

REFERENCES

Aggarwal S, Ghilardi N, Xie MH, de Sauvage FJ and Gurney AL (2003) Interleukin-23 promotes a distinct CD4 T cell activation state characterized by the production of interleukin-17. *J Biol Chem* 278:1910-1914.

Aguwa CN (1985) Gastrointestinal effects of the extracts of *Rhigiocarya racemifera* (Menispermaceae). *Gen Pharmacol* 16:387-390.

Ahmed S, Anuntiyo J, Malemud CJ and Haqqi TM (2005) Biological basis for the use of botanicals in osteoarthritis and rheumatoid arthritis: a review. *Evid Based Complement Alternat Med* 2:301-308.

Akil M and Amos RS (1995) ABC of rheumatology: Rheumatoid arthritis-II: Treatment. *BMJ* 310:652-654.

Alamanos Y and Drosos AA (2005) Epidemiology of adult rheumatoid arthritis. *Autoimmun Rev* 4:130-136.

Alarcon de la Lastra C, Martin MJ and Motilva V (1994) Antiulcer and gastroprotective effects of quercetin: a gross and histologic study. *Pharmacology* 48:56-62.

Alberghina M, Lupo G, La Spina G, Mangiameli A, Gulisano M, Sciotto D and Rizzarelli E (1992) Cytoprotective effect of copper (II) complexes against ethanol-induced damage to rat gastric mucosa. *J Inorg Biochem* 45:245-259.

Alcaraz MJ and Hoult JR (1985) Actions of flavonoids and the novel anti-inflammatory flavone, hypolaetin-8-glucoside, on prostaglandin biosynthesis and inactivation. *Biochem Pharmacol* 34:2477-2482.

Anderson GD, Hauser SD, McGarity KL, Bremer ME, Isakson PC and Gregory SA (1996) Selective inhibition of cyclooxygenase (COX)-2 reverses inflammation and expression of COX-2 and interleukin 6 in rat adjuvant arthritis. *J Clin Invest* 97:2672-2679.

Araki H, Ukawa H, Sugawa Y, Yagi K, Suzuki K and Takeuchi K (2000) The roles of prostaglandin E receptor subtypes in the cytoprotective action of prostaglandin E2 in rat stomach. *Aliment Pharmacol Ther* 14 Suppl 1:116-124.

Arun M and Asha VV (2008) Gastroprotective effect of *Dodonaea viscosa* on various experimental ulcer models. *J Ethnopharmacol* 118:460-465.

Atzeni F, Benucci M, Salli S, Bongiovanni S, Boccassini L and Sarzi-Puttini P (2013) Different effects of biological drugs in rheumatoid arthritis. *Autoimmun Rev* 12:575-579.

Ayoola G, Coker H, Adesegun S, Adepoju-Bello A, Obaweya K, Ezennia E and Atangbayila T (2008) Phytochemical screening and antioxidant activities of some selected medicinal plants used for malaria therapy in Southwestern Nigeria. *TJPR* 7:1019-1024.

Ben-Av P, Crofford LJ, Wilder RL and Hla T (1995) Induction of vascular endothelial growth factor expression in synovial fibroblasts by prostaglandin E and interleukin-1: a potential mechanism for inflammatory angiogenesis. *FEBS Lett* 372:83-87.

Bendele A, McComb J, Gould T, McAbee T, Sennello G, Chlipala E and Guy M (1999) Animal models of arthritis: relevance to human disease. *Toxicol Pathol* 27:134-142.

Bergstrom U, Jacobsson LT and Turesson C (2009) Cardiovascular morbidity and mortality remain similar in two cohorts of patients with long-standing rheumatoid arthritis seen in 1978 and 1995 in Malmo, Sweden. *Rheumatology (Oxford)* 48:1600-1605.

Bhattacharya S, Banerjee D, Bauri AK, Chattopadhyay S and Bandyopadhyay SK (2007) Healing property of the Piper betel phenol, allylpyrocatechol against indomethacin-induced stomach ulceration and mechanism of action. *World J Gastroenterol* 13:3705-3713.

Bingham CO, 3rd (2002) The pathogenesis of rheumatoid arthritis: pivotal cytokines involved in bone degradation and inflammation. *J Rheumatol Suppl* 65:3-9.

Blandizzi C, Fornai M, Colucci R, Natale G, Lubrano V, Vassalle C, Antonioli L, Lazzeri G and Del Tacca M (2005) Lansoprazole prevents experimental gastric injury induced by non-steroidal anti-inflammatory drugs through a reduction of mucosal oxidative damage. *World J Gastroenterol* 11:4052-4060.

Bombardier C, Laine L, Reicin A, Shapiro D, Burgos-Vargas R, Davis B, Day R, Ferraz MB, Hawkey CJ, Hochberg MC, Kvien TK and Schnitzer TJ (2000) Comparison of upper gastrointestinal toxicity of rofecoxib and naproxen in patients with rheumatoid arthritis. VIGOR Study Group. *N Engl J Med* 343:1520-1528, 1522 p following 1528.

Bozin B, Mimica-Dukic N, Simin N and Anackov G (2006) Characterization of the volatile composition of essential oils of some lamiaceae spices and the antimicrobial and antioxidant activities of the entire oils. *J Agric Food Chem* 54:1822-1828.

Brennan FM and McInnes IB (2008) Evidence that cytokines play a role in rheumatoid arthritis. *J Clin Invest* 118:3537-3545.

Brewer MS (2011) Natural Antioxidants: Sources, Compounds, Mechanisms of Action, and Potential Applications. *CRFSFS* 10:221-247.

Brodie DA, Marshall RW and Moreno OM (1962) Effect of restraint on gastric acidity in the rat. *Am J Physiol* 202:812-814.

Bustin SA (2000) Absolute quantification of mRNA using real-time reverse transcription polymerase chain reaction assays. *J Mol Endocrinol* 25:169-193.

Castell M, Castellote MC and Queralt J (1986) Anti-immunoglobulin antibody detection in adjuvant arthritis by an ELISA technique. *Pathol Res Pract* 181:664-667.

