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Guest Editors: Matthew Waldrop, PharmD Candidate; Daniel Tomaszewski, PharmD Candidate; Wesley Lindsey, PharmD

Key Inforbits

- What is sunscreen
- Defining SPF
- Tips about sunscreen use
- What to look for when purchasing sunscreen
- Sunglasses for protecting your eyes
- Outdoor sports and UV damage

UV Protection Awareness, Sunscreen & Sunglasses

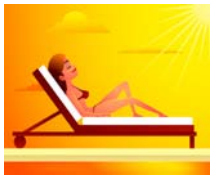
Sunscreen: An ounce of protection is worth, well, about $5-$9.

What is Sunscreen anyway?

Definition: any substance that protects our skin from ultra-violet (UV) radiation. It is available in various forms: lotions, sprays, gels, ointments, and creams, even sunglasses and windows in our homes and offices. The FDA now prevents manufacturers of sunscreens from using confusing terms such as “sunblock”, “all-day protection” and “water-proof”, as the terms are misleading to consumers.

1. Medicinenet.com [homepage on the internet] Atlanta: MedicineNet Inc.; 1996-2008 [updated 2008 June 16; cited 2008 June 16]. Available from: http://www.medicinenet.com/sun_protection_and_sunscreens/page2.htm

What exactly is SPF?



An acronym for sun-protection factor. This is referring to time duration a particular sunscreen will remain effective. However, the effective duration is specific for each person. One can figure out how long he or she will be protected with some simple multiplication of the SPF rating with an individual’s time to burn in the sun.

For example: we have two people, Susie and Magnus. Susie can remain in the sun for 30 minutes before she will burn. Magnus though will burn in only 10 minutes of fun in the sun. After they both lather up with some SPF 10 lotion, Susie will be protected for 300 minutes, but poor Magnus will have to reapply the lotion in 100 minutes. Magnus also has another option of SPF 30 sunscreen, which will protect him for that nice long 300 minutes like Susie. Thus…*Duration of sunscreen = SPF x Number of minutes until you will burn.*

1. Medicinenet.com [homepage on the internet] Atlanta: MedicineNet Inc.; 1996-2008 [updated 2008 June 16; cited 2008 June 16]. Available from: http://www.medicinenet.com/sun_protection_and_sunscreens/page2.htm

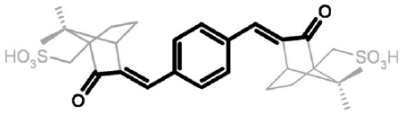
Remember to use your sunscreen correctly!

Sunscreen does not start to work immediately; it takes about 20 to 30 minutes to soak into the skin and have its full effect. Sweating and swimming will wash off your protection too. A good rule is to reapply every 2 hours if you are sweating, or to reapply after toweling off from that refreshing swim. No sunscreen available is actually water-proof, they are only water-RESISTANT. And as a general rule, everyone older than 6 months should use sunscreen. Babies younger than 6 months are likely to not tolerate sunscreen, so they should be kept in the shade.

1. Medicinenet.com [homepage on the internet] Atlanta: MedicineNet Inc.; 1996-2008 [updated 2008 June 16; cited 2008 June 16]. Available from: http://www.medicinenet.com/sun_protection_and_sunscreens/page2.htm

Warning! Not all sunscreens are equal!

On August 23, 2007 the FDA proposed a new rating system for sunscreens, as most only protect against UVB radiation (290-320 nm) and not UVA radiation (320-400 nm). UVB light is responsible for the more immediate effects like sunburn, and also long-term cancer risk. UVA light is responsible for deep skin damage, skin cancer, and photosensitivity. The legislation will allow consumers to more easily judge which sunscreen to purchase, keeping the SPF rating for UVB protection, and giving a UVA rating (up to 4 stars). This legislation will not take effect until at least 2009. It was reported to the FDA from a non-profit organization, the Environmental Working Group, that only 13% of the 386 available sunscreens with SPF ratings greater than 30 actually protected against UVA radiation.



Chemical structure of ecamsule[3]

1. Medicinenet.com [homepage on the internet] Atlanta: MedicineNet Inc.; 1996-2008 [updated 2008 June 16; cited 2008 June 16]. Available from: http://www.medicinenet.com/sun_protection_and_sunscreens/page2.htm
2. Healthfinder.gov [homepage on the internet]. Washington, DC; National Health Information Center; 2007 [updated 2007 Aug 23; cited 2008 June 16]. Available from: http://www.healthfinder.gov/news/newsstory.asp?docid=607630
3. Forestier, S. Rational for sunscreen development. J Am Acad Dermatol. May 2008;58:S133-S138.

What ingredients to look for in a sunscreen.

Until the above legislation goes into effect, here are some ingredients to look for in your sunscreen to enable you to make the best choice.

UVA and UVB protection is the key!

Reliable UVB filters have been widely available for several years. UVA filters are still limited in number and availability.

