

REFERENCES

1. Kaliaperumal N. Products from seaweeds. SDMI Research Publication No.3 2003; 33 – 42.
2. Chapman VJ, Chapman DJ: “Sea vegetables (Algae as food for man).” in *Seaweeds and their uses*. 3th ed. London New York, pp. 62-66, 1980.
3. Chandini SK, Ganesan P, Bhaskar N. In vitro antioxidant activities of three selected brown seaweeds of India. Food Chem 2008; 107: 707–713.
4. Bhaskar N, Miyashita K. Lipid composition of *Padina tetratomatica* (Dictyotales, Pheophyta), a brown seaweed of the west coast of India. Indian J Fish 2005; 52: 263–268.
5. Hoppe HA, Levring T, Tanka Y. Marine Algae in Pharmaceutical Science. Berlin & New York: Walter de Gruyter. 1979.
6. Yubin J, Guangmei Z. Pharmacological action and application of available antitumor composition of traditional Chinese medicine. Heilongjiang, China: Heilongjiang Science and Technology Press. 1998.
7. Re R, Pellegrini N, Pannala A, Yang M, Rice-Evan C. Antioxidant activity applying an improved ABTS radical cation decolorisation assay. Free cal Bio MedRadi 1999; 26 (9/10): 1231-1237.
8. Masao H, Yang HW, Miyashrio H and Nabma T. Inhibitory effects of monomeric and dimeric phenyl propanoids from mice on lipid peroxidation in vivo and in vitro. Phytother Res 1993; 7: 95–401.
9. Hammerschmidt, P.A. and Pratt, D.E. Phenolic antioxidants of dried soybeans. J Food Sci 1978; 43 (2): 556-559.
10. Chew YL, Lima YY, Omara M, Khoob KS. Antioxidant activity of three edible seaweeds from two areas in South East Asia. LWT-Food Sci Techno 2007; 6: 120–126.

11. Nakai M, Kageyama N, Nakahara K, Miki W. Phlorotannins as radical scavengers from the extract of *Sargassum ringgoldianum*. Mar Biotechnol (NY) 2006; 8 (4): 409-414.
12. Siepler JK, Smith-Scott C: "Upper gastrointestinal disorders." in *Applied therapeutics the clinical use of drugs*, 8th ed. Lippincott Williams & Wilkins A Wolters Kluwer Co., Philadelphia USA, pp.27 (1-25), 2005.
13. Shayne P. (2006). Gastritis and Peptic ulcer disease. [Online]. Available <http://www.emedicine.com/emerg/topic 820.htm>. [14 October 2007].
14. Harbison SP, Dempsey DT. Peptic Ulcer Disease. Curr Probl Surg 2005; 42 (6): 346 – 454.
15. Ganong WF: "The adrenal medulla and adrenal cortex." in *Review of medical Physiology*, 18th ed. Printice-Hall International, USA, pp.334-388, 1998.
16. Hoogerwerf A, Pasricha PJ: "Pharmacotherapy of gastric acidity, peptic ulcer and gastroesophageal reflux disease." in *Goodman and Gilman's the Pharmacological Basis of Therapeutics*, 11th ed., Macmillan Publishing, New York, pp. 967-981, 2006.
17. Brown CM, Rees WDW: "Gastrointestinal secretion in health and disease." in *Gastroenterology Clinical Scince and Practice*. Saunders, London, pp.196-207, 1993.
18. Guyton C, Hall JE: "Secretory functions of the alimentary tract." in *Physiology and Mechanisms of Disease*. Saunders, Philadelphia, pp.524-536. 1997.
19. Ramakrishnan K, Salinas FC, Salinas RC. Peptic ulcer disease. Am Fam Physician 2007; 76 (7): 1005-1007.
20. Kang YM, Lamb K, Gebhart GF, Bielefeldt K. Experimentally induced ulcers and gastric sensory-motorfunction in rats. Am J Physiol Gastrointest Liver Physiol 2005; 288: G284–G291.
21. Velle JD, Todisco A: "Gastric Secretion." in *Textbook of Gastroenterology*, 3rd ed., Lippincot, Philadelphia, pp. 278-329, 1999.
22. Phillipson M. Acid Transport through Gastric Mucus. Upsala J Med Sci 2004; 109: 1–24.