Castell M, Castellote MC, Queralt J, Barbera G and Torralba A (1985) Evidence of autoantibodies in rats with adjuvant-induced arthritis. *Allergol Immunopathol (Madr)* 13:399-403.

Cavallini ME, Andreollo NA, Metze K and Araujo MR (2006) Omeprazole and misoprostol for preventing gastric mucosa effects caused by indomethacin and celecoxib in rats. *Acta Cir Bras* 21:168-176.

Chainani-Wu N (2003) Safety and anti-inflammatory activity of curcumin: a component of tumeric (*Curcuma longa*). *J Altern Complement Med* 9:161-168.

Chattopadhyay I, Bandyopadhyay U, Biswas K, Maity P and Banerjee RK (2006) 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 Radic Biol Med* 40:1397-1408.

Chen G, Yin Z and Zheng X (2010) Effect and mechanism of total flavonoids of orange peel on rat adjuvant arthritis. *Zhongguo Zhong Yao Za Zhi* 35:1298-1301.

Chen LG, Yang LL and Wang CC (2008) Anti-inflammatory activity of mangostins from *Garcinia mangostana*. *Food Chem Toxicol* 46:688-693.

Claveau D, Sirinyan M, Guay J, Gordon R, Chan C-C, Bureau Y, Riendeau D and Mancini JA (2003) Microsomal prostaglandin E synthase-1 is a major terminal synthase that is selectively up-regulated during cyclooxygenase-2-dependent prostaglandin E2 production in the rat adjuvant-induced arthritis model. *J Immunol* 170:4738-4744.

Connor JR, Manning PT, Settle SL, Moore WM, Jerome GM, Webber RK, Tjoeng FS and Currie MG (1995) Suppression of adjuvant-induced arthritis by selective inhibition of inducible nitric oxide synthase. *Eur J Pharmacol* 273:15-24.

Corne SJ, Morrissey SM and Woods RJ (1974) Proceedings: A method for the quantitative estimation of gastric barrier mucus. *J Physiol* 242:116P-117P.

Conner EM and Grisham MB (1996) Inflammation, free radicals, and antioxidants. *Nutrition* 12:274-277.

Corrado A, Neve A, Maruotti N and Cantatore FP (2013) Bone effects of biologic drugs in rheumatoid arthritis. *Clin Dev Immunol* 2013:945945.

Cuzzocrea S, McDonald MC, Mota-Filipe H, Mazzon E, Costantino G, Britti D, Mazzullo G, Caputi AP and Thiemermann C (2000) Beneficial effects of tempol, a membrane-permeable radical scavenger, in a rodent model of collagen-induced arthritis. *Arthritis Rheum* 43:320-328.

Das D, Bandyopadhyay D, Bhattacharjee M and Banerjee RK (1997) Hydroxyl radical is the major causative factor in stress-induced gastric ulceration. *Free Radic Biol Med* 23:8-18.

Dayer JM and Choy E (2010) Therapeutic targets in rheumatoid arthritis: the interleukin-6 receptor. *Rheumatology (Oxford)* 49:15-24.

Dayer JM, Krane SM, Russell RG and Robinson DR (1976) Production of collagenase and prostaglandins by isolated adherent rheumatoid synovial cells. *Proc Natl Acad Sci U S A* 73:945-949.

De Filippis L, Gulli S, Caliri A, Romano C, Munao F, Trimarchi G, La Torre D, Fichera C, Pappalardo A, Triolo G, Gallo M, Valentini G and Bagnato G (2004) [Epidemiology and risk factors in osteoarthritis: literature review data from "OASIS" study]. *Reumatismo* 56:169-184.

de Sousa Falcao H, Leite JA, Barbosa-Filho JM, de Athayde-Filho PF, de Oliveira Chaves MC, Moura MD, Ferreira AL, de Almeida AB, Souza-Brito AR, de Fatima Formiga Melo Diniz M and Batista LM (2008) Gastric and duodenal antiulcer activity of alkaloids: a review. *Molecules* 13:3198-3223.

Del Favero A, Dukes MNG and Aronson JK (1991) Anti-inflammatory analgesics and drugs used in rheumatoid arthritis and gout, in *Side Effects of Drugs Annual* pp 92-109, Elsevier.

Dinarello CA (2001). Proinflammatory and anti-inflammatory cytokines in rheumatoid arthritis: A Primer for Clinicians. Thousand Oaks, Ca, USA : Amgen Inc.

Ding AH, Nathan CF and Stuehr DJ (1988) Release of reactive nitrogen intermediates and reactive oxygen intermediates from mouse peritoneal macrophages. Comparison of activating cytokines and evidence for independent production. *J Immunol* 141:2407-2412.

Durai M, Gupta RS and Moudgil KD (2004) The T cells specific for the carboxyl-terminal determinants of self (rat) heat-shock protein 65 escape tolerance induction and are involved in regulation of autoimmune arthritis. *J Immunol* 172:2795-2802.

El-Missiry MA, El-Sayed IH and Othman AI (2001) Protection by metal complexes with SOD-mimetic activity against oxidative gastric injury induced by indomethacin and ethanol in rats. *Ann Clin Biochem* 38:694-700.

Ernst H, Konturek PC, Brzozowski T, Lochs H, Hahn EG and Konturek SJ (1998) Adaptation of gastric mucosa to stress. Effect of ranitidine. *J Physiol Pharmacol* 49:405-419.

Ezaki N, Kato M, Takizawa N, Morimoto S, Nonaka G and Nishioka I (1985) Pharmacological studies on *Linderae umbellatae* Ramus, IV*. Effects of condensed tannin related compounds on peptic activity and stress-induced gastric lesions in mice. *Planta Med* 51:34-38.

Farrell AJ, Blake DR, Palmer RM and Moncada S (1992) Increased concentrations of nitrite in synovial fluid and serum samples suggest increased nitric oxide synthesis in rheumatic diseases. *Ann Rheum Dis* 51:1219-1222.

