

## REFERENCES

1. Johnson, I.T. 2002. New approaches to the role of diet in the prevention of cancers of the alimentary tract. *Mutat. Res.*, **551**: 9-28.
2. Park E, J. and Pezzuto, J.M. 2002. Botanicals in cancer chemoprevention. *Cancer Metast. Rev.*, **21**: 231-255.
3. Milner, J.A. 2002. Strategies for cancer prevention: the role of diet. *Br. J. Nutr.*, **87**: S265-S272.
4. Pezzuto, J.M. 1997. Plant-derived anticancer agents. *Biochem. Pharmacol.*, **53**: 121–133.
5. Steinmetz, K.A. and Potter, J.D. 1996. Vegetables, fruit and cancer chemoprevention: A review. *J. Am. Diet Assoc.*, **96**: 1027–1039.
6. World Health Organization. 2003. *World Cancer Report*. Lyon: International Agency for Research on Cancer.
7. John Hopkin Medicinal School. 2004. "Cancer Information at Johns Hopkins Medicine." [Online] Available <http://www.hopkinsmedicine.org>. (17 January 2005).
8. Zhang, Y., Li, J. and Tang, L. 2005. Cancer-preventive isothiocyanates: dichotomous modulators of oxidative stress. *Free Radical Biol. Med.*, **38**: 70-77.

9. Keum, Y.-S., Jeong, W.-S. and Kong, A.N.T. 2004. Chemoprevention by isothiocyanates and their underlying molecular signaling mechanisms. *Mutat. Res.*, **555**: 191-202.
10. Talalay, P. and Fahey, J.W. 2001. Phytochemicals from cruciferous plants protect against cancer by modulating carcinogen metabolism. *J. Nutr.*, **131**: 3027S–3033S.
11. Fahey, J.W., Zalcman, A.T. and Talalay, P. 2001. The chemical diversity and distribution of glucosinolates and isothiocyanates among plants. *Phytochemistry*, **56**: 5-51.
12. Mithen, R.F., Dekker, M., Verkerk, R., Rabot, S. and Johnson, I.T. 2000. The nutritional significance, biosynthesis and bioavailability of glucosinolates in human foods. *J. Sci. Food Agric.*, **80**: 967-984.
13. Palmieri, S. 2000. Glucosinolates nutraceutical product?. *Agro-Food Ind. Hi-technol.*, **7**: 1-6.
14. Fahey, J.W. and Stephenson, K.K. 1999. Cancer chemoprotective effects of cruciferous vegetables. *HortScience*, **34**: 4-8.
15. Halkier, B.A. 1999. Glucosinolates. In. Ikan, R. (Ed.), *Naturally Occurring Glycosides.*, pp. 193-223, Chichester: Wiley.
16. Hecht, S.S. 1999. Chemoprevention of cancer by isothiocyanates, modifiers of carcinogen metabolism. *J. Nutr.*, **129**: 768S-774S.
17. International Life Sciences Institute. 1999. Isothiocyanates. *Crit. Rev. Food Sci. Nutr.*, **39**: 245-257.

18. Talalay, P. 1999. The war against cancer: new hope. *Proc. Am. Philo. Soc.*, **143**: 52-72.
19. Shapiro, T.A., Fahey, J.W., Wade, K.L., Stephenson, K.K. and Talalay, P. 1998. Human metabolism and excretion of cancer chemoprotective glucosinolates and isothiocyanates of cruciferous vegetables. *Cancer Epidemiol. Biomarkers Prev.*, **7**: 1091-1100.
20. Zhang, Y. and Talalay, P. 1998. Mechanism of differential potencies of isothiocyanates as inducers of anticarcinogenic Phase 2 enzymes. *Cancer Res.*, **58**: 4632-4639.
21. Fahey, J.W., Zhang, Y. and Talalay, P. 1997. Broccoli sprouts: an exceptionally rich source of inducers of enzymes that protect against chemical carcinogens. *Proc. Natl. Acad. Sci. U.S.A.*, **94**: 10367-10372.
22. Rosa E.A.S., Hesney R.K., Fenwick G.R. and Portas C.A.M. 1997. Glucosinolates in crop plants. In Janick, J. (Ed.), *Horticultural Reviews*, vol. **19**, pp.99-215, New York : John Wiley & Sons Inc.
23. Verhoeven, D.T.H., Verhagen, H., Goldbohm, R.A., van den Brandt, P.A. and van Poppel, G. 1997. A review of mechanisms underlying anticarcinogenicity by *Brassica* vegetables. *Chem. Biol. Interact.*, **103**: 79-129.
24. Talalay, P. and Zhang, Y. 1996. Chemoprotection against cancer by isothiocyanates and glucosinolates. *Biochem. Soc. Transac.*, **24**: 806-810.
25. Verhoeven, D.T.H., Goldbohm, R.A., Van Poppel, G., Verhagen H. and van den Brandt, P.A. 1996. Epidemiological studies on *Brassica* vegetables