23. Li DS, Raybould HE, Quintero E, Guth, PH. Calcitonin gene-related peptide mediates the gastric hyperemic response to acid back-diffusion. *Gastroenterology* 1992; 102: 1124–1128.
24. Holzer P. Neural emergency system in the stomach. *Gastroenterology* 1998; 114: 823–839.
25. Altman DF: “Drugs Used in the Treatment of Gastrointestinal Diseases.” in *Katzung Basic & Clinical Pharmacology*, 9th ed., Prentice Hall International, London, pp.812-826, 2001.
26. Al-Turaifi HA, Al-Mutairy A. Effect of Clotrimazole on Chemically and Stress Induced Peptic Ulcer. *Scientific Journal of King Faisal University (Basic and Applied Sciences)* 2007; 8(2): 107-121.
27. Johansson C, Uribe A, Rubio C, Isenberg JI. Effect of oral prostaglandin E₂ on DNA turnover in gastric and intestinal epithelia of the rat. *Eur J Clin Invest* 1986; 16: 509-514.
28. Bennett A. Some new aspects of gastric mucosa protection and damage. *Acta Physiologica Hungarica* 1989; 73: 179-183.
29. Lewis GP. Immunoregulatory activity of metabolites of arachidonic acid and their role in inflammation. *Br Med Bull* 1983; 39: 243-248.
30. Sherwood L: “Digestive system.” in *Human Physiology from Cells to Systems*, 4th ed., pp. 578-579, 2001.
31. Berne RM: “Gastrointestinal secretions.” in *Physiology*, 4th ed. Mosby, Inc, St. Louis, pp.626, 1998.
32. Wallace JL, Miller MJS. Nitric oxide in mucosal defense: A little goes a long way. *Gastroenterology* 2000; 119: 512–520.
33. Knowles RG, Moncada S. Nitric oxide synthases in mammals. *Biochem J* 1994; 298: 249–258.
34. Price KJ, Hanson PJ, Whittle BJR. Localization of constitutive isoforms of nitric oxide synthase in the gastric glandular mucosa of the rat. *Cell Tissue Res* 1996; 285: 157–163.
35. Halliwell B, Chirico S. Lipid peroxidation: its mechanism, measurement, and significance. *Am J Clin Nutr* 1993; 57 (suppl): 715s-725s.

36. Giles GI, Tasker KM, Jacob C. Hypothesis: the role of reactive sulfur species in oxidative stress. *Free Radic Biol Med* 2001; 31(10): 1279–1283.
37. Chewa YL, Lima YY, Omara M, Khoob KS. Antioxidant activity of three edible seaweeds from two areas in South East Asia. *LWT-Food Sci Techno* 2007; 6: 120–126.
38. Marnett LJ. Oxy radicals, lipid peroxidation and DNA damage. *Toxicology* 2002; 181-182: 219-222.
39. Ames BN. Dietary carcinogens and anticarcinogens: oxygen radicals and degenerative diseases. *Science* 1983; 221: 1256–1264.
40. Stadtman ER. Protein oxidation and aging. *Science* 1992; 257: 1220–1224.
41. Wiseman H, Halliwell B. Damage to DNA by reactive oxygen and nitrogen species: Role of inflammatory disease and progression to cancer. *Biochem J* 1996; 313: 17–29.
42. Halliwell B, Whiteman M. Measuring reactive species and oxidative damage in vivo and in cell culture: how should you do it and what do the results mean. *Br J Pharmacol* 2004; 142: 231–255.
43. Best B. (1990). Mechanisms of Aging, [Online]. Available <http://www.benbest.com/lifeext/aging.html>. [5 March 2008].
44. Sevanian A, Hochstein P. Mechanisms and consequences of lipid peroxidation in biological systems: *Ann Rev Nutr* 1985; 5: 365-90.
45. Dianzani MU. Lipid peroxidation in ethanol poisoning: A critical reconsideration. *Alcohol Alcohol* 1985; 20 (2): 161-173.
46. Yoshikawa T, Naito Y, Kishi A. Role of active oxygen, lipidperoxidation, and antioxidants in the pathogenesis of gastric mucosal injury induced by indomethacin in rats. *Gut* 1993; 34: 732- 737.
47. Vaananen PM, Meddings JB, Wallace JL. Role of oxygen- derived free radicals in indomethacin- induced gastric injury. *Am J Physiol* 1991; 261: G470- G475.
48. Szelenyi I, Brune K. Possible role of oxygen free radicals in ethanol- induced gastric mucosal damage in rats. *Dig Dis Sci* 1988; 33: 865- 871.