Flemstrom G and Turnberg LA (1984) Gastroduodenal defence mechanisms. *Clin Gastroenterol* 13:327-354.

Fonseca JE, Santos MJ, Canhao H and Choy E (2009) Interleukin-6 as a key player in systemic inflammation and joint destruction. *Autoimmun Rev* 8:538-542.

Fossiez F, Djossou O, Chomar P, Flores-Romo L, Ait-Yahia S, Maat C, Pin JJ, Garrone P, Garcia E, Saeland S, Blanchard D, Gaillard C, Das Mahapatra B, Rouvier E, Golstein P, Banchereau J and Lebecque S (1996) T cell interleukin-17 induces stromal cells to produce proinflammatory and hematopoietic cytokines. *J Exp Med* 183:2593-2603.

Fries S and Grosser T (2005) The cardiovascular pharmacology of COX-2 inhibition. *Hematology Am Soc Hematol Educ Program* 1:445-451.

Funk JL, Oyarzo JN, Frye JB, Chen G, Lantz RC, Jolad SD, Solyom AM and Timmermann BN (2006) Turmeric extracts containing curcuminoids prevent experimental rheumatoid arthritis. *J Nat Prod* 69:351-355.

Gabriel SE (2001) The epidemiology of rheumatoid arthritis. *Rheum Dis Clin North Am* 27:269-281.

Gaudio E, Carpino F, Petrozza V, Bianchi G, Alberico P, Melis M, Carlei F and Lygidakis NJ (1993) Cytoprotective drugs in the prevention of ethanol-induced experimental gastric mucosal damage: a morphological study. *Hepatogastroenterology* 40:110-115.

Giulietti A, Overbergh L, Valckx D, Decallonne B, Bouillon R and Mathieu C (2001) An overview of real-time quantitative PCR: applications to quantify cytokine gene expression. *Methods* 25:386-401.

Glavin GB and Szabo S (1992) Experimental gastric mucosal injury: laboratory models reveal mechanisms of pathogenesis and new therapeutic strategies. *FASEB J* 6:825-831.

Goodson T, Morgan SL, Carlee JR and Baggott JE (2003) The energy cost of adjuvant-induced arthritis in rats. *Arthritis Rheum* 48:2979-2982.

Grosser T, Fries S and FitzGerald GA (2006) Biological basis for the cardiovascular consequences of COX-2 inhibition: therapeutic challenges and opportunities. *J Clin Invest* 116:4-15.

Hammerschmidt PA and Pratt DE (1978) Phenolic antioxidants of dried soybeans. *J Food Sci* 43:556-559.

Han Z, Boyle DL, Manning AM and Firestein GS (1998) AP-1 and NF-kappaB regulation in rheumatoid arthritis and murine collagen-induced arthritis. *Autoimmunity* 28:197-208.

Hawkey CJ (1996) Non-steroidal anti-inflammatory drug gastropathy: causes and treatment. *Scand J Gastroenterol Suppl* 220:124-127.

Hawkins C and Hanks GW (2000) The gastroduodenal toxicity of nonsteroidal anti-inflammatory drugs: a review of the literature. *J Pain Symptom Manage* 20:140-151.

Hayllar J and Bjarnason I (1995) NSAIDs, Cox-2 inhibitors, and the gut. *Lancet* 346:521-522.

Hegen M, Keith JC, Jr., Collins M and Nickerson-Nutter CL (2008) Utility of animal models for identification of potential therapeutics for rheumatoid arthritis. *Ann Rheum Dis* 67:1505-1515.

Hemmer J, Schwille PO, Schellerer W and Hofmann W (1980) Effects of cimetidine upon gastric secretion and mucosal blood flow in the rat stressed by restraint. A dose-response and prophylaxis trial. *Res Exp Med (Berl)* 176:207-217.

Herrmann ML, Schleyerbach R and Kirschbaum BJ (2000) Leflunomide: an immunomodulatory drug for the treatment of rheumatoid arthritis and other autoimmune diseases. *Immunopharmacology* 47:273-289.

Hippisley-Cox J, Coupland C and Logan R (2005) Risk of adverse gastrointestinal outcomes in patients taking cyclo-oxygenase-2 inhibitors or conventional non-steroidal anti-inflammatory drugs: population based nested case-control analysis. *BMJ* 331:1310-1316.

Hiraishi H, Shimada T and Terano A (2000) Involvement of oxidative stress in the pathogenesis of NSAID-induced gastric mucosal damage. *J Gastroenterol* 35:567-569.

Holt KM and Hollander D (1986) Acute gastric mucosal injury: pathogenesis and therapy. *Annu Rev Med* 37:107-124.

Inada M, Matsumoto C, Uematsu S, Akira S and Miyaura C (2006) Membrane-bound prostaglandin E synthase-1-mediated prostaglandin E₂ production by osteoblast plays a critical role in lipopolysaccharide-induced bone loss associated with inflammation. *J Immunol* 177:1879-1885.

Intiyot Y, Kinouchi T, Kataoka K, Arimochi H, Kuwahara T, Vinitketkumnuen U and Ohnishi Y (2002) Antimutagenicity of *Murdannia loriformis* in the *Salmonella* mutation assay and its inhibitory effects on azoxymethane-induced DNA methylation and aberrant crypt focus formation in male F344 rats. *J Med Invest* 49:25-34.

Ito M, Shii D, Segami T, Kojima R and Suzuki Y (1992) Preventive actions of N-(3-aminopropionyl)-L-histidinato zinc (Z-103) through increases in the activities of oxygen-derived free radical scavenging enzymes in the gastric mucosa on ethanol-induced gastric mucosal damage in rats. *Jpn J Pharmacol* 59:267-274.

Izzo AA, Carlo GD, Mascolo N, Capasso F and Autore G (1994) Antiulcer effect of flavonoids. Role of endogenous PAF. *Phytother Res* 8:179-181.

Jiratchariyakul W, Okabe H and Frahm AW (1996) A steroidal glucoside from *Murdannia loriformis* (Hassk.) Rolla Rao et Kammathy. *Thai J Phytopharmacy* 3:31-39.

