

AKTIVITAS INHIBITOR ASETILKOLINESTERASE SEBAGAI TERAPI ALZHEIMER DARI PEPTIDA AKTIF GONAD BULU BABI (*Tripneustes ventricosus* Lamarck, 1816)

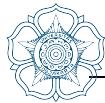
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INTISARI

Penyakit Alzheimer atau *Alzheimer Disease* (AD) merupakan salah satu jenis penyakit dari demensia yang disebabkan oleh adanya aktivitas enzim kolinesterase pada sel saraf. Obat sintetik yang beredar sebagai bentuk terapi AD diketahui belum memiliki efektivitas yang baik serta masih menimbulkan efek samping negatif bagi pasien AD yang mengkonsumsinya. Sehingga, penelitian mengenai jenis obat atau terapi baru berbasis bahan alam yang lebih efektif dan minim efek samping perlu dilakukan. Berdasarkan hal tersebut, penelitian ini bertujuan untuk mengetahui aktivitas inhibitor enzim asetilkolinesterase dari peptida aktif gonad bulu babi (*Tripneustes ventricosus*). Ruang lingkup dari penelitian ini adalah eksplorasi peptida aktif dari famili Echinoidea di Pantai Selatan Gunung Kidul, Yogyakarta. Metode yang digunakan adalah pengambilan sampel bulu babi di Pantai, indentifikasi spesies yang didapatkan, isolasi protein gonad, perhitungan konsentrasi dan konfirmasi kandungan protein, purifikasi dan digesti protein, penentuan aktivitas inhibitor asetilkolinesterase, sekvensing protein, dan analisis kimia komputasi. Hasil diperoleh menunjukkan adanya aktivitas penghambatan enzim AChE oleh dua fraksi aktif TV1 dan TV3 pada dua konsentrasi 700 ppm dan 3000 ppm. Persentase penghambatan oleh TV1 adalah 31,2% (700 ppm) dan 67,16% (3000 ppm), sedangkan oleh TV3 adalah 66,56% (700 ppm) dan 68,95% (3000 ppm). Sekuens peptida terbaik dalam mekanisme penghambatan enzim AChE dalam penelitian ini adalah KTKDLLK.

Kata Kunci: Alzheimer, *Tripneustes ventricosus*, Asetilkolinesterase, Peptida.



ACETYLCHOLINESTERASE INHIBITOR ACTIVITY AS ALZHEIMER THERAPY FROM SEA URCHIN GONAD (*Tripneustes ventricosus* Lamarck, 1816) ACTIVE PEPTIDE

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ABSTRACT

Alzheimer's disease or Alzheimer's Disease (AD) is a type of dementia caused by the activity of the enzyme cholinesterase in nerve cells. Worldwide distributed synthetic drugs as a form of AD therapy are known to not be very effective and still cause negative side effects for AD patients who consume them. Thus, research into new types of drugs or therapies based on natural ingredients which more effective and have minimal side effects needs to be carried out. Based on that, this study aims to determine the activity of the acetylcholinesterase enzyme inhibitor from the active peptide of sea urchin gonads (*Tripneustes ventricosus*). The scope of this research is the exploration of active peptides from the Echinoidea family on the South Coast of Gunung Kidul, Yogyakarta. The methods used were sampling of sea urchins on the beach, identification of the species obtained, isolation of gonad protein, calculation of concentration and confirmation of protein content, purification and digestion of protein, determination of acetylcholinesterase inhibitor activity, protein sequencing, and computational chemical analysis. The results obtained showed that there was inhibitory activity of the AChE enzyme by the two active fractions TV1 and TV3 at two concentrations of 700 ppm and 3000 ppm. The percentage of inhibition by TV1 was 31.2% (700 ppm) and 67.16% (3000 ppm), while by TV3 it was 66.56% (700 ppm) and 68.95% (3000 ppm). The best peptide sequence in the AChE enzyme inhibition mechanism in this study is KTKDLLK.

Key Words: Alzheimer, Acetylcholinesterase, *Tripneustes ventricosus*, Peptide.