

Monohydroxamates of aspartic acid and glutamic acid exhibited antioxidant and angiotensin converting enzyme inhibitory activities

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Abstract

Two monohydroxamates of L-aspartic acid beta-hydroxamate (AAH) and L-glutamic acid gamma-hydroxamate (GAH) were used for testing antioxidant and angiotensin converting enzyme (ACE) inhibitory activities in comparison with those of asparagine and glutamine, respectively. The half-inhibition concentrations, IC(50), of scavenging activity against 1,1-diphenyl-2-picrylhydrazyl (DPPH) were 36 and 48 microM and against superoxide radicals were 18.99 and 6.33 mM, respectively, for AAH and GAH. However, no activities of asparagine and glutamine were found. AAH and GAH also exhibited activities against peroxynitrite-mediated dihydrorhodamine 123 oxidations and hydroxyl radical-mediated DNA damage. For ACE inhibitory activities, the IC(50) values were 4.92 and 6.56 mM, respectively, for AAH and GAH. The ACE hydrolyzed products on the TLC chromatogram also confirmed the inhibitory activities of the two amino acid hydroxamates on ACE. When 1.23 mM AAH was added, AAH showed competitive inhibitions against ACE, and the apparent inhibition constant (K(i)) was 2.20 mM.