

INTISARI

Seledri mengandung senyawa flavonoid yang mampu memodulasi aktivitas sistem imun, termasuk aktivitas sel makrofag. Kebanyakan tanaman obat diolah dalam bentuk jamu serbuk yang dianggap kurang efektif karena sukar larut, sehingga saat ini dikembangkan dengan teknologi nanokristal. Pembuatan partikel obat menjadi nanokristal diharapkan mampu meningkatkan absorpsi obat oleh tubuh serta meningkatkan bioavailabilitasnya di dalam tubuh sehingga aktivitas farmakologisnya lebih baik.

Penelitian ini mengamati migrasi sel makrofag setelah pemberian *bulk powder* dan nanokristal seledri secara *in vitro*. Parameter yang diamati adalah jumlah sel makrofag yang bermigrasi ke daerah bebas sel. Aktivitas migrasi sel diuji menggunakan metode *wound-healing assay* dengan induksi dan tanpa induksi bakteri *E-coli* yang sudah dimatikan. Sel makrofag diisolasi dari rongga peritoneum tikus. Konsentrasi suspensi seledri yang digunakan sebagai sampel adalah 200 µg/mL, 400 µg/mL, dan 800 µg/mL. Sel makrofag diamati menggunakan mikroskop, kemudian dihitung jumlah sel yang bermigrasi. Hasil yang diperoleh dianalisis secara statistika menggunakan uji *One-way ANOVA*.

Hasil penelitian menunjukkan suspensi *bulk powder* seledri bisa meningkatkan migrasi sel makrofag pada konsentrasi 200 µg/mL sebanyak 18,3% terhadap kontrol. Pada konsentrasi 400 µg/mL hingga 800 µg/mL *bulk powder* menurunkan migrasi sel sebesar 13,5% – 21,6% terhadap kontrol. Nanokristal mampu meningkatkan migrasi sel makrofag 27,3% lebih tinggi dibandingkan *bulk powder* pada konsentrasi 200 µg/mL. Pada konsentrasi 400 µg/mL nanokristal seledri mampu meningkatkan migrasi sel sebanyak 84,4% lebih tinggi daripada *bulk powder*.

Kata Kunci : Nanokristal seledri, *Bulk powder* seledri, Makrofag, Migrasi sel

ABSTRACT

Celery contains flavonoid compounds which are able to modulate immune system activity, including macrophage cell activity. Most plant extracts made in herbal medicine powder are considered to be less effective, so they are currently developed with nanocrystal technology. The making of drug particles into nanocrystals is expected to be able to increase the absorption of drugs and increase its bioavailability in the body so that pharmacological activities are improved.

This study will observe the migration of macrophage cells after the administration of bulk powder and celery nanocrystals in vitro. The parameter observed was the number of macrophage cells that migrated to the cell-free area. Cell migration activity was tested using the wound-healing assay method divided into induction and without induction of dead *E-coli* bacteria. Macrophage cells were isolated from rat peritoneal cavities. Celery suspension concentrations used as samples were 200 µg/mL, 400 µg/mL, and 800 µg/mL.. Macrophage cells were observed using a microscope, then counted the number of cells that migrate. The results obtained will be analyzed statistically using the *One-way* ANOVA test.

The results showed that celery bulk powder suspension was able to increase macrophage cell migration at 200 µg/mL by 18.3% to the control. At concentrations of 400 µg/mL to 800 µg/mL bulk powder reduced cell migration by 13.5% - 21.6% to the control. Nanocrystals can increase macrophage cell migration 27.3% higher than bulk powder at a concentration of 200 µg/mL. At concentrations of 400 µg/mL celery nanocrystals were able to increase cell migration as much as 84.4% higher than bulk powder.

Keywords: Celery nanocrystal, Celery bulk powder, Macrophages, Cell migration