

## ABSTRAK

### AKTIVITAS ANTIBAKTERI EKSTRAK ETANOL TANGKAI *Begonia multangula Blume* TERHADAP PENGHAMBATAN PEMBENTUKAN BIOFILM *Fusobacterium nucleatum* PENYEBAB PERIODONTITIS KRONIS

(Penelitian Eksperimental *In Vitro*)

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*Fusobacterium nucleatum* merupakan salah satu bakteri penyebab periodontitis kronis. Ekstrak etanol tangkai *Begonia multangula Blume* mempunyai potensi antibakteri yang dapat digunakan sebagai alternatif terapi adjuvan penyakit periodontitis kronis. Tujuan penelitian untuk mengetahui aktivitas antibakteri ekstrak etanol tangkai *B. multangula Blume* terhadap penghambatan pembentukan biofilm *F. nucleatum*. Jenis penelitian menggunakan penelitian eksperimental dengan rancangan penelitian *post-test only control group design*. Pada penelitian ini terdapat kelompok perlakuan ekstrak etanol tangkai *B. multangula Blume* (konsentrasi masing-masing 6,25%, 12,5%, 25%, 50%, 75%, dan 100%), Kontrol Negatif (DMSO 1%) dan Kontrol Positif (Metronidazole). Pengujian penghambatan pembentukan biofilm dilakukan menggunakan metode *microtiter plate assay* menggunakan pewarnaan kristal violet 1% setelah diinkubasi 24 jam. Densitas optik dibaca menggunakan *microplate reader* dengan panjang gelombang 620 nm. Uji statistik yang digunakan adalah uji *Kruskal-Wallis* dilanjutkan dengan uji *Post-hoc Mann-Whitney*. Hasil uji aktivitas penghambatan biofilm *F. nucleatum* oleh ekstrak etanol tangkai *B. multangula Blume* meningkat seiring dengan penambahan konsentrasi. Rerata penghambatan tertinggi adalah 78,12% pada konsentrasi ekstrak 100%. *Minimum Biofilm Inhibition Concentration* (MBIC<sub>50</sub>) terhadap *F. nucleatum* terdapat pada konsentrasi ekstrak 25% (54,19%). Hasil penelitian menunjukkan perbedaan signifikan ( $p < 0,05$ ) antara kelompok perlakuan ekstrak etanol tangkai *B. multangula Blume* (konsentrasi 6,25%, 12,5%, 25%, 50%, 75%, dan 100%), kontrol positif (metronidazole) dan kontrol negatif terhadap penghambatan pembentukan biofilm *F. nucleatum*. Simpulan penelitian ini adalah terdapat aktivitas antibakteri ekstrak etanol tangkai *B. multangula Blume* terhadap penghambatan pembentukan biofilm *F. nucleatum*.

**Kata kunci** : *Begonia multangula Blume*, Biofilm, *Fusobacterium nucleatum*, Periodontitis Kronis.

## ABSTRACT

### **ANTIBACTERIAL ACTIVITIES OF *Begonia multangula* Blume STALK ETHANOL EXTRACT ON THE INHIBITION *Fusobacterium* *Nucleatum* BIOFILM AS A CHRONIC PERIODONTITIS AGENT**

***(In Vitro Experimental Research)***

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*Fusobacterium nucleatum* is one of the bacteria that causes chronic periodontitis. The ethanol extract of the stalk of *Begonia multangula* Blume has antibacterial potential that can be used as an alternative adjuvant therapy for chronic periodontitis. The aim of this research was to determine the antibacterial activity of the ethanol extract of the stalk of *B. multangula* Blume against the inhibition of *F. nucleatum* biofilm formation. The method of this research used experimental research with post-test only control group design. In this research, there were a treatment groups for the ethanol extract of the stalk of *B. multangula* Blume (concentrations of 6.25%, 12.5%, 25%, 50%, 75%, and 100%, respectively), Negative Control (DMSO 1%) and Positive Control (Metronidazole). The test for inhibition of biofilm formation were carried out using the microtiter plate assay method using 1% crystal violet staining after 24 hours incubation. The optical density was read using a microplate reader with a wavelength of 620 nm. The statistical test used was the Kruskal-Wallis test followed by the Post-hoc Mann-Whitney test. The test results showed that the inhibitory activity of the *F. nucleatum* biofilm by the ethanol extract of the stalk of *B. multangula* Blume increased as the increasing of the concentration. The highest average inhibition was 78.12% at 100% extract concentration. Minimum Biofilm Inhibition Concentration (MBIC<sub>50</sub>) against *F. nucleatum* was found at 25% (54.19%) of the extract concentration. The results showed a significant difference ( $p < 0.05$ ) between the treatment groups of *B. multangula* Blume stalk ethanol extract (concentration 6.25%, 12.5%, 25%, 50%, 75%, and 100%), positive control (metronidazole) and negative control of inhibition of *F. nucleatum* biofilm formation. The conclusion of this study was that there was antibacterial activity of the ethanol extract of stalks of *B. multangula* Blume against the inhibition of biofilm formation of *F. nucleatum*.

**Key Word :** *Begonia multangula* Blume, Biofilm, Chronic Periodontitis, *Fusobacterium nucleatum*.