Jiratchariyakul W, Okabe H, Moongkarndi P and Frahm AW (1998) Cytotoxic glycosphingolipid from *Murdannia loriformis* (Hassk.) Rolla Rao et Kammathy. *Thai J Phytopharmacy* 5:10-20.

Jiratchariyakul W, Vongsakul M, Sunthornsuk L, Moongkarndi P, Narintorn A, Somanabandhu A, Okabe H and Frahm A (2006) Immunomodulatory effect and quantitation of a cytotoxic glycosphingolipid from *Murdannia loriformis*. *J Nat Med* 60:210-216.

Jones R (2001) Nonsteroidal anti-inflammatory drug prescribing: past, present, and future. *Am J Med* 110:4S-7S.

Joosten LA, Helsen MM, Saxne T, van De Loo FA, Heinegard D and van Den Berg WB (1999) IL-1 alpha beta blockade prevents cartilage and bone destruction in murine type II collagen-induced arthritis, whereas TNF-alpha blockade only ameliorates joint inflammation. *J Immunol* 163:5049-5055.

Jurenka JS (2009) Anti-inflammatory properties of curcumin, a major constituent of *Curcuma longa*: a review of preclinical and clinical research. *Altern Med Rev* 14:141-153.

Kanter M, Demir H, Karakaya C and Ozbek H (2005) Gastroprotective activity of *Nigella sativa* L oil and its constituent, thymoquinone against acute alcohol-induced gastric mucosal injury in rats. *World J Gastroenterol* 11:6662-6666.

Kim SH, Jun CD, Suk K, Choi BJ, Lim H, Park S, Lee SH, Shin HY, Kim DK and Shin TY (2006) Gallic acid inhibits histamine release and pro-inflammatory cytokine production in mast cells. *Toxicol Sci* 91:123-131.

Kinne RW, Brauer R, Stuhlmuller B, Palombo-Kinne E and Burmester GR (2000) Macrophages in rheumatoid arthritis. *Arthritis Res* 2:189-202.

Kinouchi T, Suaeyun R, Chewonarin T, Intiyot Y, Arimochi H, Kataoka K, Akimoto S, Vinitketkumnuen U and Ohnishi Y (1997) P XVII B.36 Chemopreventive effects of Thai medicinal plants on formation of azoxymethane-induced DNA adducts and aberrant crypt foci in the rat colon. *Mutat Res* 379:S181-S181.

Kishimoto T (1989) The biology of interleukin-6. *Blood* 74:1-10.

Kitagawa H, Fujiwara M and Osumi Y (1979) Effects of water-immersion stress on gastric secretion and mucosal blood flow in rats. *Gastroenterology* 77:298-302.

Koenders MI, Joosten LA and van den Berg WB (2006) Potential new targets in arthritis therapy: interleukin (IL)-17 and its relation to tumour necrosis factor and IL-1 in experimental arthritis. *Ann Rheum Dis* 65 Suppl 3:iii29-33.

Komatsu N and Takayanagi H (2012) Inflammation and bone destruction in arthritis: synergistic activity of immune and mesenchymal cells in joints. *Front Immunol* 3:77.

Koontongkaew S, Suriyawong K and Siengboon W (2009) Effects of *Murdannia loriformis* extracts on cancer cell growth. 2nd Meeting of IADR Pan Asian Pacific Federation (PAPF) and the 1st Meeting of IADR Asia/Pacific Region (APR), Pathumthani, Thailand.

Kotake S, Udagawa N, Takahashi N, Matsuzaki K, Itoh K, Ishiyama S, Saito S, Inoue K, Kamatani N, Gillespie MT, Martin TJ and Suda T (1999) IL-17 in synovial fluids from patients with rheumatoid arthritis is a potent stimulator of osteoclastogenesis. *J Clin Invest* 103:1345-1352.

Kuratani K, Yamazaki M, Kodama H and Yamaguchi I (1992) Possible involvement of hyperinsulinemia and adrenergic activation in the pathogenesis of indomethacin-

induced antral ulcers in nonfasted hamsters and refed rats. *J Pharmacol Exp Ther* 263:951-955.

Kwan Tat S, Padrines M, Theoleyre S, Heymann D and Fortun Y (2004) IL-6, RANKL, TNF-alpha/IL-1: interrelations in bone resorption pathophysiology. *Cytokine Growth Factor Rev* 15:49-60.

Kwiecien S, Brzozowski T and Konturek SJ (2002) Effects of reactive oxygen species action on gastric mucosa in various models of mucosal injury. *J Physiol Pharmacol* 53:39-50.

Lacy ER and Ito S (1982) Microscopic analysis of ethanol damage to rat gastric mucosa after treatment with a prostaglandin. *Gastroenterology* 83:619-625.

Laine L, Takeuchi K and Tarnawski A (2008) Gastric mucosal defense and cytoprotection: bench to bedside. *Gastroenterology* 135:41-60.

Lee SH, Soyoola E, Chanmugam P, Hart S, Sun W, Zhong H, Liou S, Simmons D and Hwang D (1992) Selective expression of mitogen-inducible cyclooxygenase in macrophages stimulated with lipopolysaccharide. *J Biol Chem* 267:25934-25938.

Lee SJ and Kavanaugh A (2003) Pharmacological treatment of established rheumatoid arthritis. *Best Pract Res Clin Rheumatol* 17:811-829.

Leisten JC, Gaarde WA and Scholz W (1990) Interleukin-6 serum levels correlate with footpad swelling in adjuvant-induced arthritic Lewis rats treated with cyclosporin A or indomethacin. *Clin Immunol Immunopathol* 56:108-115.

Li D, Ren W, Wang X, Wang F, Gao Y, Ning Q, Han Y, Song T and Lu S (2009) A modified method using TRIzol reagent and liquid nitrogen produces high-quality RNA from rat pancreas. *Appl Biochem Biotechnol* 158:253-261.

Li T and Zhang XJ (1993) [Role of oxygen-derived free radicals in stress-induced gastric ulceration]. *Sheng Li Xue Bao* 45:286-291.