- Inorganic pigments such as titanium dioxide or zinc oxide offer poor protection against UVA when used alone and tend to limit cosmetic acceptability of a sunscreen product.
- The Benzophenones such as oxybenzone are very stable molecules, but are basically UVB filters with very little absorptive potency in the UVA range.
- The Dibenzoylmethanes such as avobenzone have high UVA absorptive potency (peak at 360 nm) and are true UVA filters, but degradation upon UV exposure decreases protection, so stabilizers may be added to maintain potency. Neutrogena Helioplex™contains avobenzone.

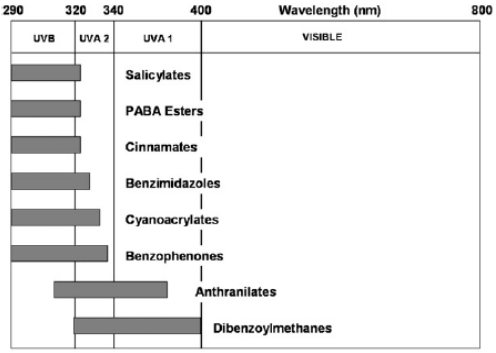


Fig 2. Efficacy range for different classes of organic sunscreen active ingredients listed in Food and Drug Administration monograph.[14-16,32] *PABA*, Para-aminobenzoic acid; *UV*, ultraviolet.

Forestier, S. Rational for sunscreen development. J Am Acad Dermatol. May 2008;58:S133-S138.

- Terephthalylidene dicamphor sulfonic acid, or ecamsule, has a well-balanced molecular structure with peak UV absorption at 345 nm, at the boundary between short and long UVA radiation. It has good stability and provides higher sun(burn)-protection. L'Oreal's Anthelios SX™ products contain ecamsule.

1. Forestier, S. Rational for sunscreen development. J Am Acad Dermatol. May 2008;58:S133-S138.
2. Healthfinder.gov [homepage on the internet]. Washington, DC; National Health Information Center; 2007 [updated 2007 Aug 23; cited 2008 June 16]. Available from: http://www.healthfinder.gov/news/newsstory.asp?docid=607630

Eye care. I really do…

UV safety month is about more than just protecting the skin you're in. The American Academy of Ophthalmology stresses the importance of UV Safety Month for the health of your eyes. Through use of sunglasses and wide-brimmed hats, the eyes total exposure to ultraviolet light may be lessened.

Exposure to bright sunlight may increase your risk for developing cataracts, age-related macular degenerations and growths on the eye, such as cancer. Similar to your skin, the eye does not recover from excessive UV exposure which can damage the front surface of the eye.

The following tips are offered by the American Academy of Ophthalmology to protect your eyes from the sun:

- Don't buy sunglasses based on cost or color; the ability to protect from UV light does not depend on price tag or fashion.
- Don't focus on color or darkness of lenses; focus on sunglasses that block UV rays.
- Look for sunglasses that block 97-100% UV-A and UV-B rays.

- Choose those that wrap-around your temples so that the sun's rays can not enter from the sides.
- Wear a wide-brimmed hat in addition to your sunglasses.
- Even if you wear contact lenses with UV protection, remember to wear sunglasses.
- Don't be fooled by clouds. The sun can damage your eyes through the haze anytime during the year.
- UV light is most intense in the early afternoon and at higher altitudes.
- Protect children's eyes with hats and sunglasses, too.

1. American Academy of Ophthalmology.org [homepage on the Internet]. San Francisco: American Academy of Ophthalmology; 2008 [cited 2008 June 16]. Available from: http://www.aao.org/

Outdoor sports and UV damage

Outdoor sports activities expose athletes and adventurers to high levels of UV light. For most activities, the timing is a factor for the high UV exposure. For alpine sports, the altitude, as well as reflected rays from the snow, also increases risks. Excessive, high-intensity training has been shown to cause exercise-induced immunosuppression, which in turn may increase tumor initiation and promotion. Due to the above risks, the authors concluded that skin cancer screening programs should focus on at-risk populations such as outdoor athletes.[1]

By studying the effects of UV radiation on structural and cellular changes in the skin, the initial reaction to exposure is observed, the generation of reactive oxygen species (ROS). By measuring the free radicals formed upon exposure, an estimation of UV damage can be quantified. Through these measurements, self-tanning agents (containing DHA ~ dihydroxyacetone) demonstrated the induction of 180% additional free radical damage, while sunscreens increased amount of time before damage occurred. [2]

1. Matthias M. Outdoor sports and skin cancer. Clinics in Dermatology 2008. 26:12-15
2. Jung K, Seifert M, Herrling T, Fuchs J. UV-generated free radicals (FR) in skin: Their prevention by sunscreens and their induction by self-tanning agents. Spectrochimica Acta Part A, Molecular & Biomolecular Spectroscopy 2008. 69:1423–1428

The Last Dose

"If you're not part of the solution, you're part of the precipitate." ~ Steven Wright

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