49. Terano A, Hiraishi H, Ota S. Role of superoxide and hydroxyl radicals in rat gastric mucosal injury induced by ethanol. *Gastroenterol Japon* 1989; 24: 488- 493.
50. Yoshikawa T , Yoshida N, Naito Y. Role of oxygen radicals in the pathogenesis of gastric mucosal lesions induced by water-immersion restraint stress and burn stress in rats. *J Clin Biochem Nutr* 1990; 8: 227- 234.
51. Wadhwa SS, Perry MA. Gastric mucosal injury by hemorrhage, local ischemia and oxygen radical generation. *Am J Physiol* 1987; 253: G129- G133.
52. Esplugues JV, Whittle BJR. Gastric damage following local intra-administration of reactive oxygen metabolites in the rat. *Br J Pharmacol* 1989; 97: 1085- 1092.
53. Yoshikawa T, Naito Y. Peptic ulcer and free radical; Proceedings of the 5th Seoul International Digestive Disease Symposium pp.33-40.
54. Vitaglione P, Morisco F, Caporaso N, Fogliano V. Dietary antioxidant compounds and liver health. *Crit Rev Food Sci Nutr* 2004; 44 (7-8): 575- 586.
55. Recknagel R.O. A new direction in the study of carbon tetrachloride hepatotoxicity. *Life Sci* 1983; 33: 401–408.
56. Wendel A, Feurensteins S, Konz KH. Acute paracetamol intoxication of starved mice leads to lipid peroxidation in vivo. *Biochem Pharmacol* 1987; 28: 2051–2053.
57. Dianzani MU, Muzia G, Biocca ME, Canuto RA. Lipidperoxidation in fatty liver induced by caffeine in rats. *Int J Tiss Reac* 199; 13: 79–85.
58. Shanmugasundaram P, Venkataraman S. Hepatoprotective and antioxidant effects of *Hygrophila auriculata* (K. Schum) Heine Acanthaceae root extract. *J Ethnopharmacology* 2006; 104: 124–128.
59. Pierce RA, Glaug MR, Greco RS, Mackenzie JW, Boyd CD, Deak SB. Increased procollagen mRNA levels in carbon tetrachloride-induced liver fibrosis in rats. *J Biol Chem* 1987; 262: 1652–1658.
60. Hernandez-Munoz R, Diaz-Munoz M, Suarez J, Chagoya de Sanches V. Adenosine partially prevents cirrhosis induced by carbon tetrachloride in rats. *Hepatology* 1990; 12: 242– 248.

61. Weber LW, Boll M, Stampfl A. Hepatotoxicity and mechanism of action of haloalkanes: carbon tetrachloride as a toxicological model. *Crit Rev Toxicol* 2003; 33: 105–136.
62. Hung MY, Fu TY, Shih PH, Lee CP, Du-Zhong GCY. Eucommia ulmoides Oliv. leaves inhibits CCl₄-induced hepatic damage in rats. *Food Chem Toxicol* 2006; 44: 1424–1431.
63. Kodai S, Takemura S, Minamiyama Y, Hai S, Yamamoto S, Kubo S, Yoshida Y, Niki E, Okada S, Hirohashi K, Suehiro S. S-allyl cysteine prevents CCl₄-induced acute liver injury in rats, *Free Radic. Res* 2007; 41: 489–497.
64. Lin HM, Tseng HC, Wang CJ, Lin JJ, Lo CW, Chou FP. Hepatoprotective effects of *Solanum nigrum* Linn extract against CCl₄-iduced oxidative damage in rats. *Chem Biol Interact* 2008; 171(3): 283-293.
65. Kranl K, Schlesier K, Bitsch R, Hermann H, Rohe M, Böhm V. Comparing antioxidative food additives and secondary plant productsuse of different assays. *Food Chem* 2005; 93: 171–175.
66. Rodrigo R, Bosco C. Oxidative stress and protective effects of polyphenols: Comparative studies in human and rodent kidney. A review *Comparative Biochem Physiol Part C* 2006; 142: 317–327.
67. Shahidi F, Naczk M. Phenolics in food and nutraceuticals. Boca Raton, Fla, USA: CRC Press; 2003.
68. Mazza G, Miniati E. Anthocyanins in fruits, vegetables and grains. Boca Raton, Fla, USA: CRC Press; 1993.
69. Balaji Raghavendra HR, Sathivel A, Devaki T. Antioxidant nature of *Ulva lactuca* on D-galactosamine induced liver damage in rats. SDMRI Research Publication No. 3 2003; 114 – 117.
70. Kinsella JE, Frankel E, German B, Kanner J. Possible mechanisms for the protective role of antioxidants in wine and plant foods. *Food Technol* 1993; 47: 85-9.
71. Kuresh Y, Dobbie MS, Kuhnle G, Proteggente AR , Ab J, Rice-Evans C. Interaction between flavonoids and the blood brainbarrier: In vitro studies. *J Neurochemistry* 2003; 85:180-92.