- and cancer risk: a review. *Cancer Epidemiol. Biomarkers Prev.*, **5**: 733-748.
26. Stoewsand, G.S. 1995. Bioactive organosulfur phytochemicals in *Brassica oleracea* vegetables-a review. *Food Chem. Toxic.*, **30**(6): 537-543.
27. Zhang, Y., Kensler, T.W., Cho, C.G., Posner, G.H. and Talalay, P. 1994. Anticarcinogenic activities of sulforaphane and structurally related synthetic norbornyl isothiocyanates. *Proc. Natl. Acad. Sci. U.S.A.*, **91**: 3147-3150.
28. Zhang, Y. and Talalay, P. 1994. Anticarcinogenic activities of organic isothiocyanates: chemistry and mechanisms. *Cancer Res.*, **54**: 1976S-1981S.
29. Block, G., Patterson, B. and Subar, A. 1992. Fruit, vegetables, and cancer prevention: a review of the epidemiological evidence. *Nutr. Cancer*, **18**: 1-29.
30. Talalay, P., Fahey, J.W., Holtzclaw, W.D., Prestera, T. and Zhang, Y. 1995. Chemoprotection against cancer by phase 2 enzyme induction. *Toxicol. Lett.*, **82** (83): 173-179.
31. Bhardwaj, H.L. and Hamama, A. 2003. Accumulation of glucosinolate, oil, and erucic acid in developing *Brassica* seeds. *Ind. Crops. Prod.*, **17**: 47-51.
32. Jeffery, E.H., Brown, A.F., Kurilich, A.C., Keck, A.S., Matusheski, N., Klein, B.P. and Juvik, J.A. 2003. Variation in content of bioactive components in broccoli. *J. Food Comp. Anal.*, **16**: 323-330.

33. Daxenbichler, M.E., Spencer, G.F., Carlson, D.G., Rose, G.B., Brinker, A.M. and Powell, R.G. 1991. Glucosinolate composition from 297 species of wild plants. *Phytochemistry*, **30**: 2623-2638.
34. Fahey, J.W. and Talalay, P. 1999. Antioxidant functions of sulforaphane: a potent inducer of Phase 2 detoxication enzymes. *Food Chem. Toxicol.*, **37**: 973-979.
35. Gamet-Payrastre, L., Lumeau, S., Gasc, N., Cassar, G., Rollin, P. and Tulliez, J. 1998. Selective cytostatic and cytotoxic effects of glucosinolates hydrolysis products on human colon cancer cells *in vitro*. *Anticancer Drugs*, **9**: 141-148.
36. Jiang, Z.-Q., Chen, C., Yang, B., Hebbar, V. and Kong, A.-N.T. 2003. Differential response from seven mammalian cell lines to the treatments of detoxifying enzyme inducers. *Life Sci.*, **72**: 2243-2253.
37. Farnham, M.W., Stephenson, K.K. and Fahey, J.W. 2000. The capacity of broccoli to induce a mammalian chemoprotective enzyme varies among inbred lines. *J. Am. Soc. Hort. Sci.*, **125**(4): 482-488.
38. Vang, O., Jensen H., and Autrup, H. 1991. Induction of cytochrome P-450AM, IA2, IIB1, IIB2 and IIE1 by broccoli in rat liver and colon. *Chem. Biol. Interact.*, **78**: 85-96.
39. Vistisen, K., Loft, S. and Poulsen, H.E. 1991. Cytochrome P450 1A2 activity in man measured by caffeine metabolism: effect of smoking, broccoli and exercise. *Adv. Exp. Med. Biol.*, **283**: 407-411.

