gel, which includes water, a water-soluble soap component, and a self-foaming agent, plus hydrogenated polyisobutene in combination with a fluoro-surfactant. When spread over the skin and beard the composition produces foam generated by the action of a volatile self-foaming agent. A different approach to this type of formulation is described in USP 5,858,343 that utilises polyethylene oxide and polyvinylpyrrolidone in an aerosol composition.

A patent granted to Gillette in 2003 [USP 6,627,185] is for a non-aerosol shaving gel free of thickening and gelling agents. It proposes the use of a triethanolamine soap completely dissolved in water with a solubilising agent to provide the soap in the hexagonal liquid crystal phase in the composition. When the soap molecules are arranged in this form, the composition becomes a non-flowing gel with a yield viscosity.

A novel effect is possible by incorporating XO-Therm-SP from **Chemsil Silicones Inc.** It is a medium viscosity, self-warming liquid lubricant that instantly warms upon contact with moisture, with temperature increases up to 15°C possible. XO-Therm-SP

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[INCI: PEG-8, PEG-4, VP] was specially formulated for use in shaving applications where a warming sensation combined with lubricity and emolliancy is desired.

There is a trend away from traditional foams and gels towards serums and oils: lubricating oils include silicones, meadowfoam and other natural oils plus various essential oils to add zing and sting: mint, lavender and tea tree oils are popular examples. Other ideas include Tamanu oil [INCI: Calophyllum inophyllum oil] from **Greentech**, which is a natural oil with wound healing and antiseptic properties and Daikon Radish Oil from **Natural Plant Products** [INCI: Raphinus sativus seed oil], which is a natural vegetable oil with a cushioning and silicone like feel.

For those seeking natural oils from sustainable sources that are being harvested to the advantage of rural populations the Ubuntu range of African oils is worth consideration. They were developed by **PhytoTrade Africa** and **Aldivia** and include Ximenia oil, which is sourced from primary producers in Northern Namibia. The Ximenia fruits are harvested and processed by villagers who have been fully trained in sustainable harvesting techniques to ensure that the supply of Ximenia is protected for future generations. Other oils are available and **Aldivia's** expertise in natural oils and green technologies ensure the consistently high quality required for effective cosmetic formulations. **PhytoTrade Africa** guarantees indigenous African raw materials that have been sustainably wild-harvested by, and for the benefit of, poor rural people.

An advantage of shave oils is that the area to be shaved can be seen and after shaving residual oils can be massaged into the skin. A variation incorporates an emulsifier like PEG-40 hydrogenated castor oil so that the face may be readily rinsed clean after shaving. Another surfactant of interest for this application is Olivem 460 from **Hallstar** that is derived from olive oil fatty acids [INCI: Sodium PEG-7 olive oil carboxylate] with foaming, cleansing and solubilising properties.

Research in the area of male hair removal has identified several key issues that men continually experience in the hair removal process. One particular issue stems from the phenomenon of trapped hair, the extreme forms of which are *folliculitis* and *pseudofolliculitis barbae*. *Folliculitis* occurs when hair follicles become infected, often with *Staphylococcus aureus* or other types of bacteria. *Pseudofolliculitis barbae* is a disorder that occurs mainly in black men. If curly beard hairs are cut too short, they may curve back into the skin and cause inflammation.

The majority of men report the neck as the area where they are most likely to experience soreness and irritation. Signs of shave-induced irritation include redness, nicks and cuts, burning, stinging, tightness, dryness and itching, often leading to irritation in prone areas.

Under stress, such as the shaving process, keratinocytes secrete a large number of pro-inflammatory mediators known as cytokines. Cytokines are capable of activating, directly or indirectly, all the cells of the epidermis but generally speaking, the inflammatory response is limited in time thanks to a system that controls the amplification phase. The controlling factors are anti-inflammatory cytokines, anti-proteases and anti-free radicals however, if the inflammatory response is poorly controlled, it can become aggressive. Whereas cytokine production by skin cells is

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low and even non-existent in normal conditions, it increases considerably under stress conditions.