Lin SK, Kok SH, Kuo MY, Lee MS, Wang CC, Lan WH, Hsiao M, Goldring SR and Hong CY (2003) Nitric oxide promotes infectious bone resorption by enhancing cytokine-stimulated interstitial collagenase synthesis in osteoblasts. *J Bone Miner Res* 18:39-46.

Liu W and Saint DA (2002) A new quantitative method of real time reverse transcription polymerase chain reaction assay based on simulation of polymerase chain reaction kinetics. *Anal Biochem* 302:52-59.

MacMicking J, Xie QW and Nathan C (1997) Nitric oxide and macrophage function. *Annu Rev Immunol* 15:323-350.

Maity P, Bindu S, Dey S, Goyal M, Alam A, Pal C, Mitra K and Bandyopadhyay U (2009) Indomethacin, a non-steroidal anti-inflammatory drug, develops gastropathy by inducing reactive oxygen species-mediated mitochondrial pathology and associated apoptosis in gastric mucosa: a novel role of mitochondrial aconitase oxidation. *J Biol Chem* 284:3058-3068.

Malfertheiner P, Chan FKL and McColl KEL (2009) Peptic ulcer disease. *Lancet* 374:1449-1461.

Maradit-Kremers H, Crowson CS, Nicola PJ, Ballman KV, Roger VL, Jacobsen SJ and Gabriel SE (2005a) Increased unrecognized coronary heart disease and sudden deaths in rheumatoid arthritis: a population-based cohort study. *Arthritis Rheum* 52:402-411.

Maradit-Kremers H, Nicola PJ, Crowson CS, Ballman KV and Gabriel SE (2005b) Cardiovascular death in rheumatoid arthritis: a population-based study. *Arthritis Rheum* 52:722-732.

Marcus EA, Vagin O, Tokhtaeva E, Sachs G and Scott DR (2013) Helicobacter pylori impedes acid-induced tightening of gastric epithelial junctions. *Am J Physiol Gastrointest Liver Physiol*.

Martin MJ, de la Lastra CA, Marhuenda E, Delgado F and Torreblanca J (1988) Anti-ulcerogenicity of the flavonoid fraction from *Dittrichia viscosa* (L.) W. Greuter in rats. *Phytother Res* 2:183-186.

Matsumoto A, Asada S, Saitoh O, Tei H, Okumura Y, Hirata I and Ohshiba S (1989) A study on gastric ulcers induced by long-term fasting in rats. *Scand J Gastroenterol Suppl* 162:75-78.

Matsuno H, Yudoh K, Katayama R, Nakazawa F, Uzuki M, Sawai T, Yonezawa T, Saeki Y, Panayi GS, Pitzalis C and Kimura T (2002) The role of TNF-alpha in the pathogenesis of inflammation and joint destruction in rheumatoid arthritis (RA): a study using a human RA/SCID mouse chimera. *Rheumatology (Oxford)* 41:329-337.

Mazzetti I, Grigolo B, Pulsatelli L, Dolzani P, Silvestri T, Roseti L, Meliconi R and Facchini A (2001) Differential roles of nitric oxide and oxygen radicals in chondrocytes affected by osteoarthritis and rheumatoid arthritis. *Clin Sci (Lond)* 101:593-599.

McCartney-Francis N, Allen JB, Mizel DE, Albina JE, Xie QW, Nathan CF and Wahl SM (1993) Suppression of arthritis by an inhibitor of nitric oxide synthase. *J Exp Med* 178:749-754.

Mihara M., Moriya Y, Kishimoto T, and Ohsugi Y (1995) Interleukin-6 (IL-6) induces the proliferation of synovial fibroblastic cells in the presence of soluble IL-6 receptor. *Br J Rheumatol* 34:321-325.

Mirshafiey A and Mohsenzadegan M (2008) The role of reactive oxygen species in immunopathogenesis of rheumatoid arthritis. *Iran J Allergy Asthma Immunol* 7:195-202.

Miyata K, Kamato T, Nishida A and Honda K (1991) Studies on the mechanism for the gastric mucosal protection by famotidine in rats. *Jpn J Pharmacol* 55:211-222.

Mizui T and Doteuchi M (1983) Effect of polyamines on acidified ethanol-induced gastric lesions in rats. *Jpn J Pharmacol* 33:939-945.

Mori T, Miyamoto T, Yoshida H, Asakawa M, Kawasumi M, Kobayashi T, Morioka H, Chiba K, Toyama Y and Yoshimura A (2011) IL-1beta and TNFalpha-initiated IL-6-STAT3 pathway is critical in mediating inflammatory cytokines and RANKL expression in inflammatory arthritis. *Int Immunol* 23:701-712.

Mota KS, Dias GE, Pinto ME, Luiz-Ferreira A, Souza-Brito AR, Hiruma-Lima CA, Barbosa-Filho JM and Batista LM (2009) Flavonoids with gastroprotective activity. *Molecules* 14:979-1012.

Murakami M, Lam SK, Inada M and Miyake T (1985) Pathophysiology and pathogenesis of acute gastric mucosal lesions after hypothermic restraint stress in rats. *Gastroenterology* 88:660-665.

Murase T, Kume N, Hase T, Shibuya Y, Nishizawa Y, Tokimitsu I and Kita T (1999) Gallates inhibit cytokine-induced nuclear translocation of NF-kappaB and expression of leukocyte adhesion molecules in vascular endothelial cells. *Arterioscler Thromb Vasc Biol* 19:1412-1420.

Musumba C, Pritchard DM and Pirmohamed M (2009) Review article: cellular and molecular mechanisms of NSAID-induced peptic ulcers. *Aliment Pharmacol Ther* 30:517-531.

Nagy G, Koncz A, Telarico T, Fernandez D, Ersek B, Buzas E and Perl A (2010) Central role of nitric oxide in the pathogenesis of rheumatoid arthritis and systemic lupus erythematosus. *Arthritis Res Ther* 12:210.

