

## Uji aktivitas antimikroba ekstrak kasar beta-glukan dari khamir *Aureobasidium pullulans* terhadap *Escherichia coli* ATCC 25922 dan *Bacillus cereus* ATCC 14579 = Screening for antimicrobial activity of beta-glucan crude extract from yeast *Aureobasidium pullulans* against *Escherichia coli* ATCC 25922 and *Bacillus cereus* ATCC 14579

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### Abstrak

[Telah dilakukan penelitian yang bertujuan untuk mengekstraksi, menganalisis secara FTIR, dan mengetahui aktivitas antimikroba ekstrak kasar β-glukan dari khamir *Aureobasidium pullulans*. β-glukan berhasil diekstraksi sebanyak 1,3 g per 1 L kultur khamir dalam bentuk bubuk berwarna krem. Uji kualitatif dengan FTIR menunjukkan komposisi ekstrak berupa β-glukan, hemiselulosa, protein, dan karbonat. Kadar β-glukan dalam ekstrak diukur secara enzimatik dengan kit Megazyme dan didapatkan tingkat kemurnian 49,65% (b/b). Aktivitas antimikroba ekstrak diuji terhadap bakteri *Escherichia coli* ATCC 25922 dan *Bacillus cereus* ATCC 14579 pada konsentrasi 0,1% (b/v) dan 0,2% (b/v). Produk komersial krestin dengan kemurnian β-glukan 52% (b/b) digunakan sebagai kontrol pembandingan terhadap ekstrak. Uji aktivitas antimikroba dilakukan dengan metode turbiditas dan total plate count pada suhu inkubasi 37°C dan agitasi 150 rpm. Uji turbiditas dan total plate count menunjukkan bahwa ekstrak β-glukan dan krestin pada konsentrasi 0,1% (b/v) dan 0,2% (b/v) tidak memberikan efek bakteriostatik dan bakterisidal. Persentase hambat oleh ekstrak β-glukan tidak mencapai nilai minimal 50% sehingga dinyatakan tidak memiliki aktivitas antimikroba terhadap *E. coli* dan *B. cereus*. A study to extract, analyze based on FTIR, and determine antimicrobial activity of β-glucan crude extract from yeast *Aureobasidium pullulans* has been carried out. An amount of 1,3 g β-glucan has been extracted from 1 L of yeast culture in the form of cream-colored powder. Qualitative test with FTIR showed that the extract consists of β-glucan, hemicelulose, protein, and carbonate. Purity of the compound was measured enzymatically using Megazyme kit and the result was 49,65% (w/w). Antimicrobial activity of the extract was tested against *Escherichia coli* ATCC 25922 and *Bacillus cereus* ATCC 14579 at 0,1% (w/v) and 0,2% (w/v). Krestin as commercial product of β-glucan with purity of 52% (w/w) was used as comparison control of β-glucan crude extract. Antimicrobial activity was tested using turbidity dan total plate count method at incubation temperature 37°C and agitation 150 rpm. Turbidity and total plate count test showed that β-glucan crude extract and krestin at 0,1% (w/v) and 0,2% (w/v) have no bacteriostatic and bactericidal effect. The percentage of inhibition from β-glucan crude extract was less than 50%. Based on these result, β-glucan extract has no antimicrobial activity against *E. coli* and *B. cereus*. ]