Macro Lens for Mirrorless Cameras in Digital Photography in Dermatology☆

Objetivos macro para cámaras *mirrorless* en fotografía dermatológica

To the Editor:

Photography is an important element of dermatology and the day-to-day activity of dermatologists. Photographs provide an objective method for recording various skin conditions and allow rigorous measurements and assessments.[1,2]

For dermatologists, it is important to have a small, lightweight camera that is portable and easy to use.[2]

Until a few years ago, the lenses on smaller (compact) cameras were not interchangeable and had low macro capability (an important characteristic in dermatologic photography). The only way to achieve a short focal length with such a camera is to use the wide-angle position, which causes the subject to appear distorted.[2]

Since the advent of the mirrorless camera, it is now possible to purchase small, lightweight cameras with large sensors and interchangeable lenses, thus combining the portability of a compact camera with the quality of a single-lens reflex (SLR) camera. Mirrorless cameras allow the use of fixed-focal-length lenses, which provide higher image quality than the zoom lens of a traditional compact camera.[2]

Lighting is another important characteristic in dermatologic photography. Some authors recommend flash photography, which makes it possible to use a smaller aperture and guarantees uniform lighting and color-temperature conditions in all photos.[2] Other authors have argued that the use of flash in dermatologic photography can lighten skin tone, reduce contrast, and produce luminous reflections or shadows.[3] The use of a ring flash avoids the lens-shadow effect caused by a traditional flash. With a ring flash, it is also easier to take photographs of the oral cavity with adequate lighting. A ring flash is generally a large device that can only be attached to an SLR camera.

As mirrorless cameras have grown in popularity over the past few years, various lenses with very good features have been introduced on the market, but very few have all the necessary qualities for dermatologic photography.

Ideally, a lens for dermatologic photography should be small and lightweight for ease of transport. It should have a short minimum focus distance (< 0.10 m), allowing detailed photographs to be taken of small skin lesions. It should also have an intermediate focal length (25-50 mm), which allows half-body shots to be taken without moving too far away from the subject but also allows for distortion-free macro photography. Another very important feature is the maximum magnification ratio, which must be at least 1× in order for a lens to be considered macro. Thus, the macro capability of a lens is determined by two fundamental characteristics: a short minimum focus distance and a high maximum magnification ratio.

Figure 1 Canon EF-M 28 mm F3.5 Macro IS STM lens. A, Notice the light emitting diode system on the front of the lens. B, The lens is easy to attach to a dermoscope.

One macro lens option for mirrorless cameras is the Sony E 30 mm F3.5 Macro. This lens is compatible with all Sony E-mount cameras. It weighs 138 g and has relatively small dimensions (62 × 56 mm). It has a maximum aperture of 3.5 and a minimum aperture of 22.[1–3] It has a minimum focus distance of 0.10 m and a focal length of 30 mm, adequate characteristics for dermatologic photography. The maximum magnification ratio of this lens is 1×. The absence of an image stabilizer is a disadvantage. This lens can be attached to a DermLite dermoscope using the well-known screw-on or magnetic systems.

The Canon EF-M 28 mm F3.5 Macro IS STM lens (Fig. 1) is small (61 × 46 mm), lightweight (130 g), and compatible with all Canon cameras that have an EF-M lens mount (EOS M10, M3, M6, and M5). Like the Sony lens, it has a maximum aperture of 3.5 and a minimum aperture of 22–sufficient for the everyday needs of dermatologic photography.[1–3] With a minimum focus distance of 0.09 m, the Canon lens is capable of taking macro photographs of small objects at a very short distance. It has a maximum magnification ratio of 1× or 1.2× (super macro). It has an image stabilizer, which is especially important when photographs are taken under poor lighting conditions or with slow shutter speeds (less than 1/60 of a second), which can lead to blurry or shaky images. It has a focal length of 28 mm, which allows panoramic photographs (of a patient's trunk or limbs) to be taken at a relatively short distance–an important feature for dermatologists who work in small examination rooms–but also allows for distortion-free macro photography (Fig. 2A).

Another novel aspect of the Canon lens is the adjustable light emitting diodes (LEDs) on the front of the lens (Fig. 1A). By providing additional lighting at the front of the lens, this feature prevents shadows from being cast by the body of the lens. It also provides adequate lighting for photographs of

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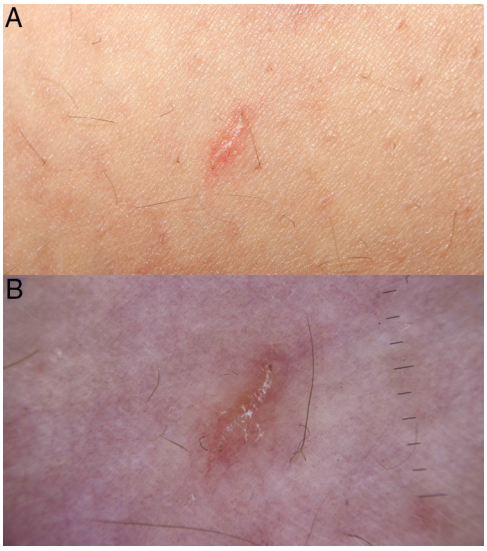

Figure 2 Examples of photographs taken with the EF-M 28 mm F3.5 Macro IS STM lens. A, Macro photograph taken at a short focal length. B, Correctly centered dermoscopic image with no dark peripheral halo and no loss of field of view.

Figure 3 Photograph of the oral cavity taken with adequate lighting, which allows higher-quality photographs and faster focusing.

cavities or skin folds such as the mouth or anogenital area (Fig. 3). In addition, this lens can quickly be attached to a DermLite 4 (Fig. 1B) with no need for additional parts, allowing dermatologists to take high-quality dermoscopic photographs quickly and easily (Fig. 2B). It can also be attached to earlier DermLite models (DL2 HR Pro or DL2 Hybrid), thanks to screw-on or magnetic attachment methods that use the filter thread.

Unfortunately, Nikon and Fujifilm currently do not offer small macro lenses for their mirrorless cameras (Nikon 1 and Fujifilm x series).

In summary, we present 2 lenses that are appropriate for dermatologic photography. Both of these small, versatile lenses stand out for their macro capability. The Canon lens also has a ring lighting feature and is easy to attach to a dermoscope.

References

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