

## **In vitro activity of xanthorrhizol isolated from the rhizome of javanese turmeric (*Curcuma xanthorrhiza* Roxb.) against *Candida albicans* biofilms.**

### ABSTRACT

The purpose of this study was to investigate the activity of xanthorrhizol isolated from *Curcuma xanthorrhiza* Roxb. on *Candida albicans* biofilms at adherent, intermediate, and mature phase of growth. *C. albicans* biofilms were formed in flat-bottom 96-well microtiter plates. The biofilms of *C. albicans* at different phases of development were exposed to xanthorrhizol at different concentrations (0.5 µg/mL - 256 µg/mL) for 24 h. The metabolic activity of cells within the biofilms was quantified using the XTT reduction assay. Sessile minimum inhibitory concentrations (SMICs) were determined at 50% and 80% reduction in the biofilm OD490 compared to the control wells. The SMIC50 and SMIC80 of xanthorrhizol against 18 *C. albicans* biofilms were 4 – 16 µg/mL and 8 – 32 µg/mL, respectively. The results demonstrated that the activity of xanthorrhizol in reducing *C. albicans* biofilms OD490 was dependent on the concentration and the phase of growth of biofilm. Xanthorrhizol at concentration of 8 µg/mL completely reduced in biofilm referring to XTT-colorimetric readings at adherent phase, whereas 32 µg/mL of xanthorrhizol reduced 87.95% and 67.48 % of biofilm referring to XTT-colorimetric readings at intermediate and mature phases, respectively. Xanthorrhizol displayed potent activity against *C. albicans* biofilms in vitro and therefore might have potential therapeutic implication for biofilm-associated candidal infections.

**Keyword:** Amphotericin B; Biofilm; *Candida albicans*; In vitro; Xanthorrhizol.