Novel bioactive peptides with antioxidant and antihypertension activities from ginger rhizome

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ABSTRACT

Nowadays, human has long life spans while health problem on non-communicable diseases, such as diabetes, hypertension and heart disease increase. For this reason, customers are interested in consuming more functional food for their health benefit. Bioactive peptide (BP) is one of acceptable functional foods due to its safety as well as their beneficial bioactivities. Bioactive peptides are derived from protein digestion by enzymes from either digestive system or microbes. BP consists of 2-20 amino acids in length. Each BP has different properties, for instance, antimicrobial, antihypertensive and antioxidant. Some BPs may have more than one activity. Most of bioactive peptides available in market are derived from foods with high protein content such as meat, soybean and milk. In the contrary, there are few researches on bioactive peptides that are derived from herbs especially edible rhizomes, such as ginger, turmeric and white turmeric. These rhizomes are commonly sold in any markets and are used as important ingredients in many Asian recipes. This study focused on searching for novel BPs with antihypertension and antioxidant activities from ginger. Proteins were extracted and digested using pepsin and trypsin. The crude hydrolysate was fractionated by molecular weight cut-off and each fraction was analyzed for angiotensin-converting enzyme (ACE) inhibitory and antioxidant activities. Fractions with molecular mass less than 1 kDa and having high biological activity were purified using RP-HPLC. The results showed that one of RP-HPLC purified fractions had both ACE inhibitory (30.74%) and antioxidant (51.53%) activities.

KEYWORDS: Bioactive peptides; Functional food; Ginger; Angiotensin-converting enzyme (ACE)