

GL-1

## Effects of Brussels Sprouts Diet on Urinary Metabolites and Quinone Reductase Activity in Rats

Eun-Sun Hwang\* and Elizabeth H. Jeffery<sup>1</sup>

The Research Center for New Biomaterials in Agriculture, Seoul National University,

<sup>1</sup>Department of Food Science and Human Nutrition, University of Illinois, USA

Brussels sprouts (BS) belong to a group of cruciferous vegetables characterized by their content of glucosinolates, secondary metabolites that, upon hydrolysis, release bioactive isothiocyanates. Isothiocyanates are 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*-acetylcysteine (NAC) conjugate. Male F344 rats (4/group) received an AIN 76B-40 diet containing 0, 10 or 20% freeze-dried BS. Urinary AITC-NAC was identified in 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 of BS, but that it may not be dose-related when rats are fed continuously for more than two days.