

【P-8】

Biological Activities and Metabolism of Chemoprotective Glucosinolates of Brussels Sprouts in Rats and Humans.

Eun-Sun Hwang* and Elizabeth. H. Jeffery

*Department of Food Science and Human Nutrition, University of Illinois, Urbana, IL 61801, USA.***Present address. Brain Korea 21 for Medical Sciences, Yonsei University, College of Dentistry, Seoul 120-752, Korea.*

Brussels sprouts (BS) belong to a group of cruciferous vegetables characterized by their content of glucosinolates, secondary metabolites that, upon hydrolysis, release bioactive isothiocyanates (ITC). ITC is considered to protect the body from cancer by induction of detoxification enzymes such as quinone reductase (QR). Sinigrin, the predominant aliphatic glucosinolate in BS, undergoes hydrolysis to yield allyl isothiocyanate (AITC) which, following absorption and metabolism, is excreted in the urine as an *N*-acetyl-cysteine (NAC) conjugate. Male F344 rats (4/group) received an AIN 76B-40 diet containing 0, 10 or 20% freeze-dried BS. A human subject ingested 500 g BS. Urinary AITC-NAC was identified in human and rat urine. On day 6, rats were killed and liver, colon and pancreas were collected. Ten and 20% BS diets caused a 1.4- and 2.3-fold induction of QR in the pancreas, a 1.5- and 2.5-fold induction in liver and a 2.1- and 3.6-fold induction in colonic epithelium, respectively. Excretion of the conjugate was dose-related on days 1 and 2 only. These results suggest that urinary NAC-AITC is a qualitative biomarker for ingestion and bioactivity of BS, but that it may not be dose-related when rats are fed continuously for more than two days.

Keyword : Glucosinolates, allyl isothiocyanates, Brussels sprouts, quinone reductase, mercapturic acid, *N*-acetyl cysteine