40. Barcelo, S., Gardiner, J.M., Gescher, A. and Chipman, J.K. 1996. CYP2E1-mediated mechanism of anti-genotoxicity of the broccoli constituent sulforaphane. *Carcinogenesis*, 17: 277-282.
41. Gamet-Payrastre, L., Lumeau, S., Gasc, N., Cassar, G., Dupont, M.A., Chevolleau, S., Gasc, N., Tulliez, J. and Terce, F. 2000. Sulforaphane, naturally occurring isothiocyanate, induces cell cycle arrest and apoptosis in HT29 human colon cancer cells. *Cancer Res.*, 60: 1426-1433.
42. Musk, S.R.R., Stephenson, P., Smith, T.K., Stening, P., Fyfe, D. and Johnson, I.T. 1995. Selective toxicity of compounds naturally present in food toward the transformed phenotype of human colorectal cell line HT29. *Nutr. Cancer*, 24: 289-298.
43. Fahey, J.W., Haristoy, X., Dolar, P.M., Kensler, T.W., Scholtus, I., Stephenson, K.K., Talalay, P. and Lozniewski, A. 2002. Sulforaphane inhibits extracellular, intracellular and antibiotic-resistant strains of *Helicobacter pylori* and prevents benzo[a]pyrene-induced stomach tumors. *PNAS*, 99(11): 7610-7615.
44. Staretz, M.E., Koenig, L.A. and Heche, S.S. 1995. Effects of isothiocyanates on benzo[a]pyrene metabolism by mouse lung and liver microsomes. *Proc. Am. Assoc. Cancer Res.*, 36: 593.
45. Lin, J.M., Amin, S.G., Trudhin, N. and Hecht, S.S. 1993. Effects of isothiocyanates on tumorigenesis by benzo[a]pyrene in murine tumor models. *Cancer Lett.*, 74:151-159.

46. Jackson, S.J. and Singletary, K.W. 2004. Sulforaphane inhibit human mcf-7 mammary cancer cell mitotic progression and tubulin polymerization. *J. Nutr.*, **134**: 2229-2236.
47. Johnston, N. 2004. Sulforaphane halts breast cancer cell growth. *DDT*, **9(21)**: 908.
48. Tseng, E. 2004. Dietary organic isothiocyanates are cytotoxic in human breast cancer MCF-7 and mammary epithelial MCF-12A cell lines. *Exp. Biol. Med.*, **229**: 835-842.
49. Terry, P., Wolk, A., Persson, I., Magnusson, C. 2001. *Brassica* vegetables and breast cancer risk. *JAMA*, **285**: 2975–2977.
50. Suto, A., Bradlow, H.L., Wong, G.Y., Osborne, M.P. and Telang, N.T. 1993. Experimental down-regulation of intermediate biomarkers of carcinogenesis in mouse mammary epithelial cells. *Breast Cancer Res. Treat.*, **27**: 193-202.
51. Michaud, D.S., Spiegelman, D., Clinton, S.K., Rimm, E.B., Willett, W.C. and Giovannucci, E.L. 1999. Fruit and vegetable intake and incidence of bladder cancer in a male prostate cohort. *J. Natl. Cancer Inst.*, **91**: 605–613.
52. Johnson, I.T. 2002. Anticarcinogenic effects of diet-related apoptosis in the colorectal mucosa. *Food Chem. Toxicol.*, **40**: 1171-1178.
53. Lin, H.J., Probst-Hensch, N.M., Louie, A.D., Kau, I.H., Witte, J.S., Ingles, S.A., Frankl, H.D., Lee, E.R. and Haile, R.W. 1998. Glutathione

- transferase null genotype broccoli and lower prevalence of colorectal adenomas. *Cancer Epidemiol. Biomarkers Prev.*, 7: 647-652.
54. Pereira, M.A. 1995. Chemoprevention of diethylnitrosamine-induced liver foci and hepatocellular adenomas in C3H mice. *Anticancer Res.*, 15: 1953-1956.
55. Wortelboer, H.M., de Kruif, C.A., van Iersel, A.A.J., Noordhoek, J., Blaauwboer, B.J., van Bladeren, P.J. and Falke, H.E. 1992. Effects of cooked brussels sprouts on cytochrome P-450 profile and phase II enzymes in liver and small intestinal mucosa of the rat. *Food Chem. Toxicol.*, 30: 17-27.
56. Nugon-Baudon, L., Rabot, S., Szylit, O., and Raibaud, P. 1990. Glucosinolates toxicity in growing rats: interactions with the hepatic detoxification system. *Xenobiotica*, 20: 223-230.
57. McDanell, R., McLean, M.E.M., Hanley, A.B., Heaney, R.K. and Fenwick, G.R. 1989. The effect of feeding *Brassica* vegetables and intact glucosinolates on mixed-function-oxidase activity in the livers and intestines of rats. *Food Chem. Toxicol.*, 27: 289-293.
58. Spit, M.R., Duhorine, C.M., Detry, M.A., Pillow, P.C., Amos, C.I., Lei, L., de Andrade, M., Gu, X., Hong, W.K. and Wu, X. 2000. Dietary intake of isothiocyanates: evidence of a joint effect with glutathione S-transferase polymorphisms in lung cancer risk. *Cancer Epidemiol. Biomarkers Prev.*, 9: 1017-1020.
59. Jiao, D., Eklind, K.I., Choi, C.I., Desai, D.H., Amin, S.G. and Chung, F.L. 1994. Structure-activity relationships of isothiocyanates and mechanism-

