

INTISARI

Radiasi UVA banyak terkandung dalam sinar matahari yang dapat menginduksi *skin photoaging* melalui aktivitas ROS. Akumulasi ROS intraseluler menyebabkan kerusakan oksidatif berupa penurunan penampilan kulit. Aktivitas antioksidan senyawa PGV-5 yang lebih baik daripada senyawa induknya, kurkumin, diduga dapat mencegah kerusakan tersebut. Oleh karenanya, penelitian ini bertujuan untuk menganalisis pengaruh senyawa PGV-5 terhadap proliferasi dan akumulasi ROS intraseluler sel *human dermal fibroblasts* (HDF) akibat UVA.

Sel HDF diberi praperlakuan senyawa PGV-5 selama 2 jam kemudian diinduksi radiasi UVA 3 J/cm^2 . Metode MTT *assay* digunakan untuk uji sitotoksik-sitoprotektif seri konsentrasi PGV-5. Selanjutnya, konsentrasi efektif senyawa PGV-5 digunakan untuk analisis ROS intraseluler sel HDF dengan metode *flow cytometry*-DCFDA. Data diolah dengan *Shapiro-Wilk Test*, *Levene Test*, dan *one-way ANOVA* beserta uji *post hoc* Tukey LSD (95%).

Senyawa PGV-5 dalam rentang konsentrasi 1 – 16 μM tidak berefek toksik terhadap sel HDF. Konsentrasi 1, 2, 4, 8, dan 16 μM senyawa PGV-5 mampu mempertahankan viabilitas sel HDF berturut-turut sebesar $97,74 \pm 3,47\%$; $101,76 \pm 2,62\%$; $99,58 \pm 2,33\%$; $101,68 \pm 3,05\%$; dan $103,10 \pm 2,27\%$. Konsentrasi 1 μM senyawa PGV-5 mampu memroteksi akumulasi ROS intraseluler sel HDF akibat UVA yang lebih baik daripada kurkumin serta vitamin E. Senyawa PGV-5 terbukti mempunyai aktivitas antioksidan pada sel HDF sehingga senyawa tersebut potensial dikembangkan untuk bahan aktif produk anti-*photoaging*.

Kata Kunci: kurkumin, PGV-5, sel HDF, UVA

ABSTRACT

UVA radiation is abundant in sunlight that can induce skin photoaging through ROS activity. Intracellular ROS accumulation causes oxidative damage in the form of decreased skin appearance. The antioxidant activity of PGV-5 is better than its parent compound, curcumin, which can presumably prevent this damage. Therefore, this study aims to analyze the PGV-5 effect on HDF–human dermal fibroblasts’ proliferation and intracellular ROS accumulation due to UVA.

HDFs were pretreated with PGV-5 for 2 hours and irradiated with 3 J/cm² UVA. MTT assay was performed for cytotoxic-cytoprotective analysis of the PGV-5 concentration series. The effective concentration was used for intracellular ROS analysis with flow cytometry-DCFDA. Data were processed using the Shapiro-Wilk test, Levene test, and one-way ANOVA–Tukey LSD test (95% CI).

PGV-5 concentrations of 1 – 16 µM were not toxic to HDF. PGV-5 concentrations of 1, 2, 4, 8, and 16 µM were able to maintain cell viability at 97.74±3.47%; 101.76±2.62%; 99.58±2.33%; 101.68±3.05%; and 103.10±2.27%, respectively. The 1 µM PGV-5 was able to protect intracellular ROS accumulation of HDF due to UVA better than curcumin and vitamin E. PGV-5 was proven to have antioxidant activity in HDFs that can be developed as an active ingredient in anti-photoaging products.

Keywords: curcumin, PGV-5, HDF, UVA