

THE EFFECT OF ULTRA VIOLET LIGHT (UVA) ON GSH PRESENT IN THE LENS OF FROG

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ABSTRACT

Ultraviolet radiation (UVA), its harmful effects in relation to biochemical changes takes place in the lens of frog was studied. Limited number of specimen was selected and they are divided in to two qualitative groups named controlled and treated. Both group was checked for the changes that took place in the lens for Glutathione (GSH) level during exposure and measured using standard method. It was observed that with the increase in time span significant changes in the same were recorded. The controlled group show negligible variation in their glutathione level.

Key words : Ultra violet light, Frog, Glutathione.

Every living being have unique sense of vision. The light sense by which light is perceived. This is the most fundamental of the visual sense which is highly developed in all most all vertebrates and more in man. The lens takes part mainly in the process of accommodation and some times as light gathering devices. The eye of frog has probably received more attention than any other vertebrates other than man, because it almost has a great resemblance with the human eye, making favorable for study. The sun is the natural source of most of the electromagnetic spectrum consists of radiant energy that is classified according to specific wavelength. Other than skin, eye is the only organ of tissue in the body particularly sensitive to the ultraviolet (UV) radiation. The chemical structure of the molecules determines the specific wavelengths of non – ionizing radiation that will be absorbed. The lens nucleus and GSH (glutathione) levels is of specific interest to us.

MATERIALS AND METHODS

For conducting the study of the effect of radiation particularly UVA on lens, frog as experimental animal was selected, taking in to consideration it's life expectancy and easy availability. The study includes; 1) frog exposed to UV source under laboratory condition. 2) The effect of UV observed on frog eye by estimating the level of GSH.

Radiation source: the radiation source used through the study was two black tube light (40w, BLB) with peak

emission at 366 nm (Heraeus, Germany).

The experimental animals were maintained in controlled laboratory condition without any external bacterial or fungal contamination. Total 24 animals were used. Among them 12 animal were kept in radiation chamber exposed 6 hours per day to radiation from black tube light (2x40w, BLB Heraeus, Germany) designated as UV irradiated and remaining 12 animals were kept under normal laboratory lightening designated as control group. Both the animal groups were sacrificed at different duration of exposure and lens was collected from the eyeballs and biochemical estimation was carried out just after weighing them.

Measurement of GSH levels :

The level of glutathione (GSH) in the lens of frog measured using standard Ellman's method. The weighted lenses were homogenized in 0.05 M EDTA (0.75ml) and 20% TCA (Tri chloro acetic acid) 0.75ml. This homogenate was centrifuged at 8000g for 20 min. and the supernatant was used for determination of GSH. The GSH content of the lens was calculate using the formula as under

$$\text{GSH} = \frac{Y - 0.00314}{0.134} \times \frac{\text{dilution}}{\text{lens wt.} \times \text{aliquot}}$$

Were, Y= absolute at 412nm value were expressed as μ mol of reduced glutathione per mgm of lens (μ mol / mgm).