

ABSTRACT

LONG-TERM USED OF *BENZALCONIUM CHLORIDE* PRESERVATIVE ANTIGLAUCOMA EYE DROPS. Studies on the Expression of Matrix-metalloproteinase-1 dan Tissue Inhibitor Matrixmetalloproteinase-1.

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Benzalkonium Chloride (BAC) is considered as a preservative ingredient in eye drops. BAC was reported as the cause of inflammation, apoptosis and squamous metaplasia of conjunctival tissue. This cross-sectional study design is aimed to compare the mean expression of Matrix metalloproteinase-1 (MMP-1) and the mean expression of Tissue Inhibitor Matrix metalloproteinase-1 (TIMP-1) of the long-term preservative antiglaucoma BAC eye drops conjunctival users with the non-users of preservative antiglaucoma BAC.

From the total 32 biopsy conjunctival tissues, 17 samples are derived from the preservative antiglaucoma BAC user group and 15 samples are derived from control conjunctival. The expression of MMP-1 and TIMP-1 in both groups were detected by immunohistochemistry with monoclonal antibody anti-human MMP-1 and anti-human TIMP-1.

Research shows that the mean expression of MMP-1 from the long terms preservative antiglaucoma eye drops BAC user groups as 9.22 ± 8.11 % and the expression of TIMP-1 as 2.75 ± 2.36 %. In the expression control group, MMP-1 of 1.02 ± 0.71 % and the expression of TIMP-1 as 0.46 ± 0.22 %. The expression of MMP-1 and TIMP-1 in the long term preservative antiglaucoma eye drops BAC user group is higher than the expression of the control group were significantly at $p < 0.001$.

Key words : *Benzalkonium chloride*, MMP-1 expression, TIMP-1 expression, conjunctival epithelium.

ABSTRAK

PENGGUNA ANTIGLAUKOMA TETES MATA BERPENGAWET BENZALKONIUM CHLORIDE JANGKA PANJANG. Kajian terhadap Ekspresi Matriks Metalloproteinase-1 dan Tissue Inhibitor Matriks Metalloproteinase-1.

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Benzalkonium chloride (BAC) merupakan bahan pengawet pada obat tetes mata. BAC dilaporkan dapat menyebabkan inflamasi, apoptosis dan metaplasia squamosa pada konjungtiva. Penelitian berdesain potong lintang ini bertujuan untuk membandingkan rerata ekspresi Matriks metalloproteinase-1 (MMP-1) dan Tissue Inhibitor Matriks metalloproteinase-1 (TIMP-1) konjungtiva pengguna antiglaukoma tetes mata berpengawet BAC jangka panjang dengan yang bukan pengguna antiglaukoma berpengawet BAC.

Dari total 32 jaringan konjungtiva biopsi, 17 sampel berasal dari kelompok pengguna antiglaukoma berpengawet BAC jangka panjang dan 15 sampel konjungtiva kontrol. Ekspresi MMP-1 dan TIMP-1 pada kedua kelompok dideteksi secara imunohistokimia dengan antibodi monoklonal anti-human MMP-1 dan anti-human TIMP-1.

Hasil penelitian menunjukkan rerata ekspresi MMP-1 pada kelompok pengguna antiglaukoma tetes mata berpengawet BAC jangka panjang sebesar $9,22 \pm 8,11\%$ dan ekspresi TIMP-1 sebesar $2,75 \pm 2,36\%$. Pada kelompok kontrol ekspresi MMP-1 sebesar $1,02 \pm 0,71\%$ dan ekspresi TIMP-1 sebesar $0,46 \pm 0,22\%$. Ekspresi MMP-1 dan TIMP-1 pada kelompok pengguna antiglaukoma tetes mata berpengawet BAC jangka panjang lebih tinggi dibandingkan kelompok kontrol dan bermakna secara statistik dengan nilai $p < 0,001$.

Kata kunci: *Benzalkonium chloride*, ekspresi MMP-1, ekspresi TIMP-1, epitel konjungtiva