- based inhibitors of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butatone-induced lung tumorigenesis in A/J mice. *Cancer Res.*, 54: 4327-4333.
60. Zhang, S.M., Hunter, D.J., Rosner, B.A., Giovannucci, E.L., Colditz, G.A., Speizer, F.E. and Willett, W.C. 2000. Intakes of fruits, vegetables and related nutrients and the risk of non-Hodgkin's lymphoma among women. *Cancer Epidemiol. Biomarkers Prev.*, 9: 477-485.
61. Chiao, J.W., Chung, F.L., Kancherla, R., Ahmed, T., Mittelman, A. and Conaway, C.C. 2002. Sulforaphane and its metabolite mediate growth arrest and apoptosis in human prostate cancer cells. *Inter. J. Oncol.*, 3: 631-636.
62. Brooks, J.D., Paton, V.G. and Vidanes, G. 2001. Potent induction of phase 2 enzymes in human prostate cells by sulforaphane. *Cancer Epidemiol. Biomarkers Prev.*, 10 : 949-954.
63. Cohen, J.H., Kristal, A.R. and Stanford, J.L. 2000. Fruit and vegetable intakes and prostate cancer risk. *J Natl. Cancer Inst.*, 92: 61-68.
64. Kolonel, L.N., Hankin, J.H., Whittemore, A.S., Wu, A.H., Gallagher, R.P., Wilkens, L.R., John, E.M., Howe, G.R., Dreon, D.M., West, D.W. and Paffenbarger, R.S.Jr. 2000. Vegetables, fruits, legumes and prostate cancer: a multiethnic case control study. *Cancer Epidemiol. Biomarkers Prev.*, 9: 795-804.
65. Gao, X., Dinkova-Kostova, A.T. and Talalay, P. 2001. Powerful and prolonged protection of human retinal pigment epithelial cells,

- keratinocytes, and mouse leukemia cells against oxidative damage: the direct antioxidant effects of sulforaphane. *PNAS*, **98**(26): 15221-15226.
66. Xu, K. and Thornalley, P.J. 2000. Studies on the mechanism of the inhibition of human leukemia cell growth by dietary isothiocyanates and their cysteine adducts *in vitro*. *Biochem. Pharmacol.*, **60**: 221-231.
67. Willett, W. C. and Burning, J. 2000. Fruit and vegetable intake and risk of cardiovascular disease: the women's health study. *Am. J. Clinic. Nutr.*, **72**: 922-928.
68. Yamaguchi, T. 1980. Mutagenicity of isothiocyanates, isocyanated and thioureas on *Salmonella typhimurium*. *Agric. Biol. Chem.*, **44**: 3017-3018.
69. Neudecker, T. and Henschler, D. 1985. Allyl isothiocyanate is mutagenic in *Salmonella typhinurium*. *Mutat. Res.*, **156**: 33-37.
70. Guo, J.-T., Lee, H.-L., Chiang, S.-H, Ling, F.-I. and Chang, C.-Y. 2001. Antioxidant properties of the extracts from different parts of broccoli in Taiwan. *J. Food Drugs Anal.*, **9**(2): 96-101.
71. Kurilich, A.C., Tsau, G.J., Brown, A. Howard, L., Klein, B.P., Jeffery, E.H., Kushad, M., Wallig, M.A. and Juvik, J.A. 1999. Carotene, tocopherol and ascorbate contents in subspecies of *Brassica oleracea*. *J. Agric. Food Chem.*, **47**: 1576-1581.
72. Gadamer, J. 1897. Über das Sinigrin. *Berichte Deutschen Chemischen Gesellschaft*, **30**: 2322-2327.
73. Ettlinger, M.G. and Lundeen, A.J. 1956. The structures of sinigrin and sinalbin: an enzymatic rearrangement. *J. Am. Chem. Soc.*, **78**: 4172-4173.