Gattefossé has studied the inflammatory response and determined which vegetal fractions can activate the modulation mechanisms of the inflammatory processes. It selected the buds of *Capparis spinosa* or caper and studies by Gattefossé showed that the caper bud offered significant anti-inflammatory activity in the presence of stimulated inflammation. The active fractions of caper were then identified as mainly cappaprenols, which are isolated by supercritical CO₂ extraction, and incorporated them in Gatuline Derma Sensitive [INCI: Octyldodecyl myristate, Capparis spinosa (Caper) fruit extract] and suggest if used at 2% in post-shaving products it will significantly reduce inflammation.

Also from **Gattefossé**, Gatuline A is a plant-derived active material, designed for cosmetic and dermatologic products formulated to soothe, calm and reduce redness of the skin [INCI: Ranunculus ficaria (Lesser celandine) extract]. Defensil from **RAHN** [INCI: Octyldodecanol, Echium plantagineum seed oil, Cardiospermum halicacabum flower/leaf/vine extract, Helianthus annuus (Sunflower) seed oil unsaponifiables] is suggested for inflammation and irritation caused by shaving.

There are many ingredients that are claimed to reduce inflammation but few aimed specifically at men. **TRIglyphix Sense** [INCI: Hordeum vulgare seed isolate] from **Tri-K** is suggested as an ingredient to be added at 5% to post-shave products to reduce the appearance of redness and folliculitis with results visible in as little as 3 days. In-vivo and in-vitro trials by **Tri-K** show it helps regulate inflammation, stress response and repair mechanisms and increases synthesis of collagen, elastin and hyaluronic acid.

Ircalmin PF from **Pentapharm** is a multi-component mixture of which the principal ingredients are Triticum vulgare (Wheat) germ extract, Saccharomyces cerevisiae extract, sodium hyaluronate and panthenol. It is described as a biopolymer complex made from plants and created by biotechnology for use in skin care products to combat the aggressions of modern life. It acts as a multi-functional anti-irritant that is also able to regenerate the protective lipid layer of skin damaged by activities such as sport and shaving.

Sea Heather by **Gelyma** is obtained from three Mediterranean varieties of *Cystoseira* species of brown algae, which contain large amounts of free phloroglucinol and its polymers. Phloroglucinol is a free radical scavenger that inhibits lipid peroxidation and the production of arachidonic acid and leukotrienes, thus reducing irritation and inflammation due to skin trauma caused by shaving.

Reducing vigorous hair regrowth is one way of reducing irritation by making shaving easier and less needful. Several materials have been suggested that can help in this regard including AP100 from **Greentech**. It is an aqueous-alcoholic solution of extracts of Serenoa serrulata fruit, Epilobium angustifolium and Curcubita pepo (Pumpkin) seeds that has high levels of ruscogen and proline to reduce hair regrowth.

From **Kalichem** comes Mix Oxy Stop, a mixture of ten extracts with amino acid derivatives that is said to render regrowth finer and less pigmented and also to have a

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soothing effect on the skin. Depil Enzyme from **I.R.A.** is a solution of subtilisin, a serine protease obtained by microbial fermentation. This enzyme is able to catalyse the cleavage of most of the peptide links in a protein, reducing it to small peptides that are readily soluble and it can act against the newly synthesised keratin which occurs at the hair follicle.

Akott's range of Akomplex extracts includes Akomplex Epil Oil; a liposoluble blend of botanical extracts, which is reported to slow hair growth. This property is based on the synergistic activity of papaya extract with *Serenoa serrulata* and its content of polyphenolic compounds with soothing and antioxidant activity. It is supplied in a solution of caprylic/capric triglyceride and Glycine soja (soyabean) germ extract and **Akott** recommends that it is used at 1 – 5% to delay hair regrowth and to provide emolliancy to the product.

Decelerine from **Lipotec** is a mixture of lauryl isoquinolinium bromide that inhibits hair growth; Pseudoalteromonas ferment extract, which provides a healing and smoothing effect, and aloe vera and allantoin that have moisturising, soothing and anti-inflammatory properties. As with all ingredients mentioned in this feature, the suppliers publish data to show the efficacy of the material. That from **Lipotec** shows the results of in-vivo testing on males over a 60 day period, which resulted in a significant reduction in the density and length of hair on the treated area.

