Acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) are the key enzymes in pathogenesis of Alzheimer’s disease (AD), which is characterized by a deficit in central cholinergic transmission. In the current study, AChE and BChE inhibitory activities of seven coumarin derivatives [umbelliferone (1), 4-methylumbelliferone (2), 4-hydroxycoumarin (3), scopoletin (4), 8-methoxypsoralen (5), bergapten (6), and iso-bergapten (7)], a furanocoumarin mixture obtained from *Heracleum crenatifolium* Boiss. (Umbelliferae), as well as of two anthroquinone derivatives [rhein (8) and aloe-emodine (9)] and one stilbene, rhapontin (10), were tested by the spectrophotometric method of Ellman using an ELISA microplate-reader at 1 mg mL\(^{-1}\). Among them, the furanocoumarin mixture [(68.8 ± 0.76) %], bergapten [(62.4 ± 0.74) %], aloe-emodine [(57.2 ± 1.32) %], scopoletin [(53.1 ± 0.83) %], and 4-methyl-umbelliferone [(62.3 ± 1.03) %] showed over 50% inhibition against AChE, while umbelliferone [(54.3 ± 0.23) %], 4-methylumbelliferone [(80.9 ± 1.17) %], scopoletin [(73.5 ± 1.01) %], 8-methoxypsoralen [(67.1 ± 0.98) %], as well as the furanocoumarin mixture [(76.7 ± 0.95) %] had a notable anti-BChE effect.

**Key words:** Coumarin, Acetylcholinesterase, Butyrylcholinesterase, Alzheimer’s Disease