

INTISARI

Latar Belakang: Nano silver fluoride (NSF) merupakan agen anti karies yang tidak menyebabkan pewarnaan pada gigi. Bahan ini terdiri dari nano silver sebagai anti bakteri dan *fluoride* sebagai anti bakteri dan remineralisasi gigi. Nano silver dapat disintesis secara biologi dengan ekstrak alga cokelat (*Sargassum sp.*) yang berperan sebagai reduktor dan meningkatkan stabilitas bahan aktif. Uji viabilitas sel fibroblas perlu dilakukan untuk uji keamanan bahan. **Tujuan:** Untuk menguji pengaruh variasi konsentrasi *nano silver fluoride*-ekstrak *sargassum* (NSF-ES) terhadap viabilitas sel fibroblas NIH3T3. **Metode:** Jenis penelitian eksperimental in vitro yang dilakukan pada kelompok perlakuan NSF-ES dengan konsentrasi 100%, 50%, 25%, 12.5%, 6.25%, 3.12%, 1.56% dan 0.78%. Uji viabilitas sel fibroblas NIH3T3 dilakukan menggunakan metode MTT *assay* selama 24 jam. Data dianalisis menggunakan *One Way ANOVA* dilanjutkan uji *post-hoc*, uji korelasi dan regresi linear pada tingkat signifikansi 95%. **Hasil:** Viabilitas tertinggi ditemukan pada konsentrasi NSF-ES 0.78% dan terendah pada konsentrasi NSF-ES 100%. Pada konsentrasi NSF-ES 0,78% hingga 6,25% tidak terdapat perbedaan signifikan viabilitas sel fibroblas dengan kontrol positif dan kontrol negatif. Uji regresi linear diperoleh persamaan $y = -0,7124x + 97,067$ dengan nilai koefisien korelasi $r = -0,978$. **Kesimpulan:** Semakin tinggi konsentrasi NSF-ES, semakin rendah viabilitas sel fibroblas NIH3T3. Konsentrasi non toksik NSF-ES berdasarkan ISO-10993-5 (viabilitas sel >70%) pada lama paparan 24 jam adalah $\leq 25\%$.

Kata kunci: *Nano silver fluoride*, Biosintesis, Ekstrak *Sargassum sp.*, Viabilitas sel.

ABSTRACT

Background: Nano silver fluoride (NSF) is an anti-caries agent that does not cause tooth discoloration. This material consists of nano silver as an antibacterial agent and fluoride for antibacterial and tooth remineralization. Nano silver can be synthesized biologically using *Sargassum* extract, which acts as a reducing agent and increases the stability of the active ingredient. Cell viability testing of fibroblasts is necessary to assess the safety of the material. **Objective:** To test the effect of varying concentrations of biosynthetic nano silver fluoride from brown algae (*Sargassum* sp.) on the viability of NIH3T3 fibroblasts. **Methods:** An in vitro experimental research on the NSF-ES group with concentrations of 100%, 50%, 25%, 12.5%, 6.25%, 3.12%, 1.56%, and 0.78%. NIH3T3 fibroblast cell viability testing was performed using the MTT assay method for 24 hours. Data were analyzed using One Way ANOVA followed by post-hoc tests, correlation tests, and linear regression at a 95% significance level. **Results:** The highest viability was found at a concentration of 0.78% NSF-ES and the lowest at a concentration of 100% NSF-ES. At NSF-ES concentrations of 0.78% to 6.25%, there was no significant difference in fibroblast cell viability compared to the positive control and negative control. The linear regression test yielded the equation $y = -0.7124x + 97.067$ with a correlation coefficient of $r = -0.978$. **Conclusion:** The higher the NSF-ES concentration, the lower the viability of NIH3T3 fibroblasts. The non-toxic concentration of NSF-ES based on ISO-10993-5 (cell viability >70%) at an exposure time of 24 hours is $\leq 25\%$.

Keywords: *Nano Silver Fluoride*, Biosynthesis, *Sargassum* sp. Extract, Viability Cell.