

PubMed

Display Settings:  Abstract



*J Agric Food Chem.* 2007 Aug 8;55(16):6439-46. Epub 2007 Jul 6.

## **Aqueous extract from Spanish black radish (*Raphanus sativus* L. Var. *niger*) induces detoxification enzymes in the HepG2 human hepatoma cell line.**

Hanlon PR, Webber DM, Barnes DM.

Standard Process, Department of Research and Development, 1200 West Royal Lee Drive, Palmyra, Wisconsin 53156, USA. phanlon@standardprocess.com

### **Abstract**

Spanish black radish (***Raphanus sativus* L. var. *niger***) is a member of the Cruciferae family that also contains broccoli and Brussels sprouts, well-known to contain health-promoting constituents. Spanish black radishes (SBR) contain high concentrations of a glucosinolate unique to the radish family, glucoraphasatin, which represents >65% of the total glucosinolates present in SBR. The metabolites of glucosinolates, such as isothiocyanates, are implicated in health promotion, although it is unclear whether glucosinolates themselves elicit a similar response. The crude aqueous extract from 0.3 to 3 mg of dry SBR material increased the activity of the phase II detoxification enzyme quinone reductase in the human hepatoma HepG2 cell line with a maximal effect at a concentration of 1 mg/mL. Treatment of HepG2 cells with the crude aqueous extract of 1 mg of SBR per mL also significantly induced the expression of mRNA corresponding to the phase I detoxification enzymes: cytochrome P450 (CYP) 1A1, CYP1A2, and CYP1B1 as well as the phase II detoxification enzymes: quinone reductase, heme oxygenase 1, and thioredoxin reductase 1. Previous studies have shown that the myrosinase metabolites of different glucosinolates vary in their ability to induce detoxification enzymes. Here, we show that while glucoraphasatin addition was ineffective, the isothiocyanate metabolite of glucoraphasatin, 4-methylthio-3-butenyl isothiocyanate (MIBITC), significantly induced phase II detoxification enzymes at a concentration of 10 microM. These data demonstrate that the crude aqueous extract of SBR and the isothiocyanate metabolite of glucoraphasatin, MIBITC, are potent inducers of detoxification enzymes in the HepG2 cell line.

PMID: 17616135 [PubMed - indexed for MEDLINE]

**Publication Types, MeSH Terms, Substances**

**LinkOut - more resources**