Abstrak

Tanaman kumis kucing (*Orthosiphon aristatus*) dapat meringankan penyakit seperti edema, demam, dan influenza yang melibatkan sel makrofag. Makrofag akan bermigrasi ke daerah inflamasi dan infeksi untuk melakukan fagositosis. Tanaman kumis kucing mengandung flavonoid sinensetin dan eupatorin yang sukar larut dalam air, sehingga sukar dibuat dalam sediaan farmasetik. Penelitian ini bertujuan untuk mengetahui pengaruh nanokristal tanaman kumis kucing terhadap aktivitas migrasi sel makrofag.

Penelitian ini dilakukan dengan memaparkan suspensi *bulk powder* dan nanokristal *Orthosiphon aristatus* (OA) dengan seri konsentrasi 0,2; 0,8; dan 3,2 mg/mL pada sel makrofag yang diisolasi dari rongga peritoneal tikus. Uji migrasi sel makrofag dilakukan dengan *wound-healing assay* dan diamati menggunakan mikroskop. Sel yang bermigrasi diamati pada sel tanpa induksi dan induksi bakteri. Jumlah sel yang bermigrasi dianalisis secara statistik dengan uji *One Way* ANOVA menggunakan program SPSS.

Sampel suspensi nanokristal OA dengan konsentrasi 0,8 mg/mL pada jam ke-48 dengan induksi bakteri yang menghambat migrasi sel sebesar 14,92 ± 14,49% jika dibandingkan dengan sampel suspensi *bulk powder* sebesar 48,25 ± 8,03%. Perlakuan sampel suspensi nanokristal OA kurang aktif dalam menginhibisi migrasi sel jika dibandingkan dengan perlakuan sampel suspensi *bulk powder* OA.

Kata Kunci: kumis kucing (*Orthosiphon aristatus)*, makrofag, nanokristal, migrasi sel, *wound-healing assay*

Abstract

Kumis Kucing (*Orthosiphon aristatus*) can relieve diseases that involved macrophage cells such as edema, fever and influenza. Macrophages will migrate to the area of inflammation and infection to phagocyte. *Orthosiphon aristatus* (OA) contain flavonoids sinensetin and eupatorin which are difficult to dissolve in water, making it difficult to produce in pharmaceutical formulation. This study aims to determine the effect of OA nanocrystal on macrophage cell migration activity.

This research was performed by applying water suspension of bulk powder or nanocrystal of OA with a concentration series of 0.2; 0.8; and 3.2 mg/mL on macrophage cells which isolated from rat's peritoneal cavities. Macrophage cell migration were performed by wound-healing assay and observed using a microscope. Migrated macrophage cells are observed with and without bacterial induction. The number of migrated cells was analyzed statistically with One Way ANOVA test using SPSS program.

The sample of OA nanocrystal suspension with a concentration of 0.8 mg/mL at the 48 hour with bacterial induction inhibited cell migration by 14.92 ± 14.49% compared to the sample bulk powder suspension by 48.25 ± 8.03%. The samples of OA nanocrystal suspension is less active in inhibiting cell migration when compared to the samples of bulk powder suspension.

Keywords: kumis kucing (*Orthosiphon aristatus)*, macrophage, nanocrystal, cell migration, wound-healing assay