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Photomedicine include investigations of untoward effects of lights and its prevention, and proper use of light in the diagnosis and treatment of diseases. Unwanted effects of lights, particularly for the ultraviolet (UV) radiation, includes acute and chronic effects. Acute irradiation of UV induces sunburn and pigmentation, and repeated irradiation induces premature aging of the skin (photoaging) and various skin cancers (photocarcinogenesis).

Researchers are interested in the mechanism and prevention of those side effects. Their work include *in vitro* or *in vivo* animal or human studies, and finally aims to prevent human problems of sunburn, pigmentation (melasma, lentigines, freckles...), photoaging and photocarcinogenesis. Photochemical reaction is a cross reaction between chemical and physical agents, and a lot of medicinal drugs and traditional herbs work as photosensitizers.

Use of lights to improve the diagnosis of diseases include fluorescence for some skin diseases (Wood light) and photodynamic diagnosis using aminolevulinic acid (ALA) for precise excision of cancers. Various photosensitivity diseases are also classified and investigated in the photomedicine.

Lights are also used to improve the treatments, and they include laser, intense pulsed light (IPL), blue or red light, UV, and the photochemical reaction like 'psoralen + UVA (PUVA)' and photodynamic therapy (PDT). Lasers are widely used in various medical and cosmetic treatments, and IPL is one of the new cosmetic treatments. UV therapy include broad band UVB, narrow-band UVB (311-313 nm), and UVA1 therapy. New strong UV treatments using laser (excimer laser; 308 nm) or intense pulsed system (Thera-light) are recently introduced. Blue or red light treatment is to activate porphyrin in the targeting tissues or acne organisms.

All these activities work together or separately in the field of photomedicine to improve the human quality of life.