72. Miniati E. Assessment of phenolic compounds in biological samples; Ann 1st Super Sanità 2007; 43 (No. 4): 362-368.
73. Yan X, Nagata T, Fan X. Antioxidant activities in some common seaweeds. Plant Foods Human Nutr 1998; 52: 252-262.
74. Amornlertpison D, Peerapornpisal Y, Rujjanawate C, Taesotikul T, Nualchareon M, Kanjanapothi D. Potentials of *Gracilaria fisheri*: a red seaweed as nutraceuticals. Abstracts, the 7th Thailand Research Fund Meeting, Ambassador City Hotel, Chonburi, Thailand, 11-13 October, p.42.
75. Amornlertpison D, Peerapornpisal Y, Taesotikul T, Jamjai U, Nualchareon M, Kanjanapothi D. 2007, Abstracts, the 2nd Meeting of Fisheries and Aquatic Resources for Security and Stability, Chiang Mai, 6-7 December, p.49.
76. Balaji Raghavendran HR, Sathivel A, Devaki T. Antioxidant effect of *Sargassum polycystum* (Phaeophyceae) against acetaminophen induced changes in hepatic mitochondrial enzymes during toxic hepatitis. Chemosphere 2005; 6: 276–281.
77. Balaji Raghavendran HR, Sathivel A, Devaki T. Hepatoprotective nature of seaweed alcoholic extract in acetaminophen induced hepatic oxidative stress. J Health Sci 2004; 50 (1): 42.
78. Wong CK, Ooi VEC, Ang PO. Protective effects of seaweeds against liver injury caused by carbon tetracholide in rats. Chemosphere 2000; 41: 173-176.
79. Sathivel A, Balaji Raghavendra HR, Anbarasu D, DevakiHe T. Hepato protective role of *Gracilaria edulis* (Red alga) on D-galactosamine induced hepatitis in rats. SDMI Researech Publication No. 3 2003: 105 – 107.
80. Verlaque M, Durand C, Huisman JM, Boudouresque CF, Le Parco Y. On the identity and origin of the Mediterranean invasive *Caulerpa racemosa* (Caulerpales, Chlorophyta). EJP 2003; 38: 325–339.
81. Klein J, Verlaque M. The *Caulerpa racemosa* invasion: A critical review. Mar Pollut Bull 2008; 56: 205–225.

82. Wikimedia Foundation. (2008). Caulerpa [Online]. Available: <http://en.wikipedia.org/wik/Caulerpa>. [2007, December 5].
83. Ghosh P, Adhikari U, Ghosal PK, Pujol CA, Carlucci MJ, Damonte EB, Ray B. In vitro anti-herpetic activity of sulfated polysaccharide fractions from *Caulerpa racemosa*. *Phytochem* 2004; 65: 3151–3157.
84. Ayyad SEN, Badria FA. Caulerpin, an antitumor indole alkaloid from *Caulerpa racemes*. *Alex J Pharm Sci* 1994; 8: 217.
85. Clavijo RE, Weiss-Lopez B, Rivera P. Vibrational spectra of Caulerpin, a green algae pigment. *Bol Soc Chil Quim* 1996; 41: 153.
86. Schroder HC, Badria FA, Ayyad SN, Batel R, Wiens M, Hassanein HMA, Kurelec B, Muller WEG. Inhibitory effects of extracts from the marine alga *Caulerpa taxifolia* and of toxin from *Caulerpa racemosa* on multixenobiotic resistance in the marine sponge *Geodia cydonium*. *Environ Toxicol Pharmacol* 1998; 5 (2): 119-126 (8).
87. Marnett LT. Oxy radicals, lipid peroxidation and DNA damage. *Toxicology* 2002; 181-182: 219-222.
88. Barbier P, Guise S, Huitorel P, Amade P, Pesando D, Briand C, Peyrot V. Caulerpenyne from *Caulerpa taxifolia* has an antiproliferative activity on tumor cell line SK-N-SH and modifies the microtubule network. *Life Sci* 2001; 70: 415–429.
89. Lemee R, Pesando D, Durant-Clement M, Dubreuil A, Meinesz A, Guerriero A, Pietra F. Preliminary survey of toxicity of the green alga *C. taxifolia* introduced into Mediterranean. *J Appl Phycol* 1993; 5: 485–493.
90. Galgani I, Pesando D, Porthe-Nibelle J, Fossat B, Girard JP. Effect of caulerpenyne, a toxin extracted from *Caulerpa taxifolia* on mechanisms regulating intracellular pH in sea urchin eggs and sea bream hepatocytes. *J Biochem Toxicol* 1996; 11: 243–250.
91. Cavas L, Baskin Y, Yurdakoc K, Olgun N. Antiproliferative and newly attributed apoptotic activities from an invasive marine: *Caulerpa racemosa* var. *cylindracea*. *J Exp Mar Biol Ecol* 2006; 339: 111-119.

