

## BILBIOGRAPHY

- Abdel-Hafez, M.M., el-Kady, N. and Bolbol, A.S. 1985. Prevalence of intestinal parasitic infections in Riyadh District, Saudi Arabia. *Ann. Trop. Med. Parasitol.* 80 : 631-634.
- Almeida, C.E., Karnikowski, M.G.O., Foletto, R. and Baldisserotto, B. 1995. Analysis of antidiarrhoeic effect of plants used in popular medicine. *Rev. Saúde Pública* 29:428-433.
- Ankri, S., Miron, T., Wilchek, M. and Mirelman, D., 1997. Allicin from garlic strongly inhibits cysteine proteinase and cytopathic effects of *Entamoeba histolytica*. *Antimicrob agents Chemother* 41,2286-2288.
- Anon., 1997. Dysentery. In: Annual Epidemiological Surveillance Report. Division of Epidemiology Ministry of Public Health, Thailand, pp.132-139.
- Anpak, J., Sribolmas, N., DC-Ekhamkul, W. and Ruangrunsi, N. 1997. Essential oils of *Piper sarmentosum* : Chemical composition and antimicrobial activity in Abstr 23<sup>rd</sup> Congress on Science and Technology of Thailand, Chiangmai University, Thailand, pp. 264-264.
- Apisariyakul, A. and Anantasarn, V. 1984. Pharmacological study of the Thai medicinal plants used as cathartics and antispasmodics, in Abstract 10<sup>th</sup> Congress of Science and Technology Thailand, Chiangmai University Chiangmai, Thailand, pp. 452-453.
- Atal, C.K., Girotra, R.N. and Dhar, K.L. 1966. Occurrence of sesamin in *Piper longum*. *Indian J. Chem.* 4 : 252.
- Atal, C.K., Zutshi, U. and Rao, P.G. 1981. Scientific evidence on the role of ayurvedic herbals on bioavailability of drugs. *J Ethnophar.* 4 : 229-232
- Awouters, F., Megens, A. Verlinden, M., Schuurkes, J., Niemegeers, C. and Janssen, P.A.J.1993. Loperamide : survey of studies on mechanism of its antidiarrheal activity. *Dig. Dis. Sci.* 38:977-995.

- Backer, C.A., Bakhuizen, R.C. and Brink, V.D. 1963. *Piper sarmentosum*. In Flora of Java. N.V.P. Noordhoff-Groningen The Netherland.
- Bajad, S., Bedi, K.L., Singla, A.K. and Johri, R.K. 2001. Antidiarrhoeal activity of piperine in mice. *Planta Med.* 67:284-287.
- Balazs, M., Illye, S. and Vadasz, G. 1989. Mast cells in ulcerative colitis. *Virchows Arch* (cell Patho). 57:353-360.
- Basit, N., Siddiquiz, M.A. and Ahmed, Z. 1977. *In vitro* effect of extracts of *Euphorbia hirta* Linn. on *Entamoeba histolytica*. *Riv. Parasitol.* 38 : 259-262.
- Baum, C.A., Bhatia, B. and Miner, P.B. 1989. Increased colonic mucosal mast cells associated with severe watery diarrhea and microscopic colitis. *Dig. Dis. Sci.* 34:1462-1465.
- Berne, R.M., Levy, M, Koeppen, B.M. and Stanton, B.E. (eds.) 1998a. Gastrointestinal Motility. pp. 589-615. In: Physiology 4<sup>th</sup> ed., Mosby, St. Louis.
- Berne, R.M., Levy, M, Koeppen, B.M. and Stanton, B.E. (eds.) 1998b. Digestion and absorption. pp. 647-674. In: Physiology 4<sup>th</sup> ed., Mosby, St. Louis.
- Berridge, M.J. 1984. A general survey of the mechanism and control of intestinal fluid transport. *Scand. J. Gastroenterol.* 18 (suppl. 87), :43-49.
- Berridge, M.J. and Bootman, M.D. 1997. Calcium signaling. pp.203-221. In: C.H. Henlik and M. Purton (eds.). Signal Transduction, Chapman & Hill, London.
- Bhopale, K.K., Pradhan, K.S., Masani, K.B. and Kaul, C.L. 1995. A comparative study of experimental caecal amoebiasis and the evaluation of amoebicides. *Ann. Trop. Med. Parasitol.* '89 : 253-259.
- Blackwood, A.M. and Bolton, T.B. 1991. Mechanism of carbachol and high K<sup>+</sup> contractions of guinea-pig ileum close to freezing point. *Br. J. Pharmacol.* 102:supp; 160P.