Pilisoft is an aqueous/glycolic extract of *Gymnema sylvestre* leaves from **BASF Beauty Creations**. It is a specific active that prolongs and enhances the effects of hair removal treatments by combining a reduction in hair vitality and a visible slowing down of hair growth, resulting in increased ease of depilation and shaving. Clinical testing showed that Pilisoft at 1% in a gel has significant anti-hair growth activity with a reduction of 12% after 28 days of application.

The problem of trapped and ingrown hairs can be tackled in several ways: the recent introduction of multi-blade razors ensures a closer shave and improvements in pre-shave products help soften the beard prior to removal. Where this is not sufficient the use of exfoliants can be beneficial. **Laboratoires Expanscience** offer Prunus cerasus (Bitter Cherry) shell powder and Persea gratissima (Avocado) fruit powder. **PQ Corporation** provides a wide range of silicas with different levels of particle size and skin feel. CBT60S had rapid breakdown and provides a mild tingling sensation when incorporated in a face wash and CBT70 breaks down very slowly, offering more exfoliation.

Shamrock Technologies specialises in fluoropolymers and speciality waxes as additives to improve the texture, application and durability of make-up but it also supplies polyethylene and polypropylene spheres in a range of particle sizes as scrub and exfoliant additives. It is claimed that the carefully controlled particle size distribution allows varying degrees of abrasiveness and scrubbing action.

Also polymer-based are the **Asensa SC** range of white powder low molecular weight copolymer scrubs with moderate hardness. They are slightly oxidised to render them easier to disperse in skin care products. The hardness and geometry of the spherical particle shape avoids the problem of micro-cuts on the skin which can occur with natural materials.

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There are many other exfoliants available from suppliers such as **A&E Connock** that has a range varying in abrasive properties from rose petals to pumice and includes both natural and polymer-based materials. Cosmospheres GC3-S from **Pelletech** are small green spheres containing menthyl lactate that break down on rub-in to release a cooling sensation. **Gemro** have a number of exotic exfoliants based on materials from the Amazon and other areas around the world.

The increase in sales of products for men is very much due to an appreciation by males that their appearance can be improved by taking care of their skin. Hitherto this generally involved using whatever products their partner left available but there are physiological differences that have opened up the market for male-specific products.

Comparative studies of male and female skin [Ref 3] suggest that the influence of androgens, especially testosterone and dihydrotestosterone, result in reduced viability of hair at the scalp and reduced epidermal permeability barrier repair capacity. More recently it was investigated whether visible skin colouration predicts perception of male facial age, health and attractiveness [Ref 4]. The author's findings were that age, health and attractiveness perception of men's faces could be predicted by the ratings of cheek skin only, such that older men were viewed as older, less healthy and less attractive. The conclusion was the potent signalling role of skin in its own right, independent of shape or other factors suggested strongly that visible skin condition, and skin colour homogeneity in particular, plays a significant role in the perception of men's faces.

Searching further afield reveals an interesting article by John Oblong in *Dermatological Therapy* that describes male skin care, shaving and moisturising needs [Ref 5]. Oblong concludes that male skin biology has unique properties that are distinct from females and have a significant impact on the way males groom and maintain their overall appearance. He suggested that male skin has a different response profile to such environmental insults as UV, heat, and stress that is based on underlying biological differences. Oblong discusses these differences and implies that a broader understanding of male facial skin care is required to ensure proper grooming and sunscreen and moisturiser usage.

The *British Journal of Dermatology* published a special issue on research considerations for the care and appearance of men's skin in which P. Elsner discussed the trends in men's grooming from a dermatologists perspective [Ref 6]. Elsner suggested as men are changing their habits and increasingly tend to use cosmetic products, the dermatologist will be asked for expert advice regarding efficacy and safety of cosmetics for male skin and dermatologists need to be aware of anatomical and physiological differences between male and female skin.

Other articles in that issue discussed male skin and ingredients relevant to male skin care and also insights into shaving and its impact on skin. This latter one [Ref 7] describes how male grooming is being impacted by improvements in fundamental understanding of male skin.