74. Challenger, F. 1959. The natural mustard oil glucosides and the related isothiocyanates and nitriles. In *Aspects of the Organic Chemistry of Sulphur*, pp. 115-161, London: Butterworths.
75. Wittstock, U. and Halkier, B.A. 2000. Cytochrome P450 CYP79A2 from *Arabidopsis thaliana* L. catalyzes the conversion of L-phenylalanine to phenylacetaldoxime in the biosynthesis of benzylglucosinolate. *J. Biol. Chem.*, **275**: 14659-14666.
76. Du, L.C. and Halkier, B.A. 1998. Biosynthesis of glucosinolates in the developing siliques walls and seeds of *Sinapis alba*. *Phytochemistry*, **48**: 1145-1150.
77. Halkier, B.A. and Du, L. 1997. The biosynthesis of glucosinolates. *Trends Plant Sci.*, **2**(11): 425-431.
78. Bennett, R.N., Hick, A.J., Dawson, G.W. and Wallsgrove, R.M. 1995. Glucosinolate biosynthesis: further characterization of the aldoxime-forming microsomal monooxygenases in oilseed rape leaves. *Plant Physiol.*, **109**: 299-305.
79. El-Sayed, S.T., Jwanny, E.W., Rashad, M.M., Mahmoud, A.E. and Abdallah, N.M. 1995. Glycosidases in plant tissues of some Brassicaceae: screening of different cruciferous plants for glycosidases production. *Appl. Biochem. Biotech.*, **55**:219-230.
80. Dawson, G.W., Hick, A.J., Bennett, R.N., Donald, A., Pickett, J.A. and Wallsgrove, R.M. 1993. Synthesis of glucosinolate precursors and

- investigations into the biosynthesis of phenylalkyl- and methyl-thioalkylglucosinolates. *J. Biol. Chem.*, **268**: 27154-27159.
81. Blanc-Muesser, M., Driguez, H., Joseph, B., Viaud, M.C. and Rollin, P. 1990. First synthesis of alpha-glucosinolates. *Tetrahedron Lett.*, **31**: 3867-3868.
82. Gardrat, C., Quinsac, A., Joseph, B. and Rollin, P. 1993. Synthesis of indole glucosinolates, sugar-variants of naturally-occurring glucobrassicin. *Heterocycles*, **35**: 1015-1027.
83. Viiud, M.C. and Rollin, P. 1990. First synthesis of an indole glucosinolate. *Tetrahedron Lett.*, **31(10)**: 1417-1418.
84. Cassel, S., Casenave, B., Déleris, G., Latxague, L. and Rollin, P. 1998. Exploring an alternative approach to the synthesis of arylalkyl and indolylmethyl glucosinolates. *Tetrahedron*, **54**: 8515-8524.
85. Mavratzotis, M., Dourtoglou, V., Lorin, C. and Rollin, P. 1996. Glucosinolate chemistry. first synthesis of glucosinolates bearing an external thio-function. *Tetrahedron Lett.*, **37**: 5699-5700.
86. Cottaz, S., Rollin, P. and Driguez, H. 1997. Synthesis of 2-deoxy-2-fluoro-glucotropaeolin, a thioglucosidase inhibitor. *Carbohydrate Res.*, **298**: 127-130.
87. Cottaz, S., Henrissat, B. and Driguez, H. 1996. Mechanism-based inhibition and stereochemistry of glucosinolate hydrolysis by myrosinase. *Biochemistry*, **35**: 15256-15259.

88. Lazar, S. and Rollin, P. 1994. Synthesis of an artificial phosphate bioisostere of glucotropaeolin. *Tetrahedron Lett.*, **35**: 2173-2174.
89. Aucagne, V., Gueyraud, D., Tatibouet, A., Cottaz, S., Driguez, H., Lafosse, M. and Rollin, P. 1999. The first synthesis of C-glucotropaeolin. *Tetrahedron Lett.*, **40**: 7319-7321.
90. Iori, R., Bernardi, R., Gueyraud, D., Rollin, P. and Palmieri, S. 1999. Formation of glucoraphanin by chemoselective oxidation of natural glucoerucin: a chemoenzymatic route to sulforaphane. *Bioor. Med. Chem. Lett.*, **9**: 1047-1048.
91. Posner, G.H., Cho, C.G., Green, J.V., Zhang, Y. and Talalay, P. 1994. Design and synthesis of bifunctional isothiocyanate analogs of sulforaphane: correlation between structure and potency as inducers of anticarcinogenic detoxication enzymes. *J. Med. Chem.*, **37**: 170-176.
92. Rask, L., Andréasson, E., Ekbom, B., Eriksson, S., Pontoppidan, B. and Meijer, J. 2000. Myrosinase: gene family evolution and herbivore defense in Brassicaceae. *Plant Molec. Biol.*, **42**: 93-113.
93. Xue, J.P., Lenman, M., Falk, A. and Rask, L. 1992. The glucosinolate-degrading enzyme myrosinase in Brassicaceae is encoded by a gene family. *Plant Molec. Bio.*, **18**: 387-398.
94. Vaughn, S.F. and Berhow, M.A. 2004. Glucosinolate hydrolysis products from various plant sources: pH effects, isolation, and purification. *Ind. Crops Prod.*, **17**: 1-10.