- Bolton, T.B. 1979. Mechanism of action of transmitters and other substances on smooth muscles. *Physiol. Rev.* 59 : 606-718.
- Bolton, T.B. and Zholos, A.V. 1997. Activation of M<sub>2</sub> muscarinic receptors in guinea-pig ileum opens cationic channels modulated by M<sub>3</sub> muscarinic receptors. *Life Sci.* 60:1121-1128.
- Bolton, T.B., Prestwich, S.A., Zholos, A.V. and Gordienko, D.V. 1999. Excitation-contraction coupling gastrointestinal and other smooth muscle. *Annu. Rev. Physiol.* 61:85-115.
- Bost, R.G. 1977. Metronidazole : Mammalian Mutagenicity. In: Finegold, S. M. (ed) McFadzean, J. A., Roe, F.J.C. (assoc. eds) Metronidazole pp.126-131. Proceedings of the International Metronidazole Conference, Montreal, Quebec, Canada, May 26-28, 1976. Excerpta Medica. Princeton, NJ.
- Brading, A.F. and Sneddon, P. 1980. Evidence for multiple sources of calcium for activation of the contractile mechanism of guinea-pig taenia coli on stimulation with carbachol. *Br. J. Pharmacol.* 70:229-240.
- Brandt, H. and Perez Tamayo, R. 1970. Pathology of human amebiasis in human pathology, pp. 351-385.
- Bray, J.J., Cragg, P.A., DC Macknight, A. and Mills, R.G. 1999. Digestive System. In : Lecture Notes on Human Physiology (4<sup>th</sup> ed), pp. 468-511. Blackwell Science.
- Bray, R.S. and Harris, W.G. 1977. The epidemiology of infection with *Entamoeba histolytica* in the Gambia West Africa. *Trans. R. Soc. Trop. Med. Hyg.* 71 : 401-404.
- Brown N.J. and Robert, II, L.J. 2001. Histamine, bradykinin, and their antagonists. pp.645-667. In: G. Hardman and L.E. Limbird (eds.), Goodman and Gilman's The Pharmacological Basis of Therapeutics, McGraw-Hill, New York.
- Brown, D.R. 1992. Antidiarrheal drugs; pharmacologic control of intestinal hypersecretion. pp.1083-1091. In: P.L. Munson, R.A. Mueller and

- G.R. Breese (eds.), Principles of Pharmacology, Chapman & Hall, New York.
- Burchard, G.D. and Mirelman, D. 1988. *Entamoeba histolytica*: virulence potential and sensitivity to metronidazole and emetine of four isolates possessing nonpathogenic zymodemes. *Exp. Parasitol.* 66 : 231-242.
- Brunton, L.L. 1996. Agents affecting gastrointestinal water flux and motility; emesis and antiemetic; bile acids and pancreatic enzymes. Pp. 917-936. In : G. Hardman and L.E. Limbird (eds.), Goodman and Gilman's The Pharmacological Basis of Therapeutics, McGraw-Hill, New York.
- Carl, A., Lee, H.K. and Sanders, K.M. 1995. Regulation of ion channels in smooth muscles by calcium. *Am. J. Physiol.* 40:C9-C34.
- Cassuto, J., Jodal, M., Turtle, R. and Lundgren, O. 1982. 5-Hydroxytryptamine and cholera secretion, physiological and pharmacological studies in cats and rats. *Scand. J. Gastroenterol.* 17:695-703.
- Caulfield, M.P. and Birdsall, N.J.M. 1998. International Union of Pharmacology. XVII. Classification of muscarinic acetylcholine receptors. *Pharmacol. Rev.* 50 : 279-290.
- Chang, E.B., Brown, D.R., Wang, N.S. and Field, M. 1984. Loperamide selectivity inhibits peptide-induced Cl<sup>-</sup> secretion and calcium entry in gut. *Gastroenterol* 86:1044A.
- Chatgidakis, C.B. 1953. The pathology of hepatic amoebiasis as seen on the Witwatersrand. *S. Afr. J. Clin. Sci.* 4 : 30.
- Chatterjee, A. and Dutta, C.P. 1966. Structure of piperlonguminine, an alkaloid of *Piper longum*. *Tetrahedron Lett.* 16 : 1,797-1,800.
- Chatterjee, A. and Dutta, C.P. 1967. Alkaloids of *Piper longum*. I. Structure and synthesis of piperlongumine and piperlonguminine. *Tetrahedron.* 23 : 1,769-1,781.