Nanjundaiah SM, Astry B and Moudgil KD Mediators of inflammation-induced bone damage in arthritis and their control by herbal products. *Evid Based Complement Alternat Med* 2013:518094.

Needleman P, Turk J, Jakschik BA, Morrison AR and Lefkowitz JB (1986) Arachidonic acid metabolism. *Annu Rev Biochem* 55:69-102.

Newbould BB (1963) Chemotherapy of arthritis induced in rats by mycobacterial adjuvant. *Br J Pharmacol Chemother* 21:127-136.

Newbould BB (1969) The pharmacology of fenclozic acid (2-(4-chlorophenyl)-thiazol-4-ylacetic acid; I.C.I. 54,450; 'Myalex'); a new compound with anti-inflammatory, analgesic and antipyretic activity. *Br J Pharmacol* 35:487-497.

Nwafor PA, Okwuasaba FK and Binda LG (2000) Antidiarrhoeal and antiulcerogenic effects of methanolic extract of *Asparagus pubescens* root in rats. *J Ethnopharmacol* 72:421-427.

Ohta Y, Kobayashi T, Imai Y, Inui K, Yoshino J and Nakazawa S (2006) Effect of oral vitamin E administration on acute gastric mucosal lesion progression in rats treated with compound 48/80, a mast cell degranulator. *Biol Pharm Bull* 29:675-683.

Oyanagui Y (1994) Nitric oxide and superoxide radical are involved in both initiation and development of adjuvant arthritis in rats. *Life Sci* 54:PL285-289.

Papatheodoridis GV, Sougioultzis S and Archimandritis AJ (2006) Effects of *Helicobacter pylori* and nonsteroidal anti-inflammatory drugs on peptic ulcer disease: a systematic review. *Clin Gastroenterol Hepatol* 4:130-142.

Paradowska A, Masliniski W, Grzybowska-Kowalczyk A and Lacki J (2007) The function of interleukin 17 in the pathogenesis of rheumatoid arthritis. *Arch Immunol Ther Exp (Warsz)* 55:329-334.

Paul BN and Saxena AK (1997) Depletion of tumor necrosis factor- α in mice by *Nyctanthes arbor-tristis*. *J Ethnopharmacol* 56:153-158.

Pearson CM and Wood FD (1959) Studies of polyarthritis and other lesions induced in rats by injection of mycobacterial adjuvant. I. General clinical and pathologic characteristics and some modifying factors. *Arthritis Rheum* 2:440-459.

Perron NR and Brumaghim JL (2009) A review of the antioxidant mechanisms of polyphenol compounds related to iron binding. *Cell Biochem Biophys* 53:75-100.

Pihan G, Rogers C and Szabo S (1988) Vascular injury in acute gastric mucosal damage. Mediator role of leukotrienes. *Dig Dis Sci* 33:625-632.

Pornprasert S, Punturee K and Vinitketkumneun U (2001) Anti-proliferative and cytotoxic effects of *Murdannia loriformis* on leukemic cell lines. *Chiang Mai Med Bull* 40 (4):195-203.

Ragab AA, Nalepka JL, Bi Y and Greenfield EM (2002) Cytokines synergistically induce osteoclast differentiation: support by immortalized or normal calvarial cells. *Am J Physiol Cell Physiol* 283:C679-687.

Rainsford KD (1987) The effects of 5-lipoxygenase inhibitors and leukotriene antagonists on the development of gastric lesions induced by nonsteroidal antiinflammatory drugs in mice. *Agents Actions* 21:316-319.

Ramadan G, Al-Kahtani M and El-Sayed W (2011) Anti-inflammatory and anti-oxidant properties of *Curcuma longa* (turmeric) versus *Zingiber officinale* (ginger) rhizomes in rat adjuvant-induced arthritis. *Inflammation* 34:291-301.

Ramakrishnan K and Salinas RC (2007) Peptic ulcer disease. *Am Fam Physician* 76:1005-1012.

Rastogi L, Patnaik GK and Dikshit M (1998) Free radicals and antioxidant status following pylorus ligation induced gastric mucosal injury in rats. *Pharmacol Res* 38:125-132.

Ravipati, A., L. Zhang, S. Koyyalamudi, S. Jeong, N. Reddy, J. Bartlett, P. Smith, K. Shanmugam, G. Munch, M. Wu, M. Satyanarayanan, and B. Vysetti. 2012. Antioxidant and anti-inflammatory activities of selected Chinese medicinal plants and their relation with antioxidant content. *BMC Complement Altern Med* 12:173.

Rearungchom T (1993) Possible mechanism of inhibition of aflatoxin-B1 mutagenesis by Thai medicinal plant, *Murdannia loriformis* and *Alpinia galanga*. Master's thesis, Chiang Mai University.

Reimann HJ, Lewin J, Schmidt U, Wendt P, Bluemel G and Dajani EZ (1987) Misoprostol prevents damage to the gastric mucosa by stabilizing the mast cells. *Prostaglandins* 33 Suppl:105-116.

Repetto MG and Llesuy SF (2002) Antioxidant properties of natural compounds used in popular medicine for gastric ulcers. *Braz J Med Biol Res* 35:523-534.

Ricciotti E and FitzGerald GA (2011) Prostaglandins and inflammation. *Arterioscler Thromb Vasc Biol* 31:986-1000.

Robert A, Nezamis JE, Lancaster C and Hanchar AJ (1979) Cytoprotection by prostaglandins in rats. Prevention of gastric necrosis produced by alcohol, HCl, NaOH, hypertonic NaCl, and thermal injury. *Gastroenterology* 77:433-443.

Rujjanawate C, Kanjanapothi D and Amornlerdpison D (2004) The anti-gastric ulcer effect of *Gynostemma pentaphyllum* Makino. *Phytomedicine* 11:431-435.

Saag KG, Teng GG, Patkar NM, Anuntiyo J, Finney C, Curtis JR, Paulus HE, Mudano A, Pisu M, Elkins-Melton M, Outman R, Allison JJ, Suarez Almazor M, Bridges SL, Jr., Chatham WW, Hochberg M, MacLean C, Mikuls T, Moreland LW, O'Dell J, Turkiewicz AM and Furst DE (2008) American College of Rheumatology 2008 recommendations for the use of nonbiologic and biologic disease-modifying antirheumatic drugs in rheumatoid arthritis. *Arthritis Rheum* 59:762-784.

