



Intisari

Penelitian ini bertujuan untuk mengetahui potensi aktivitas antibakteri dan antioksidan dari hidrolisat protein usus lele. Usus lele diekstrak dengan 50mM buffer fosfat pH 7,4 (1:6 b/v) lalu, dihomogenkan kemudian disentrifugasi. Supernatan awal dipresipitasi menggunakan $(\text{NH}_4)_2\text{SO}_4$ dengan tingkat kejenuhan 20, 40, 60, 80% lalu disentrifugasi sehingga didapat presipitat, kemudian presipitat tiap fraksi tersebut didialisis. Dialisat protein fraksi 20, 40, 60 dan 80% dihidrolisis menggunakan papain dan tripsin sebanyak 3% (v/v), pH 7, suhu 55°C (papain) dan 37°C (tripsin) selama 4 jam di *waterbath shaker*. Hidrolisat protein fraksi 20-80% diuji kadar protein terlarut, aktivitas antioksidan dan aktivitas antibakteri. Penambahan garam ammonium sulfat tingkat kejenuhan 20% (fraksi 20%) diperoleh total protein presipitat dan dialisat sebesar 21.443 dan 16.402,7 mg. Hidrolisat protein usus lele dengan papain (HPUP) dan tripsin (HPUT) fraksi 40% (392 dan 338 mg/mL) merupakan fraksi dengan nilai protein terlarut tertinggi. HPUP fraksi 20-80% menunjukkan daya hambat yang lemah terhadap *Escherichia coli* (2,10; 42,50; 2,30; dan 2,2 mm) dan *Bacillus cereus* (1,80; 2,00; 1,60; dan 1,40 mm). HPUT fraksi 20-80% menunjukkan daya hambat yang lemah terhadap *E. coli* (6,30; 7,80; 6,90; dan 6,40 mm) dan *B. cereus* (1,60; 1,80; 1,80; dan 2,30 mm). HPUP fraksi 20-80% menunjukkan aktivitas antioksidan yang sangat lemah dengan nilai IC_{50} berturut-turut sebesar 302; 244; 310; dan 322 ppm. HPUT fraksi 20-80% menunjukkan aktivitas antioksidan yang lemah dengan nilai IC_{50} berturut-turut sebesar 174; 177; 192; dan 181 ppm.

Kata kunci: antibakteri, antioksidan, presipitasi, hidrolisat protein

Abstract

*This research purpose is to understand anti-oxidant and anti-bacterial potential activities from catfish's hydrolyzate intestines protein. The intestines was extracted with 1:6 (b/v) 50mM buffer phosphate pH 7,4, homogenized, and then performed centrifuge. First Supernatant was precipitated using (NH₄)₂SO₄ with 20, 40, 60, 80% saturation levels to obtain precipitate, then every precipitate fraction was performed dialysis. Dialysate protein fraction 20, 40, 60, 80% was performed hydrolysis using papain and trypsin 3% (v/v), pH 7, 55°C (papain) and 37°C (trypsin) in the waterbath shaker for 4 hours. Hydrolyzate protein fraction 20-80% was tested for its soluble protein level, antioxidant and antibacterial activities. Ammonium sulfate salt with saturation level of 20% (fraction 20%) was added and resulting with protein precipitate total and dialysate in the amount of 21.443 and 16.402,7 mg. Hydrolyzate of catfish's intestines protein using papain (HPUP) and trypsin (HPUT) fraction of 40% (392 and 338 mg/mL) were fractions with highest level of soluble protein. HPUP fraction 20-80% showed weak resistance against *Escherichia coli* (2,10; 42,50; 2,30; dan 2,2 mm) dan *Bacillus cereus* (1,80; 2,00; 1,60; dan 1,40 mm). HPUT fraction 20-80% showed weak resistance against *E. coli* (6,30; 7,80; 6,9; and 6,40 mm) and *B. cereus* (1,60; 1,80; 1,80; and 2,30 mm). HPUP fraction 20-80% showed very weak antioxidant activity with IC₅₀ value in sequence 302, 244, 310 and 322 ppm. HPUT fraction 20-80% showed a weak anti-oxidant activity with IC₅₀ value in sequence 174, 177, 192 and 181 ppm.*

Keyword: antibacteria, antioxidant, precipitation, protein hydrolysate