New cancer therapy using ultra-violet C (UVC) pulse flash irradiation
22 August 2012

In contrast, the sterilization effects of UV pulsed flash rays (wavelengths of 230-280nm and peak wavelength of 248 nm) show promise as a more efficient and rapid means of destroying a wider range of bacteria because this type of irradiation produces light whose energy is tens of thousands of times greater for a given area of irradiation, compared with conventional UV lamps (65W equivalency).

UVC pulse flash rays (UVCPFR), with 1-10 continuous flashes per second, can be produced by a powerful discharge of xenon gas. Johbu Itoh and colleagues at the Tokai University School of Medicine has developed and established UVCPFR therapy system for cancer therapy.

The researchers irradiated cells with pulsed light UVCPFR and caused functional disorder to produce cell injury and/or a functional obstruction only to neoplastic cells. Higher ultraviolet radiation sensitivity in the UVC range was observed in neoplastic cells compared to non-neoplastic cells. That is, a short burst of ultraviolet radiation was sufficient to selectively induce injury and death to neoplastic cells.

Furthermore, experiments showed UVCPFR to cause cell death within a few seconds. One of the major features of this method is that below a certain range of irradiation conditions, damage to intact or non-neoplastic cells can be largely ignored, and only neoplastic cells die. This method offers a simple means of reducing the burden on patients undergoing cancer therapy. Itoh and colleagues plan to adapt this system for cancer treatment using endoscopy, laser microscopy, and other such light irradiation equipment.

More information: www.acplan.jp/ichc2012/

Provided by Tokai University School of Medicine