According to a publication by **Kao Chemicals Europe**, *Men's Grooming Formulations*, the three main differences between female and male skin are firmness, thickness and sebaceous secretion. Men's skin is around 25% thicker than women's,

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which makes it more resistant and less affected by allergens or UV rays. Men's skin also ages more slowly thanks to its firmness and the secretion of more sebum moisturises the skin. However, the cheeks and the neck skin are often dry and dehydrated due to shaving. The publication gives a range of ideas for various products aimed at men.

A presentation available from **Cornelius Cosmetics and Personal Care** is entitled Men's Skincare and it gives a round up of the principal brands to be found in this area. It then identifies the various problems encountered by men in caring for their skin and identifies product forms and selected ingredients to meet those needs.

It would appear from these articles plus a review of men's skin products already on the market as well as new ingredients being introduced to target male skin that the principal areas of interest are moisturisers, improved skin tone and radiance and a reduction in puffy eyes and eye bags.

Pentavitin from **Pentapharm** is a solution of saccharide isomerate in water that ensures instant, deep hydration and generates a moisture reservoir that lasts for 72 hours. Extensive in vivo and gene expression studies show that Pentavitin leads to more and better hydrated epidermal cells and an improved skin barrier. Skin benefits are smoothness and softness and more than 50% reduction in flakiness and itchiness caused by dry skin after only two weeks of application.

Trehalose has been shown to protect human fibroblasts from dehydration and to increase cell viability. It is available from **Hayashibara** as a water-soluble powder and studies by the supplier show that it also suppresses the breakdown of fatty acids that lead to human malodours, which suggest its use in deodorant sprays.

Hayashibara also markets Alpha Glucosyl Hesperidin, which has anti-inflammatory properties and also improves blood circulation in the hands and lips.

For skin radiance and luminosity and a good masculine story **Laboratoires Expanscience** offer Skinergium [INCI: Hydrolyzed lepidium meyenii root]. Derived from Maca root to give energy to tired, dull skin this extremeophile lives 11,000ft in the Andean mountains of Peru. Skinergium is said to offer skin firming and anti-wrinkle properties and it stimulate fibroblast cells to produce collagen and elastin. The sugars present offer luminosity and radiance to brighten the skin complexion.

Another product with a masculine flavour is made for CellActive-MEN from **RAHN** [INCI: Aqua/Water, glycerin, taurine, Chlorella vulgaris/Lupinus albus protein ferment, Acanthopanax senticosus (Eleuthero) root extract]. It is one of the few materials targeted specifically at male skin and contains taurine for moisturising and energising the skin. Acanthopanax senticosus is an adaptogen which protects the skin against stress and changing climates and with taurine it works to reduce cell death. Chlorella vulgaris/Lupinus albus protein ferment contains all the essential skin amino acids and trace element to help bind the cells together and promote healing of small nicks and cuts from shaving.

All our living cells need energy in the form of adenosine triphosphate (ATP) as fuel to carry out biochemical reactions. The energetic performance of our cells can be challenged by many factors and various ingredients are offered that claim to support

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the cells need for energy. An example is Peptide Q10 from **Vinscience** that is shown to increase cellular energy by increasing the formation of ATP. Trials show it is a strong anti-oxidant and that it reduces the appearance of wrinkles.

Energen from **Provital** contains Sapindus mukurossi fruit extract and Caesalpinia spinosa gum in aqueous/glycolic solution. It is described as an innovative three-dimensional hydrocolloid matrix composed of galactomannans obtained from Caesalpinia spinosa seeds, which sequentially releases saponosides extracted from Sapindus mukurossi fruits into the skin. This energy source is claimed to prevent and reverse the symptoms of tired skin, leaving it better toned, and because the galactomannans cannot penetrate skin, they form a film on its surface, making it feel smoother and moisturised.

Staying with the energy theme Somatine from **Greentech** is Mannosyl glucuronic acid oligoglucan, which is described as a cellular energy booster that recharges cell batteries and increases cell respiration and metabolism. SMS Energy from **Silab** is rich in purified oligopeptides obtained from chick pea. It is said to reinforce the bioenergetic potential of the skin and boost cell renewal.

