

## ABSTRAK

Skrining antibakteri telah dilakukan terhadap 24 ekstrak metanol hasil koleksi tumbuhan paku Sumatera Barat terhadap 12 bakteri uji *Staphylococcus aureus* ATCC 25923, *Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, *Salmonella typhimurium* ATCC 14028, *Salmonella typhosa* NCTC 786, *Bacillus subtilis* ATCC 6633, *Enterococcus faecalis* ATCC 29212, *Micrococcus luteus* ATCC 10240, *Salmonella thypi*, *Staphylococcus epidermidis* ATCC 12228, *Streptococcus mutans* ATCC 25175, dan *Vibrio cholerae* inaba. Aktivitas antibakteri ekstrak diukur dengan metode difusi agar. Hasil skrining menunjukkan tiga jenis tumbuhan paku memberikan daya hambat kuat terhadap pertumbuhan bakteri uji dengan konsentrasi minimal 0,5mg/cakram, satu diantaranya *Hymenophyllum* sp 3. Sebanyak 195 gram sampel kering batang dan daun paku *Hymenophyllum* sp3 dimaserasi menggunakan metanol dan difraksinasi berturut-turut dengan *n*-heksana, etil asetat, butanol selanjutnya diuapkan dan didapatkan fraksi *n*-heksana 7 gram (3,6%) etil asetat 39 gram (20,2%) dan butanol 12 gram (6,2%). Pada aktivitas uji antibakteri terlihat fraksi *n*-hexana aktif terhadap beberapa bakteri, fraksi etil asetat aktif terhadap bakteri *Salmonella thypi* sampai pada konsentrasi 0,25 mg/cakram, sedangkan fraksi *n*-butanol aktif terhadap bakteri *Escherichia coli* ATCC 25922 dan *Bacillus subtilis* ATCC 6633 sampai pada konsentrasi terendah 0,0625 mg/cakram.

Fraksi *n*-heksana dikromatografi dengan menggunakan silika gel dielusi dengan *n*-heksana yang kepolarannya secara bertahap ditingkatkan dengan penambahan etil asetat. Subfraksi yang memiliki pola KLT yang sama digabung, diuapkan dan selanjutnya direkristalisasi sehingga diperoleh dua senyawa utama HHKR-1 dan HHKR-2 dalam bentuk kristal tidak berwarna dan kristal berwarna kekuningan. Berdasarkan jarak leleh, profil kromatografi lapis tipis dengan pembanding baku dan spektrum infra merah, HHKR-1 diidentifikasi sebagai  $\beta$ -sitosterol dan HHKR-2 memiliki titik leleh sebesar 208-217 °C.

Kata Kunci : Tumbuhan Paku, *Hymenophyllum*, Isolasi, Aktivitas Antibakteri.



## ABSTRACT

The antibacterial activity of 24 methanolic extracts of ferns which were collected in West Sumatra had been screened toward 12 human pathogenic testing bacteria *Staphylococcus aureus* ATCC 25923, *Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, *Salmonella typhimurium* ATCC 14028, *Salmonella typhosa* NCTC, *Bacillus subtilis* ATCC 6633, *Enterococcus faecalis* ATCC 29212, *Micrococcus luteus* ATCC 10240, *Salmonella thypi*, *Staphylococcus epidermidis* ATCC 12228, *Streptococcus mutans* ATCC 25175, and *Vibrio cholerae* inaba, by using disc diffusion assay. The results showed that three ferns gave strong inhibition toward the growth of human pathogenic testing bacteria with minimal inhibition concentration 0,5 mg/disc, and one of them was *Hymenophyllum* sp 3. The air dried stems and leaves of *Hymenophyllum* sp 3 195 gram were macerated with methanol then evaporated and fractionated with *n*-hexane, ethyl acetate, *n*-butanol evaporated to give *n*-hexane fraction (7 gram, 3.6%), ethyl acetate (39 gram, 20.2%) and butanol (12 gram, 6.2%). The *n*-hexane fraction was active against some human pathogenic testing bacteria, ethyl acetate fraction active *Salmonella thypi* at the concentrations of 0,25 mg/disk and *n*-butanol fraction active toward *Escherichia coli* ATCC 25922 and *Bacillus subtilis* ATCC 6633 at minimum inhibition concentration 0,0625 mg/disc.

*n*-hexane fraction was chromatographed on silica gel and eluted with an increasing amount of ethyl acetate in hexane, the fractions that showed similar behavior on TLC were combined, evaporated and recrystallized to yield HHKR-1 and HHKR-2 as colourless and yellowish needles. Based on its mixed melting point, thin layer chromatography profile compared with standard compound and Infrared spectra compound HHKR-1 was identified as  $\beta$ -sitosterol. HHKR-2 gave melting point at 208-217 °C.

Keyword : Ferns, *Hymenophyllum*, Isolation, Antibacterial Activity

