

Author: [ADVANCED](#) | Volume Page
Keyword: |



[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1881-3984

PRINT ISSN : 1344-6606

Food Science and Technology Research

Vol. 14 (2008) , No. 4 pp.377

[\[PDF \(669K\)\]](#) [\[References\]](#)

Anticancer and Antimicrobial Activities of β -Phenylethyl Isothiocyanate in *Brassica rapa* L.

[Eunyoung HONG](#)¹⁾ and [Gun-Hee KIM](#)¹⁾

1) Department of Food and Nutrition, Duksung Women's University

(Received: January 11, 2006)

(Accepted: March 26, 2008)

Glucosinolates, precursors of isothiocyanates, are present in cruciferous vegetables such as the turnip (*Brassica rapa* L.). Glucosinolates are usually broken down through hydrolysis catalyzed by myrosinase released from damaged plant cells. Glucosinolates and their breakdown products, in particular isothiocyanates, have long been known to have various pharmaceutical benefits, including anticarcinogenic, antimicrobial and antioxidant properties. In this study, quantitative analyses of isothiocyanates and total glucosinolates in turnip, which was divided into three parts, were performed by UV-spectrometer, GC and GC/MS. Total glucosinolates showed no significant differences among different parts of turnip. However, the amounts of 3-butenyl and 4-pentenyl isothiocyanates in turnip leaf were higher than those in other parts. β -Phenylethyl isothiocyanate, abundant in the peel, showed the highest content in turnip. In addition, β -Phenylethyl isothiocyanate inhibited the growth of human-derived hepatoma cell line (HepG2) in a concentration-dependent manner (IC₅₀ value of 24.5 μ M), assessed by the MTT method. β -Phenylethyl isothiocyanate also exhibited antimicrobial activity against food-borne pathogens *Vibrio parahaemolyticus*, *Staphylococcus aureus* and *Bacillus cereus*. In particular, minimum inhibitory concentration (MIC) against *Vibrio parahaemolyticus* was the most efficient, at 100 μ g/ml. These results suggest that the major isothiocyanate in turnip is β -phenylethyl isothiocyanate. Furthermore, β -phenylethyl isothiocyanate may have anticancer effects and antimicrobial properties against food-borne pathogens.

Keywords: [glucosinolate](#), [\$\beta\$ -phenylethyl isothiocyanate](#), [anticancer activity](#), [antimicrobial activity](#), [turnip](#)

To cite this article:

Anticancer and Antimicrobial Activities of β -Phenylethyl Isothiocyanate in *Brassica rapa* L. Eunyoung HONG and Gun-Hee KIM, *FSTR*. Vol. **14**, 377. (2008) .

doi:10.3136/fstr.14.377

JOI JST.JSTAGE/fstr/14.377

Copyright (c) 2009 by Japanese Society for Food Science and Technology



[Japan Science and Technology Information Aggregator, Electronic](#)

