UJI EFEKTIVITAS SARI KENTANG (*Solanum tuberosum*) TERHADAP AKTIVITAS PROTEOLITIK *Escherichia coli* ATCC 25922

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Abstrak

Escherichia coli merupakan bakteri Gram-negatif yang dapat menimbulkan berbagai penyakit infeksi. Salah satu komponen yang berperan dalam patogenitas *E.coli* adalah *Serine Protease Autotransporters of Enterobacteriaceae* (SPATEs). Kentang (*Solanum tuberosum)* memiliki komponen inhibitor serine protease yang berpotensi menghambat aktivitas SPATEs. Penelitian ini bertujuan untuk mengetahui efek pemberian sari kentang (*S.tuberosum*) terhadap aktivitas proteolitik *E.coli* yang diukur berdasarkan perubahan nilai *Proteolytic Enzymatic Rate* (PER) menggunakan tiga jenis konsentrasi sari kentang (25%, 50% dan 75%). Metode penelitian adalah eksperimental dengan menggunakan isolat murni *E.coli* ATCC 25922 sebagai sampel dan uji *Anova One-Way* untuk analisis data. Hasil analisis menunjukkan semakin tinggi konsentrasi sari kentang, semakin rendah nilai *PER* dan luas zona bening, sedangkan zona koloni semakin luas. Inhibitor serine protease dalam sari kentang berkompetisi dengan substrat *serine protease* membentuk kompleks enzim-inhibitor (EI) yang menghambat aktivitas proteolitik bakteri. Hasil uji *Anova One-Way* menunjukkan terdapat perbedaan luas zona bening, zona koloni dan nilai *PER* antar kelompok. Sari kentang konsentrasi 75% memiliki rata-rata luas zona bening (3,48 mm) dan nilai *PER* (1,25 mm) terendah dengan rata-rata luas zona koloni (15,73 mm) tertinggi, sedangkan sari kentang konsentrasi 25% memiliki rata-rata luas zona koloni (6,42 mm) terendah dengan rata-rata luas zona bening (4,32 mm) dan nilai *PER* (1,70) tertinggi.

Kata Kunci: *Escherichia coli*, Kentang (*S.tuberosum*), Proteolitik Serine Protease

THE EFFECTIVENESS OF POTATO (*Solanum tuberosum*) JUICE AGAINST PROTEOLYTIC ACTIVITY OF *Escherichia coli* ATCC 25922

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Abstract

Escherichia coli are known as Gram-negative bacteria and several infection might be caused by it. *Serine Protease Autotransporters of Enterobacteriaceae* (SPATEs) had been reported as its pathogenicity component. Serine protease inhibitor produced by potato (*Solanum tuberosum)* were considered to inhibit SPATEs activity. This research was designed to test the effectiveness of potato juice against proteolytic activity of *E.coli*, determined by *Proteolytic Enzymatic Rate* (PER) score for each concentrate 25%, 50% and 75%. The method used in this research was experimental. The samples were *E.coli* ATCC 25922 pure isolates. The data were analysed with *Anova One-Way* test. The result showed that the higher concentration of potato juice, the lower *PER* score and the width of clear zone, meanwhile the colony zone became wider. Serine protease inhibitor in potato juice were competed with serine protease substrate, proteolytic activity was inhibited by enzyme-inhibitor (EI) complex. The result of *Anova One-Way* test, showed a significant difference on the width of clear zone, colony zone and *PER* score. The lowest rank of *PER* score (1.25) and clear zone (3.48 mm) was observed in 75% potato juice, while its colony zone had been the highest rank (15.73 mm). The highest rank of *PER* score (1.70) and clear zone (4.32) was observed in 25% potato juice, while its colony zone (6.42 mm) had been the lowest rank.

Kata Kunci: *Escherichia coli*, Potato (*S.tuberosum*), Serine Protease Proteolytic