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The Inhibitory Effect of Riceberry Rice Extract on Acetylcholinesterase Activity

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Abstract : The world is facing a serious situation of aging society. Elderly may have many physical health problems due to degenerative diseases including Alzheimer's disease. Riceberry rice relatively contain high levels of carbohydrate, vitamin E, -oryzanol, and also abundant of bioactive compound of anthocyanin. This study aimed to determine the inhibitory effect of Riceberry rice crude extract on acetylcholinesterase activity. The active compound was extracted by using 70% ethanol (v/v). The inhibitory effect of Riceberry rice on acetylcholinesterase was evaluated by using slightly modified method of Ellman's method. The 120 seconds time interval of kinetics measurement showed that Riceberry rice extract at concentrations of 2.5-12.5 mg/ml presented the acetylcholinesterase inhibitory activity at the statistically significant difference at p 0.05 compared to control group over 60 -120 seconds. At the concentrations of 10 and 12.5 mg/ml of Riceberry rice extract expressed the high percentage of inhibitory activity of 50.86 and 71.22%, respectively. The half maximal inhibitory concentration (IC50) of acetylcholinesterase inhibitory activity of Riceberry rice extract; considered to the end point, was found at concentration of 9.34 mg/ml. The physostigmine (positive control); however, showed a higher inhibitory capacity than that of Riceberry rice extract. The inhibitory activity of the positive control group was around at 80.40 – 90.41%. In conclusion, the results of this study indicated that Riceberry rice extract possessed the inhibitory capacity of acetylcholinesterase activity. Moreover, at the concentrations of 12.5 mg/ml it showed the identical inhibitory effect with physostigmine group. The Riceberry rice extract might be able to alleviate the clinical manifestations of Alzheimer's disease.

Keywords : acetylcholine, acetylcholinesterase, Alzheimer's disease, riceberry rice
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