92. Cavas L, Yurdakoc K. A comparative study: Assessment of the antioxidant system in the invasive green alga *Caulerpa racemosa* and some macrophytes from the Mediterranean. *J Exp Mar Biol Ecol* 2005; 321: 35-41.
93. Takagi T, Kasuya T, Watanabe K. Studies on the drugs of peptic ulcer: A reliable method for producing stress ulcer in rats. *Chem Pharm Bull* 1963; 12: 465-472.
94. Mizui T, Doteuchi M. Effect of polyamines on acidified ethanol-induced gastric lesion in rats. *Jap J Pharmacol* 1983; 33 (5): 939-945.
95. Morimoto Y, Shimohara K, Oshima S, Sukamoto T. Effect of the new antiulcer agent KB-5492 on experimental gastric mucosal lesions and gastric mucosal defensive factor as compared to those of teprenone and cimetidine. *Jap J Pharmacol* 1991; 57: 495-505.
96. Hou WC, Chen YC, Chen HJ, Lin YH, Yang LL, Lee MH. Antioxidant activities of trypsin inhibitor, a 33 KDa root storage protein of sweet potato (*Ipomoea batatas* (L.) Lam cv. Tainong 57). *J Agric Food Chem* 2001; 49 (6): 2978-81.
97. Masao H, Yang XW, Miyashiro H, Nabma T, Inhibitory effects of monomeric and dimeric phenyl propanoids from mice on lipid peroxidation in vivo and in vitro. *Phytother Res* 1993; 7: 95–401.
98. Lowry OH, Rosenbrough NJ, Farr AL, Randall RJ. Protein measurement with the Folin phenol reagent. *J Biol Chem* 1951; 193: 265-275.
99. Hammerschmidt PA, Pratt DE. Phenolic antioxidants of dried soybeans. *J Food Sci* 1978; 43: 556-9.
100. Bettarello A. Anti-ulcer therapy, past to present. *Dig Dis Sci* 1985; 30 (11): 36s-42s.
101. Afifi FU, Khalil E, Tamini SO, Disi A. Evaluation of gastroprotective effect of *Laurus nobilis* seeds on ethanol induced gastric ulcer in rats. *J Ethnopharmacol* 1997; 58 (1): 9-14.
102. Brodie DA, Hanson HM. A study of the factors involved in the production of gastric ulcers by the restraint technique. *Gastroenterology* 1960; 38: 353-360.

