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Glutathione Isopropyl Ester (YM 737) Inhibits the Progression of X-ray-induced Cataract in Rats*

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The effect of glutathione (GSH) isopropyl ester on the progression of X-ray-induced cataract was investigated in rats. Intraperitoneal administration of 20 mg/kg GSH isopropyl ester, three times weekly, 1 day after a single irradiation dose delayed the progression of X-ray-induced cataracts significantly. The amount of non-protein SH groups and the Na^+/K^+ ratio in the lenses of drug-treated rats were maintained at the normal levels even 27 weeks after irradiation. Post-treatment with the drug resulted in a significantly lower level of malondialdehyde in the irradiated lenses than the non-treated lenses.

When 500 mg/kg GSH-isopropyl ester was administered by i. p. injection to normal rats, the GSH-ester was detected in plasma and aqueous humor after 15 min. In the lenses of the GSH-isopropyl ester-injected rats, the GSH level was 120% of that in the non-treated rats after 4 h, suggesting that GSH-isopropyl ester is transported from the aqueous humor to the lens and there converted to GSH after about 4 h. Our observations lead us to conclude that the delay of X-ray-induced lens opacity progression is due to maintenance of normal lenticular GSH levels achieved by post-irradiation administration of GSH-isopropyl ester.

However, continuous administration of 100 mg/kg after irradiation had no effect on the progression of cataracts induced by X-rays.

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