



## Ingredients in Suncare

Allie Anderson speaks to practitioners about their go-to sun care products and how they work to safeguard the skin from damage

**Non-melanoma skin cancer has the highest incidence of all cancers in the UK, with more than 130,000 cases diagnosed every year.<sup>1</sup>** This doesn't even factor in unreported cases, of which there are likely to be many, according to Cancer Research UK. Melanoma, on the other hand, is the fifth most common cancer in the UK, accounting for 13,500 new cancer diagnoses annually.<sup>2</sup> While non-melanoma skin cancers tend to be curable and easily treated – most cases are surgically excised and require no further treatment<sup>3</sup> – melanoma is often less straightforward and survival rates are dependent on many factors, such as the specific type of melanoma, the stage at which it is diagnosed, the patient's age and overall health.<sup>4</sup> What both cancer types have in common is that exposure to ultraviolet light from both the sun and sunbeds is a major cause and risk factor.<sup>5</sup>

### How UV light affects the skin

According to the British Association of Dermatologists (BAD), ultraviolet A (UVA) and ultraviolet B (UVB) rays are the two main types of harmful radiation and damage the skin in a number of ways. UVA affects the elastin in the skin, which leads to wrinkles and sun-induced skin ageing such as coarse wrinkles, leathery skin and brown pigmentation, as well as skin cancer. UVB is most responsible for sunburn and has strong links to malignant melanoma and basal cell carcinoma.<sup>1</sup> The mechanism by which this damage occurs is cellular death: the ultraviolet radiation kills off skin cells by breaking down their DNA. This can happen indirectly – the UV rays cause proliferation of free radicals leading to oxidative stress, which in turn attacks cellular DNA – and directly, by initiating a reaction between two thiamine molecules in the DNA strand and, thus, altering its structure.<sup>6,7</sup> Dr Laurence Dryer, research scientist and skincare professional, and vice president of research and development at Obagi Medical, notes that not only does UV radiation damage skin cell DNA, but it also impairs the biological processes that are designed to restore it. "Once the sun rays denature the DNA, it in turn causes the way the DNA is put together to unravel, and the rays also damage the enzymes that are normally there to repair the DNA should there be a problem with it. When the DNA is prevented from repairing itself, it's not going to make enough collagen and elastin – the components that make the skin resilient, strong and young," she explains. "Moreover, the sun stimulates additional enzymes that will degrade the collagen and elastin that are already there. So, the sun attacks and breaks down elements in the skin that are already present, and slows down the synthesis of elements that you need."

### Unravelling sunscreen

Regularly using a broad-spectrum sunscreen that protects the skin from UVA and UVB radiation has been demonstrated to help prevent photoageing and reduce incidence of skin cancer.<sup>8,9</sup> Practitioners interviewed concurred that clinicians must therefore make effective sun protection an integral part of their package of care for patients, not only because they are proponents of healthy, youthful skin, but also because the success of the treatments and procedures they perform depend upon preventing further damage. "Sun protection is the aesthetician's insurance policy," Dr Dryer states, "Because if a practitioner is repairing something, and the patient is not using sun protection every single day, they're fighting a losing battle." With manifold sunscreens on the market and a surfeit of potentially confusing and conflicting information about which is best, aesthetics practitioners are well placed to guide patients.

### Physical vs. chemical

At the most basic level, sunscreens are categorised as either physical or chemical – but they can also be a combination of the two. Miss Sherina Balaratnam, surgeon and founder of S-Thetics, explains that the two work in fundamentally different ways. "Physical sunscreen provides the skin with protection by reflecting and scattering the UVA and UVB rays away from the skin's surface," she says. "Chemical sunscreen works differently: it absorbs the UVA rays and UVB rays, converts it to heat and then releases it from the skin." Physical and chemical sunscreens can also be differentiated according to the types of UV filters they contain – the active ingredients that protect against radiation. Table 1 summarises some of the common UV filters found in physical and chemical sunscreen, as well as the properties of both.