- Chen, X.-L. and Rembold, C.M. 1992. Cyclic nucleotide-dependent regulation of  $Mn^{2+}$  influx,  $[Ca^{2+}]_i$ , and arterial smooth muscle relaxation. *Am. J. Physiol.* 263: C468-C473.
- Chitravanshi, V.C., Singh, A.P., Ghoshal, S., Krishna Prasad, B.N., Srivastava, V. and Tandon, J.S. 1992. Therapeutic action of *Nyctanthes arbor-tristis* against caecal amoebiasis of rat. *Int. J. Pharmacog.* 30 : 71-75.
- Choudhuri, G., Prakash, V, Kumar, A., Shahi, S.K. and Sharma, M. 1991. Protective immunity to *Entamoeba histolytica* infection in subjects with anti-amoebic antibodies residing in a hyperendemic zone. *Scand. J. Infect. Dis.* 23 : 771-776.
- Cole, O.F. 1985. Pharmacological studies of piperine; I. effects of piperine on transmural nerve stimulation. *Planta Med.* 81:153-156.
- Cole, W.C., Carl, A. and Sanders, K.M. 1989. Muscarinic suppression of  $Ca^{2+}$ -dependent K current in colonic smooth muscle. *Am. J. Physiol.* 257:C596-C600.
- Cornner, T.H., Stoeckel, M., Evrard, J and Legator, M.S. 1977. The contribution of metronidazole and two metabolites to the mutagenic activity detected in urine of treated humans and mice. *Cancer Res.* 37 : 629-633.
- Cosar, C. and Julou, L. 1959. Activity de 1 (hydroxy-2-ethyl)-1-methyl-2-nitro-5-imidazole (8823 R.P.) vis-a-vis des infections experimentales a *Trichomonas vaginalis*. *Ann. Inst. Pasteur.* 96 : 238-241.
- Costa, M. and Furness, J.B. (1979). The sites of action of 5-hydroxytryptamine in nerve-muscle preparations from the guinea-pig small intestine and colon. *Br. J. Pharmacol.* 65:237-248.
- Dar, M.S., Ikram, M. and Fakouhi, T. 1976. Pharmacology of *Quercus infectoria*. *J. Pharm. Sci.* 65 : 1,791-1,794.

- Das, B., Kashinatham, A. and Madhusadhan, P. 1998. Studies on phytochemicals. XXI. One new and two rare alkamides from two samples of the fruits of *Piper longum*. *Nat. Prod. Sci.* 4 :23-25.
- Das, B., Kashinatham, A. and Srinivas, K.V.N.S. 1996. Alkamides and other constituents of *Piper longum*. *Planta. Med.* 62 : 582.
- Dessy, D. and Godfraind, T. 1996. The effect of L-type calcium channel modulators on the mobilization of intracellular calcium stores in guinea-pig intestinal smooth muscle. *Br. J. Pharmacol.* 119:142-148.
- Diener, M., Knobloch, S.F. and Rummel, W. 1988. Action of loperamide on neuronally mediated and  $Ca^{2+}$ - or cAMP-mediated secretion in rat colon. *Eur. J. Pharmacol.* 152:217-225.
- Donowitz, M. 1983.  $Ca^{2+}$  in the control of active intestinal Na and Cl transport : involvement in neurohumoral action. *Am. J. Physio.* 245 : 6,165-6,177.
- Dutta, C.P. and Rao, V.K. 1966. Use of bovine serum as a substitute for horse serum for growing *Entamoeba histolytica* in modified Boeck and Drobohalv medium. *Indian J. Microb.* 6 : 83-86.
- Dutta, C.P., Banerjee, N. and Roy, D.N. 1975. Genus Piper. III. Lignans in the seed of *Piper longum*. *Phytochem.* 14 : 2,090-2,091.
- Eglen, R.M., Hegde, S.S. and Watson, N. 1996. Muscarinic receptor subtypes and smooth muscle function. *Pharmacol. Rev.* 48:531-565.
- Eglen, R.M. 2001. Muscarinic receptors and gastrointestinal tract smooth muscle function. *Life Sci.* 68:2573-2578.
- Eglen, R.M., Reddy, H., Watson, N. and Challiss, R.A. 1994. Muscarinic acetylcholine receptor subtypes in smooth muscle. *Trends Pharmacol. Sci.* 15:114-119.
- Faber, J.E. 2003. Cell physiology of smooth muscle cells (on line). Available:<http://www.med.unc.edu/wrkunits/2depts/physiol/Faber>

%20documents/3-SMOOTH MUSCLE Syllabus.doc [1 February 2004]