95. Cottaz, S., Henrissat, B. and Driguez, H. 1996. Mechanism-based inhibition and stereochemistry of glucosinolate hydrolysis by myrosinase. *Biochemistry*, **35**: 15256-15259.
96. Nastruzzi, C., Cortesi, R., Esposito, E., Menegatti, E., Leoni, O., Iori, R., and Palmieri, S. 1996. *In vitro* cytotoxic activity of some glucosinolate-derived products generated by myrosinase hydrolysis. *J. Agric. Food Chem.*, **44**: 1014-1021.
97. Gil, V. and MacLeod, A.J. 1980a. Benzylglucosinolate degradation in *Lepidium sativum*: effects of plant age and time of autolysis. *Phytochemistry*, **19**: 1365-1368.
98. Gil, V. and MacLeod, A.J. 1980b. Studies on glucosinolate degradation in *Lepidium sativum* seed extracts. *Phytochemistry*, **19**: 1369-1374.
99. Matusheski, N.V., Juvik, J.A. and Jeffery, E.H. 2004. Heating decreases epithiospecifier protein activity and increases sulforaphane formation in broccoli. *Phytochemistry*, **65**: 1273-1281.
100. Hashem, F.A. and Saleh, M.M. 1999. Antimicrobial components of some cruciferae plants (*Diplotaxis harra* Forsk. and *Erucaria microcarpa* Boiss.). *Phytotherapy Res.*, **13**: 329-332.
101. Manici, L.M., Lazzeri, L. and Palmieri, S. 1997. *In-vitro* fungitoxic activity of some glucosinolates and their enzyme-derived products toward plant pathogenic fungi. *J. Agric. Food Chem.*, **45**: 2768-2773.

102. Choi, M.M.F., Liang, M.M.K. and Lee, A.W.M. 2005. A biosensing method with enzyme-immobilized egg shell membranes for determination of total glucosinolates in vegetables. *Enzyme Microb. Technol.*, 36: 91-99.
103. Wu, B., Zhang, G., Shuang, S., Dong, C., Choi, M.M.F. and Lee, A.W.M. 2004. A biosensor with myrosinase and glucose oxidase bioenzyme system for determination of glucosinolates in seeds of commonly consumed vegetables. *Sensors Act. B.*, 3: 1-8.
104. Seow, A., Shi, C.Y., Chung, F.L., Jiao, D., Hankin, J.H., Lee, H.P., Coetzee, G.A. and Yu, M.C. 1998. Urinary total isothiocyanate (ITC) in a population-based sample of middle-aged and older Chinese in Singapore: relationship with dietary total ITC and glutathione S-transferase M1/T1/P1 genotypes. *Cancer Epidemiol. Biomarkers Prev.*, 7 : 775-781.
105. Kall, M.A., Vang, O. and Clausen, J. 1996. Effects of dietary broccoli on human *in vivo* drug metabolizing enzymes: evaluation of caffeine, oestrone and chlorzoxazone metabolism. *Carcinogenesis*, 17: 793-799.
106. Gross, H.B., Delebout, T., Grubb, C.D. and Abel, S. 2000. Functional detection of chemopreventive glucosinolates in *Arabidopsis thaliana*. *Plant Sci.*, 159: 265-272.
107. Lin, C.M., Kim, J., Du, W.X., Wei, C.I. 2000. Bactericidal activity of isothiocyanates against pathogens on fresh produce. *J. Food Protect.*, 63: 25-30.

108. Mayton, H.S., Olivier, C., Vaughn, S.F. and Loria, R. 1996. Correlation of fungicidal activity of *Brassica* species with allyl isothiocyanate production in macerated leaf tissue. *Phytopathology*, **86**: 267-271.
109. Brabban, A.D. and Edwards, C. 1995. The effects of glucosinolates and their hydrolysis products on microbial growth. *J. Appl. Bacteriol.*, **79**: 171-177.
110. Brown, P.D. and Morra, M.J. 1995. Glucosinolate-containing plant tissues as bioherbicides. *J. Agric. Food Chem.*, **43**: 3070-3074.
111. Delaquis, P.J. and Mazza, G. 1995. Antimicrobial properties of isothiocyanates in food preservation. *Food Technol.*, **49**: 73-79.
112. Mari, M., Iori, R., Leoni, O. and Marchi, A. 1993. *In vitro* activity of glucosinolate-derived isothiocyanates against postharvest fruit pathogens. *Ann. Applied Biol.*, **123**: 155-164.
113. Larsen, L.M., Nielsen, J.K. and Sørensen, H. 1992. Host plant recognition in monophagous weevils: specialization of *Ceutorhynchus inaeffectatus* to glucosinolates from its host plant *Hesperis matronalis*. *Entomolo. Exp. Appl.*, **64**: 49-55.
114. Gil, V. and MacLeod, A.J. 1980a. Glucosinolates of *Lepidium sativum* and 'Garden Cress'. *J. Sci. Food Agric.*, **3**: 739-741.
115. Gil, V. and MacLeod, A.J. 1980b. Some glucosinolates of *Farsetia aegyptia* and *Farsetia ramosissima*. *Phytochemistry*, **19**: 227-231.

