ABSTRACT

THE EFFECT OF CURCUMIN ON GSH AND GSSG LEVELS IN CORNEA OF HYPERGLYCEMIA RATS MODEL

EXPERIMENTAL RESEARCH ON WISTAR RATS
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Objective: To investigate the effect of curcumin on GSH and GSSG level in hyperglycemia induced corneal tissue.

Materials and Method: Corneal tissue obtained from hyperglycemia induced Wistar rats using intraperitoneal injection of streptozotocin (STZ) (45 mg/kgBW) with and without exposure to curcumin (1 g/kgBW). The blood sugar checked within 72 hours after STZ administration. Control group is STZ and curcumin free. After 6 weeks, GSH and GSSG levels were examined in each groups by enzyme-linked immunosorbent assay (ELISA).

Result: The mean levels of GSH in group I, II, III were 144.18 micromol/L, 14.02 micromol/L, and 144.98 micromol/L respectively. The mean levels of GSSG in group I, II, III were 11.82 micromol/L, 141.40 micromol/L, and 11.09 micromol/L respectively. After we conducted statistical analysis in each group (control, STZ, STZ+curcumin), there were differences in GSH/GSSG level. The results of GSH analysis between group I (control) on group II (STZ) and group II (STZ) on group III (STZ+Curcumin) (p=0.00; p=0.00). However, there were no significant difference on GSH/GSSG between group I (control) with group III (STZ+Curcumin) (p=0.92; p=0.72).

Conclusion: Curcumin increases GSH/GSSG ratio in hyperglycemia induced corneal damage indicate that curcumin stimulates the increase of corneal antioxidant level and cell reepithelialization. Curcumin is suggested as alternative therapy for corneal epithelialization damage caused by hyperglycemia condition.

Keyword: Curcumin, glutathione (GSH), oxidized glutathione (GSSG), corneal damage, keratopathy diabetic, wistar rats.