Sairam K, Rao CV, Babu MD, Kumar KV, Agrawal VK and K. Goel R (2002) Antiulcerogenic effect of methanolic extract of *Emblica officinalis*: an experimental study. *J Ethnopharmacol* 82:1-9.

Salvemini D, Misko TP, Masferrer JL, Seibert K, Currie MG and Needleman P (1993) Nitric oxide activates cyclooxygenase enzymes. *Proc Natl Acad Sci U S A* 90:7240-7244.

Sano H, Hla T, Maier JA, Crofford LJ, Case JP, Maciag T and Wilder RL (1992) *In vivo* cyclooxygenase expression in synovial tissues of patients with rheumatoid arthritis and osteoarthritis and rats with adjuvant and streptococcal cell wall arthritis. *J Clin Invest* 89:97-108.

Saralamp P, Chuakul W, Tamsiririrkkul R and Chayton T (1996) *Murdannia loriformis* (Hassk.) Rolla Rao et Kammathy. Medicinal plants in Thailand Volume I. Bangkok, p. 130.

Saratha V and Subramanian SP (2012) Lupeol, a triterpenoid isolated from *Calotropis gigantea* latex ameliorates the primary and secondary complications of FCA induced adjuvant disease in experimental rats. *Inflammopharmacology* 20:27-37.

Selling JA, Hogan DL, Aly A, Koss MA and Isenberg JI (1987) Indomethacin inhibits duodenal mucosal bicarbonate secretion and endogenous prostaglandin E2 output in human subjects. *Ann Intern Med* 106:368-371.

Shay H (1945) A simple method for the uniform production of gastric ulceration in the rat. *Gastroenterology* 4:43-61.

Sheibanie AF, Khayrullina T, Safadi FF and Ganea D (2007) Prostaglandin E2 exacerbates collagen-induced arthritis in mice through the inflammatory interleukin-23/interleukin-17 axis. *Arthritis Rheum* 56:2608-2619.

Shian WM, Sasaki I, Kamiyama Y, Naito H, Matsuno S and Miyazawa T (2000) The role of lipid peroxidation on gastric mucosal lesions induced by water-immersion-restraint stress in rats. *Surg Today* 30:49-53.

Singh JA, Furst DE, Bharat A, Curtis JR, Kavanaugh AF, Kremer JM, Moreland LW, O'Dell J, Winthrop KL, Beukelman T, Bridges SL, Jr., Chatham WW, Paulus HE, Suarez-Almazor M, Bombardier C, Dougados M, Khanna D, King CM, Leong AL, Matteson EL, Schousboe JT, Moynihan E, Kolba KS, Jain A, Volkmann ER, Agrawal H, Bae S, Mudano AS, Patkar NM and Saag KG (2012) 2012 update of the 2008 American College of Rheumatology recommendations for the use of disease-modifying antirheumatic drugs and biologic agents in the treatment of rheumatoid arthritis. *Arthritis Care Res (Hoboken)* 64:625-639.

Singh S and Majumdar DK (1996) Effect of Fixed Oil of *Ocimum sanctum* against Experimentally Induced Arthritis and Joint Edema in Laboratory Animals. *Pharm Biol* 34:218-222.

Skehan P, Storeng R, Scudiero D, Monks A, McMahon J, Vistica D, Warren JT, Bokesch H, Kenney S and Boyd MR (1990) New colorimetric cytotoxicity assay for anticancer-drug screening. *J Natl Cancer Inst* 82:1107-1112.

Somja S (2005) Anti-inflammatory, analgesic and antipyretic activities of ethanol extract from *Murdania loriformis* (HASSK.) Rolla Rao Et Kammathy. Master's thesis, Chiang Mai University.

Souza R, Cardoso M, Menezes C, Silva J, De Sousa D and Batista J (2011) Gastroprotective activity of alpha-terpineol in two experimental models of gastric ulcer in rats. *Daru* 19:277-281.

Stamp LK, James MJ and Cleland LG (2004) Interleukin-17: the missing link between T-cell accumulation and effector cell actions in rheumatoid arthritis? *Immunol Cell Biol* 82:1-9.

Sung J (2010) Peptic ulcer disease, in *Oxford Textbook of Medicine* (Warrell DA, Cox TM and Firth JD eds) pp 2305-2315, Oxford University Press.

Syam AF, Sadikin M, Wanandi SI and Rani AA (2009) Molecular mechanism on healing process of peptic ulcer. *Acta Med Indones* 41:95-98.

Takagi K, Kasuya Y and Watanabe K (1964a) Studies on the drugs for peptic ulcer. A reliable method for producing stress ulcer in rats. *Chem Pharm Bull (Tokyo)* 12:465-472.

Takagi K, Kasuya Y and Watanabe K (1964b) Studies on the drugs for peptic ulcers. A reliable method for producing stress ulcer in rats. *Chem Pharm Bull (Tokyo)* 12:465-472.

Takayanagi H (2005) Inflammatory bone destruction and osteoimmunology. *J Periodontal Res* 40:287-293.

Tappayuthpijarn P, Sattaboos P and Pidetcha P (1991a) Subchronic Toxicity of *Murdannia loriformis*. *Siriraj Med J* 43:529-533.

Tappayuthpijarn P, Wamanutajinda V and Pidetcha P (1991b) Acute Toxicity of *Murdannia loriformis*. *Siriraj Med J* 43:458 - 462.

Tarnawski A, Hollander D, Stachura J, Krause WJ and Gergely H (1985) Prostaglandin protection of the gastric mucosa against alcohol injury--a dynamic time-related process. Role of the mucosal proliferative zone. *Gastroenterology* 88:334-352.

Tesmer LA, Lundy SK, Sarkar S and Fox DA (2008) Th17 cells in human disease. *Immunol Rev* 223:87-113.