103. Goa KL, Monk JP. Enprostil: A preliminary review of its pharmacodynamics and pharmacokinetic properties and therapeutic efficacy in the treatment of peptic ulcer disease. *Drugs* 1987; 3: 539-559.
104. Kitagawa H, Fujiwara M, Osumi Y. Effect of water immersion stress on gastric secretion and mucosal blood flow in rats. *Gastroenterology* 1979; 77: 98-302.
105. Rujjanawate C, Kanjanapothi D, Amornlerdpison D. The anti-gastric ulcer effect of *Gynostemma pentaphyllum* Makino. *Phytomedicine* 2004; 11: 431-435.
106. Hayase M, Takeuchi K. Gastric acid secretion and lesion formation in rats under water-immersion stress. *Dig Dis Sci* 1986; 31 (2): 166-171.
107. Okabe S, Takeuchi K, Urushidani T, Takagi K. Effects of cimetidine, histamine H2-receptor antagonist, on various experimental gastric and duodenal ulcers. *Am J Dige Dis* 1977; 22 (8): 677-684.
108. Ray AP, Sullivan RM, Henke G. Adrenergic modulation of gastric stress pathology in rats. *J Autonom Nerv Syst* 1987; 20: 265-8.
109. Yelken B, Dorman T, Erkasap S, Dundar E, Tanrıverdi B. Clonidine pretreatment inhibits stress-induced gastric ulcer in rats. *Anesth Analg* 1999; 89: 159-62.
110. Guth, PH. Gastric blood flow in restraint stress. *Dig Dis Sci* 1972; 17: 807-813.
111. Koo MWL, Ogle CW, Cho C.H. Effect of verapamil, carbenoxolone and N-acetylcysteine on gastric wall mucus and ulceration in stressed rats. *Pharmacol* 1986; 32: 326-334.
112. Gepdiremen A, Süleyman H. Intraperitoneal administration of salicylate dose-dependently prevents stress-induced ulcer formation in rats. *Pol J Pharmacol* 2003; 55: 209-212.
113. Czesnikiewicz-Guzik M, Konturek J, Loster B, Wisniewska G, Majewski S. (2007) Review article: Melatonin and its role in oxidative stress related diseases oral cavity, [online]. Available http://www.jpp.krakow.pl/journal/archive/0807_s3/01_article.html. [3 August 2008]

114. Yamahara J, Mochizuki M, Rong HQ, Matsuda H, Fujimura H. The anti-ulcer effect in rats of ginger constituents. *J Ethnopharmacol* 1988; 23 (2-3): 299-304.
115. Marhuenda E, Martin MJ, Alarcon dela Lastra C. Anti-ulcerogenic activity of aescine in different experimental models. *Phytother Res* 1993; 7: 13-16.
116. Szabo S. Mechanism of mucosal injury in the stomach and duodenum: Thimeswquence analysis of morphologic, functional, biochemical and histochemical studies. *Scand J Gastroenterol* 1987; 22 supp. 127: 21-28.
117. Lange K, Peskar BM. Stimulation of rat mucosal leukotriene formation by ethanol. *Naunyn Schmiedebergs Arch Pharmacol* 1985; 27: 3305.
118. Oates PJ, Hakkinen JP. Studies on the mechanism of ethanol induced gastric damage in rats. *Gastroenterology* 1988; 94 (1), 10-21.
119. Parnaham MJ, Brune K. Therapeutic control of inflammatory diseases. *Agent Actions* 1987; 21: 232-234.
120. Gazzieri D, Trevisani M, Springer J, Harrison S, Cottrell GS, Andre E, Nicoletti P, Massi D, Zecchi S, Nosi D, Santucci M, Gerard NP, Lucattelli M, Lungarella G, Fischer A, Grady EF, Bunnett NW, Geppetti P. Substance P released by TRPV1-expressing neurons produces reactive oxygen species that mediate ethanol-induced gastric injury. *Free Rad Bio Med* 2007; 43: 581-589.
121. Sato H, Inada I, Hirata T, Maki Y. Indomethacin produces gastric antral ulcers in the refeed rat. *Gastroenterology* 1981; 81 (4): 719-725.
122. Miller TA. Protective effects of prostaglandins against gastric mucosal damage: current knowledge and proposed mechanism. *Am J Physiol* 1983; 245: G601-G623.
123. Rainford KD. The effect of 5-lipoxygenase inhibitors and leukotriene antagonists on the development of gastric lesions induced by nonsteroidal inflammatory drugs in mice. *Agents Actions* 1987; 21: 316-319.
124. Hawley CI. Prostaglandins: mucosal protection and peptic ulceration. *Methods Find Exp Clin Pharmacol* 1989; 11: 45-51.

