

ANALISIS KADAR MARKA GEN PENUAAN *TRANSFORMING GROWTH FACTOR- β* (TGF- β) TERHADAP WAKTU PAPARAN ULTRAVIOLET B PADA RNA SEL FIBROBLAS

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ABSTRAK

Indonesia merupakan negara tropis, di mana intensitas penyinaran matahari tinggi dan terjadi sepanjang tahun. Paparan sinar matahari, terutama sinar ultraviolet, menyebabkan penuaan secara prematur. Penuaan dapat dilihat dari tingkatan molekuler, di mana terjadi perubahan pada gen, di antara lain TGF- β . TGF- β merupakan sitokin yang meregulasi berbagai proses seluler, seperti perkembangan embrio, homeostasis jaringan, mengontrol proses pertumbuhan, proliferasi, dan apoptosis sel, dan berbagai kondisi patologis, seperti disfungsi imun, inflamasi, onkogenesis, dan fibrosis. Tujuan dari penelitian ini adalah untuk menganalisis perbedaan kadar TGF- β pada RNA sel fibroblas sebelum dan sesudah diinduksi oleh sinar ultraviolet B. Penelitian ini dilakukan dengan melihat kadar TGF- β menggunakan qRT-PCR pada RNA sel fibroblas jaringan palatum yang tidak dipaparkan UVB dan dipaparkan selama 24, 48, dan 96 menit dengan dosis 144 mJ/cm² dengan panjang gelombang 310 nm. Ditemukan rata-rata kadar TGF- β sebelum dipaparkan UVB adalah 1,000130 dan pada paparan 24 menit 0,00792, paparan 48 menit adalah 0,00475, dan paparan 96 menit adalah 0,00186. Terdapat perubahan dan penurunan rata-rata kadar ekspresi gen relatif TGF- β terhadap GAPDH secara signifikan yang di uji dengan metode One Way ANOVA, di mana p-value < 0,05. Hal tersebut menunjukkan kemungkinan paparan sinar UVB akan lebih besar pada dermis karena fibroblas pada jaringan palatum memiliki kemampuan penyembuhan yang lebih baik.

Kata kunci: durasi paparan sinar UVB, Fibroblas, photoaging, Transforming Growth Factor- β , Ultraviolet B

ANALYSIS OF AGING MARKER TRANSFORMING GROWTH FACTOR- β TO DURATION OF ULTRAVIOLET B EXPOSURE IN FIBROBLAST CELL

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ABSTRACT

Indonesia is a tropical country where the intensity of sunlight is high and occurs throughout the year. Exposure to sunlight, especially ultraviolet rays, causes premature aging. Aging can be observed at the molecular level, where changes occur in genes, including TGF- β . TGF- β is a cytokine that regulates various cellular processes, such as embryonic development, tissue homeostasis, and the control of cell growth, proliferation, and apoptosis, as well as various pathological conditions such as immune dysfunction, inflammation, oncogenesis, and fibrosis. The aim of this study is to analyze the differences in TGF- β levels in fibroblast RNA before and after induction by ultraviolet B (UVB) rays. This research was conducted by measuring TGF- β levels using qRT-PCR on RNA from fibroblast cells in palatal tissue that were not exposed to UVB and those exposed for 24, 48, and 96 minutes at a dose of 144 mJ/cm² with a wavelength of 310 nm. The average TGF- β level before UVB exposure was found to be 1.000130, while after 24 minutes of exposure it was 0.00792, after 48 minutes it was 0.00475, and after 96 minutes it was 0.00186. There was a significant change and decrease in the average relative expression level of the TGF- β gene compared to GAPDH, as tested by the One-Way ANOVA method, where the p-value was < 0.05. This indicates that the effect of UVB exposure is likely greater in dermal because fibroblasts in palatal tissue have better healing capabilities.

Keywords: Duration of UVB radiation, Fibroblast, Photoaging, Transforming growth factor- β , Ultraviolet B