Tran CN, Lundy SK and Fox DA (2005) Synovial biology and T cells in rheumatoid arthritis. *Pathophysiology* 12:183-189.

Turull A and Queralt J (2000) Selective cyclooxygenase-2 (COX-2) inhibitors reduce anti-Mycobacterium antibodies in adjuvant arthritic rats. *Immunopharmacology* 46:71-77.

Uramoto H, Ohno T and Ishihara T (1990) Gastric mucosal protection induced by restraint and water-immersion stress in rats. *Jpn J Pharmacol* 54:287-298.

Valko M, Leibfritz D, Moncol J, Cronin MT, Mazur M and Telser J (2007) Free radicals and antioxidants in normal physiological functions and human disease. *Int J Biochem Cell B* 39:44-84.

van't Hof RJ, Armour KJ, Smith LM, Armour KE, Wei XQ, Liew FY and Ralston SH (2000) Requirement of the inducible nitric oxide synthase pathway for IL-1-induced osteoclastic bone resorption. *Proc Natl Acad Sci U S A* 97:7993-7998.

Vane JR (1971) Inhibition of prostaglandin synthesis as a mechanism of action for aspirin-like drugs. *Nat New Biol* 231:232-235.

Vichai V and Kirtikara K (2006) Sulforhodamine B colorimetric assay for cytotoxicity screening. *Nat Protoc* 1:1112-1116.

Vinitketkumneun U, Charoenkunathum W, Kongtawelert P, Lertprasertsuke N, Picha P and Matsushima T (1996) DT-diaphorase inducer activity of antimutagenic Thai medicinal plant, *Murdannia loriformis*. *J Herbs Spices Med Plants* 4:45-52.

Vinitketkumnue U, Chewonarin T, Dhumtanom P, Lertprasertsuk N and Wild CP (1999) Aflatoxin-albumin adduct formation after single and multiple doses of aflatoxin B(1) in rats treated with Thai medicinal plants. *Mutat Res* 428:345-351.

Walan A, Bader J, Classen M, Lamers C, Piper D, Rutgersson K and Eriksson S (1989) Effect of omeprazole and ranitidine on ulcer healing and relapse rates in patients with benign gastric ulcer. *N Engl J Med* 320:69 - 75.

Wallace JL (2008) Prostaglandins, NSAIDs, and gastric mucosal protection: why doesn't the stomach digest itself?. *Physiol Rev* 88:1547-1565.

Watanabe K (1966) Some Pharmacological Factors involved in Formation and Prevention of Stress Ulcer in Rats. *Chem Pharm Bull (Tokyo)* 14:101-107.

Watson DJ, Rhodes T and Guess HA (2003) All-cause mortality and vascular events among patients with rheumatoid arthritis, osteoarthritis, or no arthritis in the UK General Practice Research Database. *J Rheumatol* 30:1196-1202.

Wei S, Kitaura H, Zhou P, Ross FP and Teitelbaum SL (2005) IL-1 mediates TNF-induced osteoclastogenesis. *J Clin Invest* 115:282-290.

Weon-Jong Y, Young Min H, Sang-Suk K, Byoung-Sam Y, Ji-Young M, Jong Seok B, Nam Ho L and Chang-Gu H (2009) Suppression of pro-inflammatory cytokines, iNOS, and COX-2 expression by brown algae *Sargassum micracanthum* in RAW 264.7 macrophages. *EurAsian J of Biosciences* 3:130-143.

Whittle BJ, Oren-Wolman N and Guth PH (1985) Gastric vasoconstrictor actions of leukotriene C4, PGF2 alpha, and thromboxane mimetic U-46619 on rat submucosal microcirculation in vivo. *Am J Physiol* 248:G580-586.

Wilson DE (1987) Antisecretory and mucosal protective actions of misoprostol. Potential role in the treatment of peptic ulcer disease. *Am J Med* 83:2-8.

Wolfe F, Freundlich B and Straus WL (2003) Increase in cardiovascular and cerebrovascular disease prevalence in rheumatoid arthritis. *J Rheumatol* 30:36-40.

Xie YF, Jiao Q, Guo S, Wang FZ, Cao JM and Zhang ZG (2005) Role of parasympathetic overactivity in water immersion stress-induced gastric mucosal lesion in rat. *J Appl Physiol* (1985) 99:2416-2422.

Yadav RNS and Agarwala M. (2011). Phytochemical analysis of some medicinal plants. *J Phytol*, 3, 10-14.

Yamahara J, Mochizuki M, Fujimura H, Takaishi Y, Yoshida M, Tomimatsu T and Tamai Y (1990) Antiulcer action of *Sophora flavescens* root and an active constituent. I. *J Ethnopharmacol* 29:173-177.

Yoshikawa T, Naito Y, Kishi A, Tomii T, Kaneko T, Iinuma S, Ichikawa H, Yasuda M, Takahashi S and Kondo M (1993) Role of active oxygen, lipid peroxidation, and antioxidants in the pathogenesis of gastric mucosal injury induced by indomethacin in rats. *Gut* 34:732-737.

Young A, Koduri G, Batley M, Kulinskaya E, Gough A, Norton S and Dixey J (2007) Mortality in rheumatoid arthritis. Increased in the early course of disease, in ischaemic heart disease and in pulmonary fibrosis. *Rheumatology (Oxford)* 46:350-357.

Zanatta F, Gandolfi RB, Lemos M, Ticona JC, Gimenez A, Clasen BK, Cechinel Filho V and de Andrade SF (2009) Gastroprotective activity of alkaloid extract and 2-phenylquinoline obtained from the bark of *Galipea longiflora* Krause (Rutaceae). *Chem Biol Interact* 180:312-317.

Zhang YH, Heulsmann A, Tondravi MM, Mukherjee A and Abu-Amer Y (2001) Tumor necrosis factor-alpha (TNF) stimulates RANKL-induced osteoclastogenesis via coupling of TNF type 1 receptor and RANK signaling pathways. *J Biol Chem* 276:563-568.

Copyright © by Chiang Mai University
All rights reserved