Objective: This study aimed to assess the antimicrobial efficacy of seed extract derived from Bouea macrophylla Griffith (Maprang wan) grown in northern Thailand against Enterococcus faecalis, Streptococcus gordonii and Candida albicans in planktonic and multispecies biofilm.

Methods: Agar diffusion and broth microdilution methods were performed to investigate the antimicrobial activities of ethyl acetate extract of Maprang wan seed against planktonic E. faecalis, S. gordonii and C. albicans. Growth curves of E. faecalis, S. gordonii and C. albicans in 1:1:1 and 1:1:0.1 ratio, respectively) were performed to measure the appropriate ratio of the species within biofilm. Multispecies of E. faecalis, S. gordonii and C. albicans biofilms were grown in RPMI for 48 hours at 37°C. Following this, the biofilms were exposed to 25 mg/ml of Maprang seed extracts. 0.02 mg/ml chlorhexidine was used as the positive control and RPMI as the negative control. After exposure, time-kill assay was conducted to evaluate time-point of the extract which showed bactericidal and fungicidal effects. The colony forming unit (CFU) data were analyzed with one-way ANOVA and Dunnett’s test (p<0.05).

Results: Maprang seed extract demonstrated the antimicrobial activity against planktonic and multispecies E. faecalis, S. gordonii and C. albicans. The time kill assay showed a time dependent action of Maprang seed extract, it demonstrated significant reduction of viable organisms at the time periods.

Conclusions: Maprang seed extract had antibiofilm property against multispecies E. faecalis, S. gordonii and C. albicans biofilms. The antimicrobial activity of the extract was comparable to chlorhexidine. Maprang seed extract has potential as a novel antimicrobial agent and may be an alternative to treat superficial infections or as a root canal medicament.

Keywords: Bouea macrophylla Griffith (Maprang wan) seed extract, multispecies biofilm, root canal medicament