116. Drobina, L., Zemanova, M., Nemec, P., Antos, K., Kristian, P., Stullerova, A., Knoppova, V. and Nemen, P. 1967. Antifungal activity of isothiocyanates and related compounds. I. Naturally occurring isothiocyanates and their analogues. *Appl. Microbiol.*, 15: 701-709.
117. Grillths, D.W., Birch, A.N.E. and Hillman, J.R. 1998. Antinutritional compounds in the Brassicaceae: analysis, biosynthesis, chemistry and dietary effects. *J. Hort. Sci. Biotechnol.*, 73: 1-18.
118. Nastruzzi, C., Cortesi, R., Edposito, E., Menegatti, E., Leoni, O., Ion, R. and Palmieri, S. 1996. *In vitro* cytotoxic activity of some glucosinolate-derived products generated by myrosinase hydrolysis. *J. Agric. Food Chem.*, 44: 1014-1021.
119. Mawson, R., Heany, R.K., Zduczyk, Z. and Kozlowska, H. 1994a. Rape seed meal-glucosinolates and their antinutritional effects. Part 3. Animal growth and performance, *Nahrug*, 38: 167-177.
120. Mawson, R., Heany, R.K., Zduczyk, Z. and Kozlowska, H. 1994b. Rapeseed meal-glucosinolates and their antinutritional effects. Part 4. Goitrogenicity and internal organs abnormalities in animals. *Nahrug*, 38: 178-191.
121. Musk, S.R.R. and Johnson, I.T. 1993. The clastogenic effects of isothiocyanates. *Mutat. Res.*, 300: 111-117.
122. Tiedink, H.G.M., Maligre, C.E., van Broekhoven, L.W., Jongen, W.M.G., Lewis, J. and Fenwick, G.R. 1991. Role of glucosinolates in the formation of *N*-nitroso compounds. *J. Agric. Food Chem.*, 39: 922-926.

123. Nugon-Baudon, L., Rabot, S., Szylit, O. and Raibaud, P. 1990. Glucosinolates toxicity in growing rats: interactions with the hepatic detoxification system. *Xenobiotica*, **20**: 223-230.
124. *Official Methods of Analysis of AOAC INTERNATIONAL* (2000) 17 th ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, Official Method **930.15**.
125. *Official Methods of Analysis of AOAC INTERNATIONAL* (2000) 17 th ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, Official Method **942.05**.
126. *Official Methods of Analysis of AOAC INTERNATIONAL* (2000) 17 th ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, Official Method **954.02**.
127. AOAC International. 2000. Guidelines for collaborative study procedures to validate characteristics of a method of analysis. In Horwit W., Ed., *Official Methods of Analysis of AOAC INTERNATIONAL*, pp. D1-D11, Maryland.
128. Food and Drugs Administration. 2000. Draft guidance for industry on analytical procedures and methods validation chemistry, manufacturing, and controls documentations. *Fed. Regist.*, **65**(169): 52776-52777.
129. ICH Q2A. 1995. International conference on harmonization: guidance for industry: text on the validation of analytical procedures availability. *Fed. Regist.*, **60**(40): 11260-11262.

