ABSTRAK

Penatalaksanaan utama pada masalah akne vulgaris adalah penggunaaan antibotik baik topikal maupun oral, namun penggunaan antibiotik dinilai telah menimbulkan dugaan resistensi terhadap *P. acnes* sebagai *agent* penyebab akne sehingga mendorong berbagai pihak untuk mengembangkan preparat antiinflamasi yang dapat diberikan topikal ataupun sistemik. *Curcuma xanthorrhiza Roxb.* memiliki senyawa utama *xanthorrizol* yang dinilai potensial untuk dikembangan sebagai antibakteri. Tujuan penelitian ini untuk menganalisis aktivitas antibakteri dari ekstrak *Curcuma xanthorrhiza Roxb* dan perubahan dinding sel *Propionibacterium acnes.*

Desain penelitian yang di gunakan adalah *eksperimen* dengan sampel *P. acnes* berupa *isolate stock culture* (ATCC® 11827™) yang selanjutnya ditumbuhkan pada media MHA. Jumlah replikasi yang digunakan sebanyak 4 ulangan. Konsentrasi ekstrak *Curcuma xanthorrhiza Roxb.* masing-masing 6,25 µg/mL, 12,5 µg/mL, 25 µg/mL, 50 µg/mL dan 100 µg/mL. Pengukuran aktivitas antibakteri didasarkan pada KHM, KBM dan pengamatan struktur dinding sel bakteri melalui metode *Scanning Electron Microscope (SEM)* dan *Transmission Electron Microscope* (TEM).

Hasil penelitian didapatkan pemberian ekstrak *Curcuma xanthorrhiza Roxb.* memiliki efek antibakteri terhadap *P. acnes* secara *in vitro*. Konsentrasi ekstrak 50 µg/mL merupakan kadar hambat minimum serta kadar bunuh minimum terhadap bakteri *P. acnes* berdasarkan pengujian dilusi agar. Bakteri *P. acnes* yang dipapar dengan ekstrak etanol *Curcuma xanthorrhiza Roxb.* mengalami perubahan struktur dinding sel berupa timbulnya dinding sel kasar kasar akibat penyusutan serta adanya dinding sel yang hancur sehingga sitoplasma keluar dan tampak meleleh.

Pemberian ekstrak *Curcuma xanthorrhiza Roxb.* memiliki efek antibakteri terhadap bakteri *P. acnes* secara *in vitro* yang diduga karena adanya kandungan minyak atsiri (*Xanthorrizol*), Kurkuminoid dan Flavonoid oleh karena itu perlu adanya upaya penelitian lebih lanjut terkait pengujian toksisitas dan uji klinik sebelum diaplikasikan menjadi sediaan fitofarmaka.

Kata Kunci: Antibakteri, Struktur dinding sel, *Propionibacterium acnes* *Curcuma xanthorrhiza Roxb.*

ABSTRACT

The main management of acne vulgaris is the use of topical and oral antibiotics, but the use of antibiotics is considered to have raised suspicion of resistance to P. acnes as a causative agent for acne, thus encouraging various parties to develop anti-inflammatory preparations that can be given topically or systemically. Curcuma xanthorrhiza Roxb. has the main compound xanthorrizol which is considered potential to be developed as an antibacterial. The purpose of this study was to analyze the antibacterial activity of Curcuma xanthorrhiza Roxb extract and cell wall changes in Propionibacterium acnes.

The research design used was an experiment with P. acnes samples in the form of isolate stock culture (ATCC® 11827 ™) which was subsequently grown on MHA media. The number of replications used was 4 replications. Concentration of Curcuma xanthorrhiza Roxb extract. 6.25 µg / mL, 12.5 µg / mL, 25 µg / mL, 50 µg / mL and 100 µg / mL, respectively. Measurement of antibacterial activity is based on the MIC, KBM and bacterial cell wall structure observations through the Scanning Electron Microscope (SEM) and Transmission Electron Microscope (TEM) methods.

The results showed the administration of Curcuma xanthorrhiza Roxb extract. has an antibacterial effect on P. acnes in vitro. The 50 µg / mL extract concentration was the minimum inhibitory level and the minimum kill rate against P. acnes bacteria based on agar dilution testing. P. acnes bacteria were exposed to ethanol extract Curcuma xanthorrhiza Roxb. undergoes changes in the structure of the cell wall in the form of the emergence of rough cell walls due to shrinkage and the presence of cell walls that are destroyed so that the cytoplasm comes out and looks melted.

Giving Curcuma xanthorrhiza Roxb extract. has an antibacterial effect against P. acnes bacteria in vitro which is suspected to be due to the presence of essential oils (Xanthorrizol), Curcuminoids and Flavonoids therefore it is necessary to further research efforts related to toxicity testing and clinical trials before being applied to phytopharmaca preparations.

Keywords: ***Antibacterial, Cell wall structure, Propionibacterium acnes Curcuma xanthorrhiza Roxb.***