

# Sun Protection: Beyond Sunscreen

Nari Lee MD,<sup>a</sup> Susruthi Rajanala MD,<sup>b</sup> Jeffrey S. Dover MD FRCPC<sup>b, c, d</sup>

<sup>a</sup>Northwell, New Hyde Park, NY

<sup>b</sup>SkinCare Physicians, Chestnut Hill, MA

<sup>c</sup>Yale University School of Medicine, Department of Dermatology

<sup>d</sup>Brown University, Department of Dermatology

## INTRODUCTION

Ultraviolet (UV) radiation from sun exposure causes photosensitivity, photoaging, and photocarcinogenesis.<sup>1</sup> While dermatologists routinely recommend sunscreen as a preventative measure, sun protection methods have diversified tremendously, offering options that cater to various physical abilities, financial budgets, and time constraints. In this review, we assess a novel mode of sun protection, sun patches, and discuss their supporting evidence as well as real-world practicalities.

### Sun Patches

Adhesive patches, popularly referred to as “sun patches,” infused with UV-blocking agents, are gaining popularity in the cosmetics market due to their durability and ease of use. The results of a search of the skincare websites Sephora and Ulta Beauty, as well as patches popularized in the media, are summarized in Table 1.<sup>2</sup> These patches are currently available as pre-cut sheets shaped to fit the zygoma and malar cheeks in a standard under-eye patch shape, as in Figure 1, or as gels applied in a thin layer to the face and peeled off once no longer needed. With the exception of the gels, patches are generally marketed as waterproof, and some are reusable. While earlier models of these sun patches were only available in opaque colors that were noticeable on the face, newer models include more discreet, thin, clear membrane-like patches that blend into the skin and may even be covered with makeup. This makes for a method of facial sun protection that can last for several hours while remaining cosmetically acceptable.<sup>3</sup>

FIGURE 1. An example of the standard under-eye patch shape.



Practical applications include situations otherwise requiring frequent sunscreen reapplications during extended outdoor periods or underwater activities. Of note, most patches do not cover the entire face, and if sunscreen is not concomitantly applied to the remaining sun-exposed areas, one would be likely to acquire tan lines or even sunburns. Moreover, as with any other adhesive product, one would risk poor adhesive performance as well as the risk of developing contact dermatitis. Real-world reports on “sweatproof” patches have accounted that some patches do not actually remain well adhered to sweaty skin. Some reports also describe sunburns in the shape of the patches, implying a lack of efficacy in UV protection of the covered skin. While clinical trials or head-to-

TABLE 1.

| A Summary of Select Sun Patches Currently Available to the US Market |                                                                    |          |                       |                    |                       |                                                                    |
|----------------------------------------------------------------------|--------------------------------------------------------------------|----------|-----------------------|--------------------|-----------------------|--------------------------------------------------------------------|
| Brand                                                                | Size/Shape                                                         | Color(s) | Material              | Length of Coverage | UPF Rating            | Other Qualities                                                    |
| Sun Patch                                                            | Standard under-eye shape, nose strip and squares, triangles, stars | Multiple | Silicone              | All day            | 50+                   | Waterproof, reusable                                               |
| Franz                                                                | Standard under-eye shape                                           | Clear    | Acrylates             | All day            | 50+                   | Water-resistant, sweat-resistant                                   |
| Dearcloud                                                            | Cloud shapes under the eyes                                        | Pink     | Polyacrylate hydrogel | 5 hours            | “Total UV protection” | Sweatproof, cooling                                                |
| From the Skin                                                        | Gel applied to form a transparent film                             | Clear    | Gel-to-film formula   | 8 hours            | 50+                   | Improves the appearance of dark spots, pigmentation, and blemishes |

head comparisons of these novel sun patches compared to conventional sunscreens are lacking, encouraging in vitro data exist: researchers in Denmark have demonstrated that glycerol-filled silicone adhesives infused with titanium dioxide can achieve an SPF of up to 100 and remain stable after 20 hours of exposure to 80% relative humidity, simulating typical usage conditions.<sup>4</sup> There are no larger in vivo studies evaluating photoprotective performance, as well as performance of “waterproof” and “sweatproof” claims.