130. United States Pharmacopeia Convention. 2003. *United States Pharmacopeia, XXVI* rev., pp. 2131-2136. Rockville.
131. Re, R., Pellegrini, N., Proteggemnte, A., Pannala, A., Yang, M. and Rice-Evans, C. 1999. Antioxidant activity applying and improved ABTS radical cation decolorization assay. *Free Radical Biol. Med.*, 26(9/10): 1234-1237.
132. Benzie, I.F.F. and Strain, J.J. "Measurement of Antioxidant (Reducing) Power and/or Antioxidant Concentration" U.S. Pat 6177260B1 Jan. 23, 2001.
133. Singleton V.L. and Rossi J.A. Colorimetry of total phenolics with phosphomolybdic-phosphotungstic acid reagents. *Am. J. Enol. Viticult.*, 1965; **16**: 144-158.
134. United States Pharmacopeia, 6 th ed., Rockville.: United States Pharmacopeia Convention, 1989: 1458-1467.
135. Yermakov A.I., Ararimov V.V. and Yarosh N.P., *Methods of biochemical analysis of plants*, Leningrad: Agropromizdat, 1987.
136. Prestera, T., Fahey, J.W., Holtzclaw, W.D., Abeygunawardana, C., Kachinski, J.L. and Talalay, P. 1996. Comprehensive chromatographic spectroscopic methods for the separation and identification of intact glucosinolates. *Anal. Biochem.*, 239: 168-179.
137. AOCS Official Method.1993. Determination of glucosinolates content in rapeseed and canola by HPLC. Ak 1-92.
138. George R.A.T. 1999. *Vegetable Seed Production*. 2 nd. ed. Oxon: CABI Publishing.

139. Rangkadilok, N., Nicolas, M.E., Bennett, R.N., Premier, R.R. Eagling, D.R. and Taylor, P.W.J. 2002. Determination of sinigrin and glucoraphanin in *Brassica* species using a simple extraction method combined with ion-pair HPLC analysis. *Sci. Hort.*, **96**: 27-41.
140. Brand-Williams, W., Cuvelier, M. E., and Berset, C. 1995. Use of free radical method to evaluate antioxidant activity. *Lebensm.-Wiss. Technol.*, **28**: 25–30.
141. Byers, T. and Perry, G. 1992. Dietary carotenes, vitamin C, and vitamin E as protective antioxidants in human cancers. *Ann. Rev. Nutr.*, **12**: 139–159.
142. Hansen, M., Moller, P., Sørensen, H. and Cantwell de Trejo, M. 1995. Glucosinolates in broccoli stored under controlled atmosphere. *J. Am. Soc. Hortic. Sci.*, **120**: 1069-1074.
143. Izumi, H., Watada, A.E. and Douglas, W. 1996. Optimum O<sub>2</sub> or CO<sub>2</sub> atmosphere for storing broccoli inflorescences at various temperatures. *J. Am. Soc. Hortic. Sci.*, **121**: 127-131.
144. Leja, M., Mareczek, A., Starzynska, A. and Rozek, S. 2001. Antioxidant ability of broccoli flower buds during short-term storage. *Food Chem.*, **72**: 219–222.
145. Lewis, J., Fenwick, G.R. and Gray, A.R. 1991. Glucosinolates in *Brassica* vegetables: green-curbed cauliflower (*Brassica oleracea* L.*botrytis* group) and purple-headed broccoli (*B. oleracea* L.*italica* group). *Lebensm.-Wiss. Technol.*, **24**: 361-363.

146. Rangkadilok, N., Tomkins, B., Nicolas, M.E., Premier, R.R., Bennett, R.N., Eagling, D. R. and Taylor, P. W. 2002. The effect of postharvest and packaging treatments on glucoraphanin concentration in broccoli (*Brassica oleracea* var. *italica*). *J. Agric. Food Chem.*, **50**: 7386-7391.
147. Rodrigues, A.S. and Rosa, E.A.S. 1999. Effect of postharvest treatments on the level of glucosinolates in broccoli. *J. Sci. Food Agric.*, **79**: 1028-1032.
148. Rodrigues, A.S. and Rosa, E.A.S. 2001. Total and individual glucosinolate content in 11 broccoli cultivars grown in early and late seasons. *HortScience*, **36**: 56-59.
149. Vallejo, F., Tomás-Barberán, F.A., and García-Viguera, C. 2002. Glucosinolates and vitamin C content in edible parts of broccoli inflorescences after domestic cooking. *Eur. Food Res. Technol.*, **215**: 310-316.
150. Vallejo, F., Tomás-Barberán, F. A. and García-Viguera, C. 2002. Potential bioactive compounds in health-promoting from broccoli inflorescences cultivars growing in Spain. *J. Sci. Food Agric.*, **82**: 1293-1297.
151. Wang, H., Cao, G. and Prior, R.L. 1996. Total antioxidant capacity of fruits. *J. Agric. Food Chem.*, **44**: 701-705.
152. Miller, J.C. and Miller, J.N. 1993. *Statistics for Analytical Chemistry*. 3rd. ed. New York: Ellis Horwood PTR Prentice Hall.
153. Albright, S.C., Winston, W. and Zappe, C.J. 2003. *Data Analysis & Decision Making with Microsoft® Excel*. 2nd. ed., CA: Brooks/Cole.