

The Purification and Characterization of Angiotensin Converting Enzyme Inhibitory Peptides from Kefir and Their Antihypertensive

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ABSTRACT

Abstract Hypertension is one of the most common worldwide diseases afflicting human because of the associated cardiovascular diseases and mortality. Inhibition of angiotensin converting enzyme (ACE) activity could be used for antihypertensive. This study was conducted to investigate ACE inhibitory peptides in vitro test and their antihypertensive activity of kefir in vivo test. Changes of their systolic blood pressure (SBP), diastolic blood pressure (DBP), mean blood pressure (MBP), and heart rate (HR) during 0-10 hr after feeding 35mg/kg of kefir in spontaneously hypertensive rat (SHR) were measured. SBP, DBP, MBP and HR significantly decreased 40 mmHg, 38 mmHg, 33 mmHg, and 70 bpm, respectively. Wistar Kyoto rat (WKY) was used as the control group. Reverse phase – high performance liquid chromatography (RP-HPLC) was used to fractionate the peptides. ACE inhibitory activity of the fractions collected by time were assayed and two groups of fractions with over 80 % were defined as fraction A and fraction B. Changes of the SBP and DBP during 0-10 hr after feeding 1mg/kg of fraction A and fraction B. SBP and DBP significantly decrease 55 mmHg, and 50 mmHg, respectively. There was no significant difference between antihypertensive activity of fraction B and the control groups in SHR. The pI values of two major spots in fraction A were 3 and 10 according isoelectric focusing (IEF) analysis. The amino acid sequences of caprine, bovine milk protein and the major spot from fraction A were aligned. The peptide of fraction A was proposed from casein. We found a novel antihypertensive peptide derived from kefir. Key word : angiotensin converting enzyme inhibitor, antihypertensive peptide, spontaneously hypertension rat

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