### Focus on ingredients

When recommending sun protection to patients, Miss Balaratnam chooses the "multitasking" iS Clinical products that she says are suitable for a number of indications. Among the range she recommends to patients are the iS Clinical Extreme Protect SPF30, and Eclipse SPF50+, both containing titanium dioxide and micronised zinc oxide, as well as extremozymes that repair cellular damage and reduce DNA breakdown.<sup>10</sup> "These ingredients work intrinsically by doing three things," she says. "They repair the cellular DNA, contain antioxidants to

	Physical sunscreen	Chemical sunscreen
Common UV filters	Titanium dioxide (TiO <sub>2</sub> ) Zinc oxide (ZnO)	Octocrylene Avobenzone Octinoxate Octisalate Oxybenzone Homosalate Helioplex 4-MBC Mexoryl SX and XL
Properties	Generally stable  TiO <sub>2</sub> protects against UVB rays and some of UVA rays ZnO protects against the entire spectrum of UVB and UVA rays  Provides protection immediately after application	Variable stability (avobenzone is known to be unstable but can be stabilised if combined with other ingredients)  Chemical filters provide more protection, depending on stability and specific UV filter  Provides protection 20 minutes after application (must be applied in advance of sun exposure)
Patient tolerance	TiO <sub>2</sub> isn't tolerated by everyone ZnO is well tolerated	UV filters can irritate some skin and cause allergic reactions

Table 1: Sunscreen ingredients and properties<sup>21</sup>

repair oxidative stress caused by sun damage, and give the skin hydration because they have vitamin E, olive leaf extract and centella asiatica, so they have excellent anti-inflammatory properties.”

It's not just UV light that patients need to be aware of. In recent years, evidence has suggested that infrared (IR) rays can be damaging to the skin. Although IR rays comprise around 50% of radiation emitted from the sun – in comparison to UV rays, which account for just 2-3% – they are less potent and hence, have not received much attention.<sup>11</sup> Notwithstanding, IR rays have been shown to cause the proliferation of free radicals and decrease collagen synthesis, resulting in photoaged skin.<sup>12</sup> Furthermore, dose-dependent high-energy visible (HEV) light – or blue light, such as that emitted from computer, TV and smartphone screens – can degrade antioxidants in the epidermis and cause similar damage over time.<sup>13</sup>

For the founder of EF Medispa, Esther Fieldgrass, this is evidence that sunscreens should protect against the full spectrum of light, and she recommends patients use products from mesoesthetic. “This sun protection covers the skin from UVA, UVB, HEV and IR light – giving patients optimal combination of physical, biological and chemical filters to provide maximum effectiveness,” she comments. In addition, she adds that the mesoprotech range includes products containing different active ingredients – physical and chemical and biological – for different skin requirements. “Each product includes the addition of collagen pro-47, a chaperone protein that protects and enhances collagen,” Fieldgrass says. “The melan 130+ also contains azeloglicine to regulate hyperpigmentation by inhibiting tyrosinase activation. This combination combines intensive treatment active principles with sun protection, so they are working to improve the skin – not just to protect it.” Since HEV and IR protection is a fairly new concept, relatively few sunscreens – particularly high street brands – include filters to prevent these rays from penetrating the skin. So, as practitioners interviewed attest, a broad-spectrum sunscreen to guard against UVA and UVB is the very minimum patients should use. It's important, however, that patients are educated in regards to the level of UV protection products offer – in a 2017 survey, 60% of UK adults thought that SPF ratings indicated the degree of protection from all of the sun's harmful rays, and while almost two-thirds said that SPF is the most important thing to look

for on sunscreens, 44% didn't know what SPF meant.<sup>14</sup> Practitioners, therefore, should make sure their patients are informed about the dangers of UVA as well as UVB radiation. This includes understanding that a product's UVA star rating indicates the percentage of UVA radiation absorbed by the sunscreen only in comparison to the UVB protection it affords – or, the ratio of the level of UVA to UVB protection.<sup>15</sup> In other words, a sunscreen with SPF15 and a UVA rating of five stars does not offer as much defence against UVA radiation as an SPF30 with a five-star UVA rating. As such, the British Association of Dermatologists recommends a high SPF of at least 30 coupled with a four or five star UVA rating is the optimum choice.<sup>16</sup>

But as Dr Dryer points out, even an SPF30 with a high level of UVA protection will not block all of the sun's UV radiation, leaving the skin still vulnerable to damage. That's

why, she says, it's important to consider all of a product's ingredients.

“The Obagi Professional-C Suncare SPF features avobenzone, homosalate, octisalate, octocrylene, and oxybenzones, which are the five cornerstones that will ensure protection against UVA and UVB, but it will not protect against 100% of the sun rays, so some of those rays will go through,” she explains. “In order for the body and the skin to be protected from the rays that still go through, the product contains 10% L-ascorbic acid, which I believe is the best and most efficacious form of vitamin C.”<sup>17</sup> The L-ascorbic acid fights free radicals and protects against oxidation,<sup>18</sup> offsetting the deleterious effect of the unfiltered radiation, Dr Dryer adds.