125. Ganguly K, Kundu P, Banerjee A, Reiter RJ, Swarnakar S. Hydrogen peroxide-mediated downregulation of matrix metalloprotease-2 in indomethacin-induced acute gastric ulceration is blocked by melatonin and other antioxidants. *Free Rad Bio Med* 2006; 41:911-925.
126. Robert A. Cytoprotection by prostaglandins. *Gastroenterology* 1979; 77: 761-767.
127. Robert A, Nezamis JE, Lancaster C, Hanchar AJ. Cytoprotectin by prostaglandins in rats: prevention of gastric necrosis produced by alcohol, HCl, NaOH, hypertonic NaCl, and thermal injury. *Gastroenterology* 1979; 77: 11-21.
128. Furst DE, Munster T. "Nonsteroidal anti-inflammatory drugs, disease modifying antirheumatic drugs, nonopioid antianalgesics, drugs used in gout." in B.G. Katzung (Ed.), *Basic & Clinical Pharmacology*, 9th ed. Prentic Hall International, London, pp. 596-599, 2001
129. Takeuchi K, Suzuki K, Yamamoto H, Araki H, Mizoguchi H, Ukawa H. Cyclooxygenase-2 selective and nitric oxide-releasing nonsteroidal anti-inflammatory drugs and gastric mucosal responses. *J Physiol Pharmacol* 1998; 49, 501-513.
130. Hawkins C, Hanks GW. The gastroduodenal toxicity of nonsteroidal anti-inflammatory drugs. A review of the literature 2000; 20 (2): 140-151.
131. Takeuchi K, Okada M, Ebara S, Osano H. Increased microvascular permeability and lesion formation during gastric hypermotility caused by indomethacin and 2-deoxy-D-glucose in rat. *J Clin Gastroenterol* 1990; 12 (Suppl.1): S76-S84.
132. Wallace JL, Keenan CM, Granger DN. Gastric ulceration induced by nonsteroidal anti-inflammatory drugs is a neutrophil dependent process. *Am J Physiol* 1990; 259: G462-G467.
133. Slomiany BL, Piotrowski J, Slomiany A. Induction of Tumor Necrosis Factor- α and apoptosis in gastric mucosal injury by indomethacin: effect of omeprazole and ebrotidine. *Scand J Gastroenterol* 1997; 32: 638-642.

134. Souza MHL, Lemos HP, Oliveira RB, Cunha FQ. Gastric damage and granulocyte infiltration induced by indomethacin in tumor necrosis factor receptor 1 (TNFR-1) or inducible nitric oxide synthase (iNOS) deficient mice. *Gut* 2004; 53: 791–796.
135. Piotrowski J, Slomiany A, Slomiany BL. Activation of apoptotic caspase-3 and nitric oxide synthase-2 in gastric mucosal injury induced by indomethacin. *Scand J Gastroenterol* 1999; 34: 129–134.
136. Fujii Y, Matsura T, Kai M, Matsui H, Kawasaki H, Yamada K. Mitochondrial/cytochrome C release and caspase-3 like protease activation during indomethacin-induced apoptosis in rat gastric mucosal cells. *Proc Soc Exptl Biol Med* 2000; 224: 102–108.
137. Swarnakar S, Ganguly K, Kundu P, Banerjee A, Maity P, Sharma AV. Curcumin regulates expression and activity of matrix metalloproteinases 9 and 2 during prevention and healing of indomethacin-induced gastric ulcer. *J Biol Chem* 2005; 280: 9409–9415.
138. Vaananen PM, Medding JB, Wallace JL. Role of oxygen derived free radicals in indomethacin-induced gastric injury. *Am J Physiol* 1991; 261: G470–G475.
139. Yoshikawa T, Naito Y, Kishi A, Tomii T, Kaneko T, Iinuma S, Ichikawa H, Yasuda M, Takahashi S, Kondo M. Role of active oxygen, lipid peroxidation and antioxidants in the pathogenesis of gastric mucosal injury induced by indomethacin in rats. *Gut* 1993; 34: 732–737.
140. Hiraishi H, Yajima N, Yamaguchi N, Ishida M, Katoh Y, Hirada T, Terano, A, Ivey KJ. Antioxidant protection against oxidant-induced damage in cultured gastric mucosal cells. *Gastroenterol Jpn* 1993; 28 (Suppl. 5): 132–138.
141. Kusuvara H, Kimatsu H, Sumichika H, Sugahara K. Reactive oxygen species are involved in the apoptosis induced by nonsteroidal anti-inflammatory drugs in cultured gastric cells. *Eur J Pharmacol* 1999; 383: 331–337.