### UPF VS SPF

Studies consistently show sunscreen to be insufficiently applied by the general public.<sup>5</sup> The sun protection factor (SPF) of sunscreens in practice is often much lower than listed on labels. The UV protection factor (UPF) labeling of UV-protective clothing and also sun patches may mitigate the human error factor of insufficient sunscreen application.

SPF ratings for sunscreens are calculated as the ratio of the minimal erythral dose (MED) of human skin protected by 2 mg/cm<sup>2</sup> of sunscreen to the MED of unprotected skin. For wearables, UPF is calculated with a spectrophotometer measuring the percentage of UV transmittance through the material. Unlike SPF, UPF considers all wavelengths of solar radiation and not only UVB. However, weighting constants are applied to the spectrophotometer readings to weight UPF toward UVB, thus modeling UPF ratings after SPF ratings to reflect the amount of erythemogenic UVB reaching the skin.<sup>6</sup> In practice, most UPF-rated materials demonstrate similar UVA and UVB transmittance, contrasting with sunscreens, which may use a combination of UV filters that may be more selective for either UVA or UVB.

### DISCUSSION

Though most of the sun patches reviewed were labeled with a UPF of 50, a sun patch available on the Ulta Beauty website was labeled as providing “total UV protection” without a specific rating, which can result in confusion about the level of photoprotection provided.<sup>7</sup> This raises the question of a potential need for FDA regulation. Currently in the United States (US), sunscreens are considered over-the-counter drugs and therefore regulated by the FDA, in contrast to other countries, where sunscreens are less regulated as cosmetics. US sunscreens involve strict labeling requirements, and UV filters require a rigorous approval process. This has resulted in only 16 UV filters approved by the FDA since 1999.<sup>8</sup>

With the new sun patches initially popularized in South Korea now available in the US, consumers have expressed excitement at the new addition to the US sun protection market that has remained virtually stagnant for over 20 years. These sun patches offer dermatologists additional options for patient recommendations that are potentially multi-use and longer-

lasting than a sunscreen might be. However, given the patchy coverage, lack of proven clinical efficacy, in addition to the lack of FDA oversight, consumers and dermatologists should remain cautious and continue to depend on sunscreens, UPF clothing, and shade as primary methods of sun protection. Though the sun patches represent a promising wearable sun protection method that can offer facial protection without concerns of adequate application or reapplication, more research is required, and regulation may be necessary.

### DISCLOSURES

The authors have no conflicts of interest to disclose.

### REFERENCES

1. Lautenschlager S, Wulf HC, Pittelkow MR. Photoprotection. *Lancet*. 2007; 370(9586): 528-537.
2. Do Sunscreen Patches Actually Work? I Tried Them. *Popsugar*. <https://www.popsugar.com/beauty/franz-sunshield-peptide-patch-review-49355375>. Accessed June 15, 2025.
3. Franz Skincare. NAKED Sunshield Peptide Patch. Available from: <https://franzskincareusa.com/products/dr-franz-naked-sunshield-patch>. Accessed October 22, 2025.
4. Yu L, Mazurek P, Madsen FB, Skov AL. Glycerol-filled silicone adhesive patches with excellent sun protection. *Macromol Mater Eng*. 2021;306(5):2000797. doi.org/10.1002/mame.202000797
5. Gorig T, Schneider S, Seuffert S, et al. Does sunscreen use comply with official recommendations? Results of a nationwide survey in Germany. *J Eur Acad Dermatol Venereol*. 2020;34(5):1112-1117.
6. Berry EG, Bezecky J, Acton M, et al. Slip versus slop: a head-to-head comparison of UV-protective clothing to sunscreen. *Cancers (Basel)*. 2022; 14(3):542. doi: 10.3390/cancers14030542
7. Ulta Beauty. UV Block Hydrogel Sun Patches. Available from: <https://www.ulta.com/p/uv-block-hydrogel-sun-patches-pimprod2045562?sku=2625738>. Accessed October 22, 2025.
8. Abdel Azim S, Bainvoll L, Vecerek N, et al. Sunscreens part 2: regulation and safety. *J Am Acad Dermatol*. 2025;92(4):689-698.

### AUTHOR CORRESPONDENCE

#### Nari Lee MD

E-mail: ..... narilee.68@gmail.com