Magnolidone from **Solabia** is the magnesium salt of L-pyrrolidone carboxylic acid (L-PCA). It is described as a men's energising active that plays a key role in cellular metabolism. It stimulates L-PCA which is naturally present in the skin and is a link between energy metabolism, the protein pool and skin hydration. Also from **Solabia**, Asparlyne is L-lysine aspartate, an active bio-energising; anti-stress ingredient essential for skin relaxation and protection against daily aggressions.

Riboxyl from **Lucas Meyer Cosmetics** is pure ribose, a natural pentose obtained by biotechnology from corn seed sugars. Ribose is a key molecule present in all living cells, acting on the metabolism of ATP and oxygen.

As skin loses its elasticity and muscles weaken through age, loose skin can accumulate around the eyes, forming eyebags. Water accumulation is another reason for puffy eyes, also known as eyelid oedema. This accumulation may be caused by poor lymphatic circulation or an increased capillary permeability. Eyeseryl from **Lipotec** is acetyl tetra peptide-5, which fights against oedema-forming mechanisms and shows a decongesting effect, enhancing elasticity and skin smoothness.

Eyeliss from **Sederma** contains three actives; hesperidin methyl chalcone, palmitoyl tetrapeptide-3 and dipeptide-2. Hesperidin methyl chalcone is an antioxidant to fight fragility of the capillaries. Palmitoyl tetrapeptide-3 is used to counteract skin slackening and to increase the firmness of fragile skin area around the eye. It also decreases irritation that could lead to puffiness. Dipeptide-2 is composed of valine and tryptophan and it assists with correcting poor drainage associated with eye bags by increasing the lymphatic exchange and achieving proper circulation of the extra cellular fluids.

For eye bags RAHN offer Perfeline, which contains synthetic caffeine to stimulate microcirculation, l-carnitine to burn the fat and butchers broom extract to help strengthen blood capillaries and enhance cell drainage through the lymphatic system.

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Combined these ingredients stimulate increased lipolysis activity and will reduce under eye puffiness and dark circles.

Lucas Meyer suggests Aldavine 5X to fade dark circles. It is a combination of 2 algal sulphated polysaccharides, *Ascophyllum nodosum* and *Asparagopsis armata* that improves microcirculation in the eye area. **Lucas Meyer** also produces Lanachrys 2B, an active from *Chrysanthellum indicum* that activates lipolysis to stimulate fat elimination and lymphatic drainage. **Lucas Meyer** suggests incorporating both materials together into eye care compositions to reduce eye puffiness and dark circles.

Cytobiol Lumin-Eye from **Gattefossé** is an extract from the bark of Fraxinus excelsior (Ash) trees combined with organic silicon and niacinamide to combat the appearance of dark shadows and bags under the eyes. Bioskinup Contour 3R from **Chemyunion** contains concentrated plant extracts of Pfaffia paniculata (Brazilian Ginseng) root, Ptychopetalum olacoides (Marapuama) bark/stem and Lilium candidum (Madonna lily) flowers that is said to treat dark circles and eye puffiness.

Vivillume from **Lonza** is an extract of the white bird of paradise flower, *Strelitzia Nicola*, which is able to degrade bilirubin, a degradation product of haemoglobin responsible for dark colouration and uneven pigmentation. It also reduces eye-puffiness and improves the radiance of the skin.

Collagen cross-linking as a result of a glycation reaction, is one of the main causes of the formation of eye bags. From **Greentech**, Setiline [INCI: Hydrolyzed trigonella foenum-graecum seed extract] has an anti-glycation effect giving an improvement in skin tone and radiance, a reduction of age spots and it improves skin elasticity and moisture levels.

Many of the trade named ingredients mentioned are mixtures but only the principal active ingredients are recorded here. Also many are approved by Ecocert. Full information is available from the suppliers.

Ref 1 Men's Grooming in the United Kingdom; Euromonitor Int., July 2012

Ref 2 Int. J. Cosmet Sci; **31**, 333–341, (2005)

Ref 3 Int. J. Cosmet Sci; **28**, 343–347, (2006)

Ref 4 Int. J. Cosmet Sci; **34**, 307–310, (2012)

Ref 5 Dermat. Therapy, **25**, 238–243, (2012)

Ref 6 B. J. Dermat. **166**, s1, 2–5, (2012)

Ref 7 B. J. Dermat. **166**, s1, 6-12, (2012)

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