142. Chattopadhyay I, Bandyopadhyay U, Biswas K, Maity P, Banerjee RK. Indomethacin inactivates gastric peroxidase to induce reactive-oxygen-mediated gastric mucosal injury and curcumin protects it by preventing peroxidase inactivation and scavenging reactive oxygen. *Free Radical Biology & Medicine* 2006; 40: 1397–1408.
143. Recknagel RO. Carbon tetrachloride hepatotoxicity. *Pharmacol Rev* 1967; 19: 145-208.
144. Chenoweth MB, Hake CL. The smaller halogenated aliphatic hydrocarbons. *Ann Rev Pharmacol* 1962; 2: 363-398.
145. Sallie R, Tredger JM, William R. Drugs and the liver. *Biopharmaceut. Drug Dispos* 1991; 12: 251-259.
146. Klaassen CD, Plaa GL. Comparison of the biochemical alterations elicited in livers from rats treated with CCl₄, CHCl₃, 1,1,2-trichloroethane and 1,1,1-trichloroethane. *Biochem Pharmacol* 1969; 18: 2019-2027.
147. Harris RN, Ratnayake JH, Garry VF, Anders MW. Interactive hepatotoxicity of CHCl₃ and CCl₄. *Toxicol Appl Pharmacol* 1982; 63: 281-291.
148. Walker RM, Racz WJ, Mcelligott TF. Acetaminophen- induced hepatotoxicity in mice. *Lab Invest* 1980; 42: 181-189.
149. Clawson GA. Mechanism of carbon tetrachloride hepatotoxicity. *Pathol Immunopathol Res* 1989; 8: 104-112.
150. Castro JA, Ferrya GC, Castro CR, Sasama H, Fenos OM, Gillette JR. Prevention of carbon tetra chloride induced necrosis by inhibitors of drug metabolism. Further studies on the metabolism of their action. *Biochem Pharmacol* 1974; 23: 295–302.
151. Maling HM, Eichelbaum FM, Saul W, Spies IG, Brown GAB, Gillette JR. Nature of protection against carbon tetrachloride induced hepatotoxicity produced by pretreatment with dibenamiane N-chloroethylidiphenylamine. *Biochem Pharmacol* 1974; 23: 1479–1491.
152. Fraschini F, Demartini G, Esposti D. Pharmacology of silymarin. *Clin Drug Invest* 2002; 22: 51-65.
153. Singh N, Rajini PS. Free radical scavenging activity of an aqueous extract of potato peel. *Food Chem* 2004; 85: 611-616.

154. Huang D, Ou B, Prior RL. The chemistry behind antioxidant capacity assays. *J Agric Food Chem* 2005; 53: 1841–1856.
155. Cao G, Sofic E, Prior RL. Antioxidant and prooxidant behaviour of flavonoids: structure–activity relationships. *Free Rad Bio Med* 1997; 22: 749–760.
156. Pannala AS, Chan TS, O-Brien, PJ, Rice-Evans CA. Flavonoids B-ring chemistry and antioxidant activity: fast reaction kinetics. *Biochem Biophys Res Commun* 2001; 282: 1161–1168.
157. Kaur R, Arora S, Singh B. Antioxidant activity of the phenol rich fractions of leaves of *Chukrasia tabularis* A. Juss. *Bioresour Technol* 2008; 99: 7692–7698.
158. Rice-Evans CA, Miller NJ, Paganga G. Structure–antioxidant activity relationships of flavonoids and phenolic acids. *Free Rad Bio Med* 1996; 20: 933–956.
159. Ramarathnam N, Ochi H, Takeuchi M: “Antioxidant defense system in vegetable extracts.” in: Shahidi, F. (Ed.), *Natural Antioxidants: Chemistry Health Effects and Applications*. AOCS Press, Champaign, IL, pp. 76–87, 1997.
160. Othmana A, Ismaila A, Ghania NA, Adenan I. Antioxidant capacity and phenolic content of cocoa beans. *Food Chem* 2007; 100: 1523–1530.
161. Amarowicz R, Pegg RB, Rahimi-Moghaddam P, Barl B, Weil JA. Free-radical scavenging capacity and antioxidant activity of selected plant species from the Canadian prairies. *Food Chem* 2004; 84: 551–562.
162. Zhao C, Dodin G, Yuan C, Chen H, Zheng R, Fan ZJB. In vitro protection of DNA from Fenton reaction by plant polyphenols verbascoside. *Biochim Biophys Acta* 2005; 1723: 114–123.