Pengaruh Konsentrasi Kalium Klorida (KCl) dan Lama Perendaman dalam Buffer Fosfat terhadap Karakteristik dan Kinetika Reaksi Enzimatis Ekstrak Kasar Enzim Papain dari Daun Pepaya *(Carica papaya,* L.*)*

Winari Alida, Deivy Andhika Permata, Rina Yenrina

ABSTRAK

Daun pepaya merupakan salah satu bagian tanaman yang kaya manfaat. Daun pepaya mengandung enzim papain yang merupakan enzim protease yang sangat bermanfaat bagi industri. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh konsentrasi Kalium Klorida dan lama perendaman dalam Buffer Fosfat terhadap karakterisitik dan kinetika ekstrak kasar enzim papain yang dihasilkan dari daun pepaya. Penelitian ini menggunakan Rancangan Acak Lengkap Faktorial dengan 2 faktor. Analisis data menggunakan Analisis of Varian (ANOVA) dan hasil yang berbeda nyata dilanjutkan dengan Duncan's New Multiple Range (DNMRT) pada taraf nyata 5 %. Faktor A (konsentrasi aktivator) terdiri dari 3 taraf yakni A1 (0,5%), A2 (1,0%), dan A3 (1,5%). Faktor B (lama perendaman) terdiri dari 4 taraf yakni B1 (0 jam), B2 (12 jam), B3 (24 jam), dan B4 (36 jam). Hasil penelitian menunjukkan interaksi KCl konsentrasi 1,5 % dan lama perendaman selama 24 jam dengan buffer fosfat menghasilkan aktivitas proteolitik tertinggi sebesar 18,18 µg/ml dengan kadar protein 6,57 %. Kestabilan aktivitas proteolitik ekstrak kasar papain diperoleh pada pH 7, suhu 37^{0}C, dengan nilai Vmax 21,276 Unit/mL dan Km 0,149%.

Kata Kunci: daun pepaya, kalium klorida, buffer fosfat, papain, aktivitas proteolitik

The Effect Concentration of Potassium Chloride (KCl) and Immersion Time in Phospate Buffer Toward Characteristic and The Kinetics of Enzymatic Reactions Crude Extract Papain Enzyme from Papaya Leaves (*Carica papaya*, L.)

Winari Alida, Deivy Andhika Permata, Rina Yenrina

ABSTRACT

Papaya leaves is a part of the plant that rich in benefits. Papaya leaves contains papain enzyme which is a protease enzyme that very helpful for the industry. This research was aimed to known the effect concentration of potassium chloride (KCl) and immersion time in phospate buffer toward characteristic and the kinetics of enzymatic reactions crude extract papain enzyme from papaya leaves. Completely Randomized Factorial Design was used as experiments of design in this research with 2 factors. Data were analyzed statistically by using ANOVA and were continued with *Duncan*'s New Multiple Range Test (DNMRT) at 5 % significance level. Factor A (activator concentration) consisted 3 level were A1 (0,5%), A2 (1,0%), and A3 (1,5%). Factor B (immersion time) consisted 4 level were B1 (0 hour), B2 (12 hour), B3 (24 hour), and B4 (36 hour). The result showed KCl by concentration of 1,5 % and was obtained during 24 h of immersion time in phosphate buffer has interaction that the highest value of the proteolitic activation were 18,18 µg/ml by protein content 6,57 %. The stability of crude papain activity was obtained at pH 7, temperature of 37°C, and Vmax is 21,276 Unit/mL and Km 0, 149%.

Keywords: **papaya, potassium chloride, phosphate buffer, papain, activity of protease**