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Review

Light, what it is and what it does for mycology

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ABSTRACT

With the exception of photosynthesis, the importance of light is often forgotten by biologists. However, light is of great importance for many aspects of basic and applied mycology, particularly for mushroom cultivation. Infrared can be used to help identify chemicals produced by fungi. A common use of infrared is monitoring and controlling the gas environment, particularly carbon dioxide. We all need visual light for our everyday activities. Visible light has been shown to be required for the production of mushrooms, with the prominent exception of *Agaricus*, the genus of the common commercial mushroom. Yet, there have been very few publications on mushroom cultivation that indicate any real understanding of light. More meaningless than meaningful data have been published on light conditions for mushroom cultivation. We can not see ultraviolet light, but publications dealing with ultraviolet and fungi generally indicate some knowledge of it. We might say, the light we experience most is what we know least of. Most basic studies on the effects of light on fungi have been carried out in model organisms (*e.g.*, *Neurospora*, *Coprinopsis*, *Schizophyllum*) showing that a variety of photoreceptors are involved, but their practical implications are not yet available. The internet and textbooks are sources of extensive information on what light is and how it can be used in the laboratory. However, there is little information, on visible light, that applied directly to mycology. In this review we

attempt to give readers a basis for understanding what has been learned, what we know or we do not know, and some things that can be done with what we do know. Information on detecting CO_2, H_2O, ethylene, methane and ethane, as well as the internet address to find much more, is given. Characteristics of visible light are discussed. The need for mushrooms to have blue light is indicated. The conversion of the fungal steroid, ergosterol, to vitamin D_2 and ultraviolet as a means of killing bacteria, fungi and human cells is discussed.

Key words: Basidioma, ergosterol, gas monitoring, infrared, photoreceptors, ultraviolet, visible light, vitamin D_2.