

## Analisis Sel Goblet Serta Konsentrasi IFN-Y Dan IL-17 Pada Konjungtiva Dan Kornea Model Mata Kering Mencit Yang Diberi Supplementasi Lutein = Analysis of Lutein Effects on Goblet Cells, IFN-Y and IL-17 Concentration in Dry Eye Mice Model

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### Abstrak

Prevalensi populasi dan manifestasi penderita dry eye bervariasi. Aktivasi jalur pensinyalan stres pada permukaan epitel okuler, sel imun bawaan, dan sel imun adaptif akan meningkatkan produksi beberapa sitokin inflamatorik, seperti IFN-Y yang memicu apoptosis sel dan sekresi IL-17 yang melisis tight-junction, menginduksi perubahan epitel, mendestabilisasi lapisan air mata, mengamplifikasi inflamasi dan menciptakan siklus tak henti. Lutein merupakan golongan antioksidan Y-karotenoid yang terbukti memiliki efek protektif dan menghambat inflamasi yang diinduksi oleh berbagai stimulator in vitro dan in vivo. Pada penelitian ini dilakukan perbandingan kadar IFN-Y dan IL-17 pada model mencit dry eye tanpa diberi dan yang diberi suplementasi lutein selama 10 hari. Metode induksi dry eye dilakukan menggunakan kombinasi antara evaporatif dan insufisiensi lakrimal. Pengamatan kondisi akhir klinis dan perhitungan sel goblet didokumentasikan dan dihitung. Pengukuran kadar IFN-Y dan IL-17 dilakukan menggunakan ELISA. Hasil akhir menunjukkan adanya perbedaan signifikan kondisi klinis dan konsentrasi sel goblet model hewan coba antara kelompok tanpa lutein dan kelompok dengan pemberian lutein. Tidak ada perbedaan signifikan kadar IFN-Y dan IL-17 antar kelompok uji coba. Belum diketahui pasti efek langsung lutein terhadap kadar IFN-Y dan IL-17. Lutein memiliki tendensi untuk menurunkan inflamasi, melindungi jaringan permukaan okuler sel goblet, dan meregenerasi sel goblet.

.....Population prevalence and manifestation of dry eye patient vary statistically. Activation of stress signaling pathways, residential immune cells, and adaptive immune cells on ocular epithelial surface will increase inflammatory cytokines, such as IFN-Y production which ignites cell apoptosis and IL-17 which lyses tight-junction, induces epithelial changes, destabilizes tear film, amplifies inflammation and creates an endless loop. Lutein is a Y-carotenoid antioxidant which has been proven to have protective and anti-inflammatory effect. This research compared IFN-Y and IL-17 levels between dry eye mice model without and with lutein supplementation for 10 days. Combination between evaporative and lacrimal insufficiency as dry eye induction method was chosen. Clinical condition and goblet cells concentration were documented and measured. IFN- $\hat{I}^3$  and IL-17 measurements were done using ELISA. There were significant differences between clinical descriptions and goblet cell concentration between groups but there are no statistically significant differences in IFN-Y and IL-17 level between groups. There has been no specific direct effect of lutein on IFN-Y and IL-17 level. Lutein has tendencies to lower inflammation, protects ocular surface from desiccation, and has potency to regenerate goblet cells.