ISOLASI, PEMURNIAN PARSIAL, KARAKTERISASI DAN AMOBILISASI ENZIM L-ASPARAGINASE DARI DAUN BENALU ALPUKAT *(Loranthaceae)*

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RINGKASAN

L-asparaginase merupakan enzim yang mengkatalisis reaksi hidrolisis L-asparagin menjadi asam L-aspartat dan amonia. L-asparagin merupakan salah satu nutrisi bagi sel kanker. Pemberian L-asparaginase pada sel kanker dapat menghambat pertumbuhan sel kanker tersebut. Penelitian sebelumnya menunjukkan bahwa daun benalu teh dapat membunuh sel kanker fibrio sarkoma. Banyaknya jenis benalu yang hidup diberbagai tanaman dan belum banyak dimanfaatkan, maka perlu dilakukan isolasi enzim L-asparaginase dari benalu yang lain. Pada penelitian ini dilakukan isolasi, pemurnian parsial, karakterisasi dan amobilisasi L-asparaginase dari daun benalu alpukat *(Lhorantaceae)*.

Tahap-tahap penelitian meliputi isolasi, pemurnian parsial dan amobilisasi. Isolasi enzim dengan ekstraksi dan sentrifugasi, pemurnian parsial enzim L-asparaginase dengan fraksinasi menggunakan amonium sulfat dan dialisis menggunakan membran selofan. Enzim hasil pemurnian parsial dikarakterisasi untuk memperoleh kondisi optimum enzim baik suhu, pH dan waktu inkubasi. Amobilisasi dengan metode penjerapan menggunakan karaginan. Pada setiap tahap perlakuan terhadap enzim L-asparaginase diuji unit aktivitasnya dengan metode Nessler dan ditentukan kadar proteinnya dengan metode Lowry. Rasio antara unit aktivitas dan kadar protein diperoleh aktivitas spesifik enzim.

Ekstrak kasar enzim L-asparaginase hasil isolasi mempunyai aktivitas spesifik sebesar 31,34 U/mg. Enzim hasil pemurnian parsial mempunyai aktivitas spesifik terbesar pada F_2 yaitu 82,49 U/mg dengan tingkat kemurnian 2,63. Aktivitas enzim L-asparaginase hasil karakterisasi diperoleh kondisi optimum pada pH 8,6; suhu 37^{o}C dan waktu inkubasi 31 menit. Enzim L-asparaginase amobil masih dapat menghidrolisis L-asparagin pada tiga kali pemakaian.

SUMMARY

L-asparaginase is a hydrolase enzyme which catalyzes L-asparagine hydrolysis reaction to produce L-aspartic acid and ammonia. L-asparagine is one of cancer cell nutritions. The growth of cancer cell will be prohibited by action of L-asparaginase enzyme into the cancer cell. The previous research indicated that the fibrio sarcoma cancer cell actually could be killed by the parasite leaves of tea. Many parasite plants which have been widely known have not been utilized yet to human health programme. The steps of the research were isolation, partial purification, characterization and immobilization. The enzyme was surfected from the avocado parasite leaves *(Lhorantaceae)*.

The enzyme was isolated by extraction and centrifugation. Then it was purified by fractionation using ammonium sulfate and dialyzed using celofane membrane. Pure enzyme is characterized to get enzyme optimum condition such as temperature, pH and incubation. Enzyme immobilize with adsorbing methode using karageenan. The enzyme activity was determined by Nessler method and the protein content was determined by Lowry method. The ratio enzyme activity and potein content were defined as the spesific enzyme activities.

The research showed that the crude L-asparaginase enzyme resulted from the isolation had 31,34 U/mg specific activity. L-asparaginase enzyme from purification had the biggest specific activity in F_2 fraction with the number of 82,49 U/mg and purified degree of 2.63. The optimum performance of the characterization happened on 37^oC tempereture with pH 8.6 for 31 minutes. In addition the immobil from the L-asparaginase enzyme actually could be three time reused to hydrolize L-asparagine substrat.

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