ONLINE ISSN : 1881-3984
PRINT ISSN : 1344-6606

Food Science and Technology Research
Vol. 10 (2004) , No. 3 pp.290-295

6-Methylsulfinylhexyl Isothiocyanate, an Antioxidant Derived from *Wasabia japonica MATUM*, Ameliorates Diabetic Nephropathy in Type 2 Diabetic Mice

Yoshiko FUKUCHI[1)], Yoji KATO[2)], Isao OKUNISHI[3)], Yasuko MATSUTANI[1)], Toshihiko OSAWA[4)] and Michitaka NAITO[1)]

1) Division of Nutrition & Health, School and Graduate School of Life Studies, Sugiyama Jogakuen University
2) School of Humanities for Environmental Policy and Technology, Himeji Institute of Technology
3) Kinjirushi Co., Ltd.
4) Laboratory of Food and Biodynamics, Nagoya University Graduate School of Bioagricultural Science

(Received: December 1, 2003)
(Accepted: March 6, 2004)

Many studies have examined the protective effects of antioxidative agents against diabetic nephropathy, using various models. 6-Methylsulfinylhexyl isothiocyanate (6-MSITC) isolated from wasabi (*Wasabia japonica MATUM*) induces glutathione S-transferase in vitro, thus 6-MSITC may act as an antioxidant *in vivo*. The aim of this study was to examine whether wasabi powder (WP) and 6-MSITC suppress oxidative stress *in vivo* and inhibit the impairment of renal function and diabetic nephropathy, using type 2 diabetic mice. KK-A^{y} type 2 diabetic mice were assigned to three groups (n = 10 each); control mice were fed normal chow (CRF-1) and two experimental groups were fed CRF-1 containing 0.5% WP or 0.03% 6-MSITC for 4 wk. Urine volume, urinary albumin excretion, and creatinine clearance were significantly lower in the 6-MSITC group than in the control group. There was statistically no difference in TBARS or other biomarkers of oxidative stress among the three groups. However, urinary 8-hydroxy-2′-deoxyguanosine

(8-OHdG), one of the markers of oxidative stress tended to be lower in the 6-MSITC group than in the control group. In conclusion, the present results show that a sufficient supply of dietary 6-MSITC may prevent or delay renal dysfunction in diabetes by protecting against oxidative stress, and that dietary 6-MSITC may have beneficial effects on diabetic complications in type 2 diabetic mice.

Keywords: wasabi, antioxidant, diabetic nephropathy, 6-methylsulfinylhexyl isothiocyanate (6-MSITC)

doi:10.3136/fstr.10.290

JOI JST.JSTAGE/fstr/10.290