The practitioners interviewed agree that UK patients remain somewhat nonchalant about the dangers of sun exposure and sunbed use, many still ascribing to the idea that a tan is a sign of good health.<sup>19</sup> As long as societal norms dictate that a suntan is desirable and attractive, healthcare professionals may continue to face an uphill struggle to engage patients in sun protection. Independent nurse prescriber Anna Baker claims that pigmented sunscreens that contain a sunless tanning element are the solution. “Products that can tick all of the boxes mean people don't have to go and bake themselves in the sun,” she says, adding, “Patients can now use SPF50 with antioxidant protection and still get a tan.”

To this end, Baker recommends two products to her patients; the first being Neostrata Sheer Physical Protection. Suggesting that this is ideal for use on the face, neck and décolletage, Baker describes this as, “A powerhouse of antioxidants and antiageing ingredients,” which also includes a mineral-based pigment that blends to suit a range of skin tones. Containing physical UV filters titanium dioxide and zinc oxide, it has SPF50 and a maximum UVA protection grade of PA ++++ (the Japanese system of rating UVA protection based on the ‘persistent pigment darkening’ process – i.e. the extent to which UVA radiation causes the skin to brown and remain brown).<sup>20</sup>

“It also contains lactobionic acid, which gives antioxidant benefits, hydrates and nourishes the skin, and preserves against detrimental effects of other nasty enzymes associated with sun exposure,” Baker adds. “Two other potent antioxidants in this SPF are EGCG green tea extract, which works to protect the skin's cellular DNA, and vitamin E. It's non-irritating, non-sensitising, and you could use it on rosacea,



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and post procedurally on intact skin, for example after superficial chemical peels," she explains.

Baker's second go-to product for patients wanting a healthy glow is Tancream – a topical sunless tanning lotion that provides SPF 50 and five-star UVA protection alongside an instant bronzer and gradual self-tan. "This is a new concept – it has a colour corrector component to it, which means it can even out skin tone," Baker says. "It's also paraben-free, odour-free, has an antioxidant complex and can be applied just like a moisturiser without any residual staining." Although the high defence against UV radiation makes Tancream a robust sunscreen, Baker notes that over-application can result in the development of a deep brown colour due to the gradual tanning agent. Thus, she advises patients to use it as they would a sunless tanner, rather than as a sunscreen to be reapplied regularly throughout the day. "It is dermatologically tested and is very forgiving and safe, but I would suggest that patients who are taking prescription emollients like topical steroids to check with their dermatologist that there are no contraindications," Baker adds.

## Encouraging compliance

These practitioners concur that a strict approach to sun protection is necessary, such that sunscreen must form an integral part of a patient's skincare regime. "As practitioners, we have to remember to first do no harm," Miss Balaratnam comments. "So, if patients don't want to use an SPF then we're unwilling to carry out treatments; it's as stringent as that." For patients who need persuading, skin analysis techniques and digital imaging to visibly demonstrate skin damage – and the improvement using sun protection – is a convincing strategy says Miss Balaratnam. She carries out a Visia digital skin analysis on all new patients to assess their skin health on the surface and 2mm underneath, and repeats the analysis six weeks later following adherence to a comprehensive skincare regime that compulsorily includes a broad-spectrum SPF. "When we can measure patients' results, we can effectively demonstrate the efficacy of sunscreens and that they work, and this encourages patients to remain motivated to continue using them," she says.

Compliance is further encouraged if patients are offered products that are pleasant to use, says Baker. "People are put off using a lot of high street products because many are thick and cakey, and often give a greasy and chalky appearance – they're simply not very nice to apply," she comments. "In the aesthetics industry, we have access to advanced, very sophisticated, cosmetically elegant formulations that patients like to wear because they feel nice. That means they are more likely to engage in conversations and adopt good skincare regimes." Offering a range of such products that patients enjoy using can also generate upselling opportunities, says Fieldgrass. "Our practitioners at EF Medispa will always finish facial treatments with sun protection before the patient leaves the clinic. These sun protection products can be incorporated into skincare regimes, so this can be included as part of a regular skincare purchase," she says. For example, the mesoesthetic melan 130+ sunscreen can be included as part of a chemical peel package, so that patients derive optimal benefits from the treatment, Fieldgrass states, adding, "This is a fantastic way to upsell a particular product."

## Conclusion

Aesthetic practitioners are in the business of retaining youth, treating photoaged skin to reverse the effects of cumulative, long-term exposure to the sun. They are also dutybound to prevent such damage from occurring. Good-quality sun protection must therefore be a fundamental part of their offering in order to safeguard patients' overall health.

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