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Inhibition of angiotensin I-converting enzyme (ACE-I) by aqueous extracts prepared from edible and non-edible parts of lotus root

Naoyoshi Nishibori[1], Takefumi Sagara[1], Takara Hiroi[2], Reina Kishibuchi[2], Manami Sawaguchi[2], Mari Itoh[2], Kyoji Morita[2], Song Her[3]

[1]Laboratory of Cell Biology and Toxicology, Department of Food Science and Nutrition, Shikoku Junior College, Ohjin, Tokushima 771-1192, Japan
[2]Laboratory of Neuropharmacology, Department of Nursing, Shikoku University School of Health Sciences, Ohjin, Tokushima 771-1192, Japan.
[3]Division of Bio-Imaging, Chuncheon Center, Korea Basic Science Institute, Chuncheon 200-701, Korea

*Corresponding Author: kmorita@shikoku-u.ac.jp; Tel: +81-88-665-9257, Fax: +81-88-665-8037

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Abstract

Angiotensin I-converting enzyme (ACE) is known to catalyze the conversion of angiotensin-I to angiotensin-II, which is the biologically active peptide elevating blood pressure, thereby being implicated in the pathogenic process of hypertension. Therefore, ACE inhibitory substances are expected to reduce the blood pressure in hypertensive patients. Then, the aqueous extracts were prepared from the edible and non-edible joint parts of lotus root (a rhizome of *Nelumbo nucifera*), and the effects of these extracts on ACE activity were examined *in vitro* to search for potentially effective substances against hypertension. The extracts of both edible and joint parts caused their inhibitory effects on ACE activity, similar in their properties and different in their potencies. Thus, the aqueous extracts prepared from lotus root are suggested to contain novel substances inhibiting ACE activity, thereby reducing blood pressure by inhibiting the production of active hypertensive peptide.

Keywords: Angiotensin I-converting enzyme (ACE); Hypertensive, Blood pressure; Lotus root extracts; Polyphenolic compounds

Introduction

Angiotensin I-converting enzyme (ACE) is generally considered to be implicated in the pathogenic process of hypertension through the conversion of angiotensin I to angiotensin II, which is known as a biologically active peptide inducing the elevation of blood pressure. Therefore, the inhibition of this enzyme is considered to reduce blood pressure, thereby improving the physical conditions of hypertensive patients. Based on this concept, much work has previously been done to find out potentially active substances to cause the antihypertensive effect, and a variety of natural materials, such as plant foods including wheat, rice, peas,

