

**PENGARUH PEMBERIAN GLUTATHIONE TOPIKAL TERHADAP KADAR
MALONDIALDEHID LENSA TIKUS YANG DIINDUKSI KATARAK DENGAN SODIUM
SELENITE**

TESIS

Diajukan sebagai salah satu syarat untuk mendapatkan gelar

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**PENGARUH PEMBERIAN GLUTATHIONE TOPIKAL TERHADAP
KADAR MALONDIALDEHID LENSA TIKUS YANG DIINDUKSI
KATARAK DENGAN SODIUM SELENITE**

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Abstrak

Pendahuluan: Kerusakan oksidatif memainkan peranan dalam proses kekeruhan lensa. Glutathione reduksi (GSH) merupakan protein tripeptide mampu mencegah akumulasi produk oksidasi tingkat berbahaya seperti hidrogen peroksida dan ikatan protein disulfida. Kadar tripeptida ini sangat tinggi pada lensa muda, namun menurun pada lensa tua sehingga rentan terhadap pembentukan katarak. Sehingga dengan mempertahankan kadar glutathione tereduksi yang tinggi in vivo, dimungkinkan untuk mencegah kekeruhan pada lensa.

Tujuan: Mengetahui pengaruh pemberian Glutathione topikal terhadap katarak yang diinduksi *sodium selenite* berdasarkan nilai kadar MDA lensa tikus.

Metode: Penelitian ekperimental menggunakan 30 ekor tikus dibagi menjadi 3 kelompok yaitu kelompok kontrol positif, P1 dan P2. Pada akhir penelitian, lensa diekstraksi untuk dilakukan pengukuran kadar malondialdehid (MDA). Kadar MDA dianalisa dengan uji one way annova

Hasil: Rata-rata nilai kadar MDA Lensa tikus pada kelompok K+, P1, P2 adalah 1.91, 1.38, dan 1.2 nmol/mL. Secara statistik terdapat perbedaan yang signifikan kadar MDA pada masing-masing kelompok perlakuan dengan nilai $p = 0,001$ ($p < 0,05$). Analisis perbedaan rata-rata MDA antara masing kelompok menunjukkan rata-rata kadar MDA tikus kelompok P2 lebih rendah dari P1 dan kadar MDA kelompok P1 dan P2 lebih rendah dari K+ dan terdapat perbedaan bermakna secara statistik dan klinis

Kesimpulan: Glutathione topikal efektif dapat menurunkan progresifitas katarak pada lensa tikus yang diinduksi dengan sodium selenite yang identik dengan katarak senilis pada manusia dalam mekanisme stres oksidasinya

Kata kunci: Katarak senilis, sodium selenite, Glutathione, stres oksidasi, Malondialdehide

**THE EFFECT OF TOPICAL GLUTATHIONE ON
MALONDIALDEHID LEVELS IN RAT WITH CATARACT
INDUCED BY SODIUM SELENITE**

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Abstract

Introduction: Oxidative damage plays a key role in the lens opacity process. Reducing glutathione (GSH) is a tripeptide protein capable of preventing the accumulation of dangerous levels of oxidation products such as hydrogen peroxide and protein disulfide bonds. The level of this tripeptide is very high in young lenses, but decreases in old lenses associated to cataract formation. Human cataract lenses contain reduced levels of reduced glutathione, so by maintaining high levels of reduced glutathione in vivo, it may be possible to prevent opacification of lens.

Objective: To determine the effect of topical Glutathione on sodium selenite-induced cataracts based on the MDA level of the rat lens.

Method: This was an experimental study using 30 mice grouped into 3 group (K+, P1 and P2). At the end of the study the lens was extracted and subsequently malondialdehyde level was measured. MDA level was analyzed using One way annovatest.

Result: The average values of rat MDA Lens levels in the K+, P1, P2 groups were 1.91, 1.38, and 1.2 nmol/mL. Statistically, there was a significant difference in MDA levels in each treatment group with $p = 0.001$ ($p < 0.05$). Analysis of the average difference in MDA between each group showed that the average MDA level of mice in the P2 group was lower than P1 and the MDA levels in the P1 and P2 groups were lower than K+ and there were statistically and clinically significant differences.

Conclusion: Topical glutathione can effectively reduce the progression of cataracts in the lens of rats induced by sodium selenite which is identical to senile cataracts in humans in its mechanism of oxidative stress.

Key Word: Senile cataract, sodium selenite, Glutathione, oxidation stress, Malondialdehyde