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Angiotensin-I converting enzyme (ACE) inhibitory activity of aqueous extract prepared from fermented brown rice: A potential functional food for management of hypertension

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Abstract

Angiotensin-II is a hypertensive peptide formed from angiotensin-I by the action of angiotensin-I converting enzyme (ACE), thereby being implicated in the pathogenic process of hypertension, and hence the substances inhibiting this enzyme can be expected to reduce the blood pressure in hypertensive patients. On the other hand, previous studies have shown that brown rice fermented with *Aspergillus oryzae*, designated as FBRA, is a dietary fiber-rich food and possibly beneficial to human health. Then, the effect of FBRA extract on ACE activity was examined to evaluate its potential activity to ameliorate hypertension. Consequently, the extract was shown to inhibit the enzyme activity in a competitive manner, and this inhibitory effect was furthermore suggested to be attributed to small peptides in the extract. Thus, FBRA is clearly shown to cause the reduction of blood pressure by inhibiting the production of hypertensive peptide.

Keywords: FBRA extract; ACE activity; Competitive inhibition; Small peptides; Antihypertensive effect

Introduction

Angiotensin I-converting enzyme (ACE) is generally known to play a pathogenic role in the onset of hypertension through its enzymatic activity to catalyze the conversion of angiotensin-I to angiotensin-II, which is an active peptide inducing the elevation of blood pressure, and hence the inhibition of this enzyme is considered to reduce the blood pressure, there-

