

ABSTRAK

Penurunan kemampuan untuk mengingat atau demensia pada usia lanjut masih sering terjadi hingga saat ini. Salah satu jenis demensia yang paling banyak ditemukan adalah penyakit Alzheimer (*Alzheimer Disease/AD*) yang merupakan akibat terganggunya fungsi asetilkolin. Penanganan AD dapat dilakukan dengan pemberian obat penghambat asetilkolinesterase. Senyawa alam berupa flavonoid dilaporkan memiliki aktivitas antikolinesterase. Penelitian ini bertujuan untuk mengetahui aktivitas penghambatan enzim asetilkolinesterase pada flavonoid khususnya flavonoid daidzein dari sub kelas isoflavonoid yang dilihat dari nilai IC_{50} . Penelitian ini merupakan penelitian eksperimental murni dengan rancangan acak lengkap pola searah. Pengujian aktivitas penghambatan enzim asetilkolinesterase pada flavonoid daidzein dilakukan dalam *96-microplate well*. Pengujian dilakukan secara *in vitro* dan didasarkan pada metode Ellman dimana tiokolin dari AChE akan bereaksi dengan 5,5-dithiobis (asam 2-nitrobenzoat) (DTNB) membentuk warna kuning dimana intensitas penyerapan cahayanya diukur pada panjang gelombang 412 nm yang sebanding dengan aktivitas AChE. Hasil penelitian menunjukkan bahwa flavonoid daidzein bertindak sebagai modulator yang meningkatkan aktivitas enzim asetilkolinesterase pada konsentrasi 10; 50; 100; 500; dan 1000 μM dengan persentase aktivitas enzim asetilkolinesterase sebesar 304,478%, 144,030%, 192,537%, 159,701%, 233,582%. Hal ini menunjukkan bahwa hasil yang diperoleh berbanding terbalik dengan beberapa sumber literatur yang mengatakan jika flavonoid daidzein dapat menghambat aktivitas dari enzim asetilkolinesterase.

Kata kunci: asetilkolinesterase, flavonoid daidzein, *in vitro*

ABSTRACT

Decreased ability to remember or dementia in old age is still common to this day. One of the most common types of dementia is Alzheimer's disease (AD), which is a result of the disruption of acetylcholine function. Treatment of AD can be done with the administration of acetylcholinesterase inhibitors. Natural flavonoid compounds have been found to have anticholinesterase activity. The study aims to identify the inhibitory activity of the enzyme acetylcholinesterase on flavonoids, in particular the flavonoid daidzein of the isoflavonoid subclass seen from the IC₅₀ value. This study is a purely experimental study with a complete random design of directional patterns. Testing of the inhibitory activity of the enzyme acetylcholinesterase on the flavonoid daidzein is carried out in a 96-microplate well. The test was conducted *in vitro* and was based on the Ellman method where the thiocholine from AChE would react with 5,5-dithiobis (acid 2-nitrobenzoate) (DTNB) forming a yellow colour where the intensity of its light absorption was measured at a wavelength of 412 nm that is equivalent to the activity of AChE. The results of the study showed that the flavonoid daidzein acted as a modulator that increased the activity of the enzyme acetylcholinesterase at concentrations of 10; 50; 100; 500; and 1000 μM with a percentage of enzymatic activity of 304,478%, 144,030%, 192,537%, 159,701%, 233,582%. This suggests that the results obtained are reversed compared to some literature sources that say if the flavonoid daidzein can inhibit the activity of the enzyme acetylcholinesterase.

Keywords: acetylcholinesterase, flavonoid daidzein, *in vitro*