- Farnsworth, N.R. and Bunyapraphatsan, N.B. 1992. *Piper retrofractum* Vahl. In :Thai medicinal plants recommended for primary health care systems, pp. 193-196, Prachachon Co, Ltd. Bangkok.
- Farrugia, G. 1999. Ionic conductances in gastrointestinal smooth muscles and intestinal cells of Cajal. *Ann.Rev.Physiol.* 61 :45-84.
- Frankish, N.H. 1983. Verapamil and bepridil on potassium-evoked contracture of guinea-pig ileum. *Br. J. Pharmacol.* 80:610P.
- Freeman, C.D., Klutman, N.E. and Lamp, K.C. 1997. Metronidazole? therapeutic review and update. *Drugs.* 54 :679-708.
- Ganong, W.F. 1997. Gastrointestinal function. In: Review of Medical Physiology (18<sup>th</sup> ed). London : Prentice Hall International.
- Ganong, W.F.(ed.) 2001. Excitable tissue : muscle. Pp.62-84. In : Review of Medical physiology 12<sup>th</sup> ed., McGraw-Hill, NewYork.
- Gathiram, V. and Jackson, T.F. 1985. Frequency distribution of *Entamoeba histolytica* zymodemes in a rural South Africa population. *Lancet.* 1 (8431) : 719-721.
- Gathiram, V. and Jackson, T.F. 1987. A longitudinal study of asymptomatic carriers of pathogenic zymodemes of *Entamoeba histolytica*. *S. Afr. Med. J.* 72 : 669-672.
- Gershon, M.D., Kirchgessner, A.L. and Wade, P.R.1994. Functional anatomy of the enteric nervous system.pp.382-422. In : L.R.Johnson (ed.), Physiology of the Gastrointestinal Tract, Raven Press, New York.
- Ghoshal, S., Krishna Prasad, B.N. and Laksmi, V. 1996. Antiamoebic activity of *Piper longum* fruits against *Entamoeba histolytica* *in vitro* and *in vivo*. *J. Ethnopharmacol.* 50 : 167-170.
- Godfraind, T., Miller, R. and Wibo, M. 1986. Calcium antagonism and calcium entry blockade. *Pharmacol. Rev.* 38 : 321-416.

- Gong, M.C., Kinter, M.T., Somlyo, A.V., and Somlyo, A.P. 1995. Arachidonic acid and diacylglycerol release associated with inhibition of myosin light chain dephosphorylation in rabbit smooth muscle. *J. Physiol.* 486: 113-122
- Grider, J.R. and Makhlouf, G.M. 1988. Contraction mediated by  $Ca^{2+}$  release and  $Ca^{2+}$  influx in longitudinal muscle cells. *J. Pharmacol. Exp. Ther.* 244:432-437.
- Griffin, J.L. and Juniper, K. Jr. 1971. Ultrastructure of *Entamoeba histolytica* from human amoebic dysentery. *Arch Pathol.* 91 : 271-280.
- Guerrant, R.L., Brush, J. and Ravdin, J.I. 1981. Interaction between *Entamoeba histolytica* and human polymorphonuclear neutrophils. *J. Infect. Dis.* 143 : 83-93.
- Guyton, A.C. and Hall, J.E. 1996. General principles of gastrointestinal function-motility, nervous control, and blood circulation. In : Textbook of Medical Physiology (9<sup>th</sup> ed), pp. 793-851, London : Philadelphia.
- Healy, G.R. 1988. Diagnostic techniques for stool samples. In : Ravdin, J.I. (ed). Amebiasis : Human Infection by *Entamoeba histolytica*. pp. 635-649, New York : Churchill Livingstone.
- Heinrich, M., Rimpler, H. and Barrera, N.A. 1992. Indigenous phytotherapy of gastrointestinal disorders in a lowland Mixe community (Oaxaca, Mexico): ethnopharmacologic evaluation. *J. Ethnopharmacol.* 36:63-80.
- Heykants, J., Michiels, M., Knaeps, A. Brugmans, J. 1974. Loperamide (R 18 553), a novel type of antidiarrheal agent. Part5: The pharmacokinetics of loperamide in rats and man. *Arzneim-Forsch* 24:1649-1653.
- Hill, S.J., Ganellin, C.R., Timmerman, H., Schwartz, J.C., Schankley, N.P., Young, J.M., Schunack, W.J., Levi, R. and Hass, H.L. 1997. International Union of Pharmacology. XIII. Classification of histamine receptors. *Pharmacol. Rev.* 49 : 253-278.



- Honda, H., Iwata, T., Takagi, S. and Bando, K. 1994. Comparative effects of loperamide hydrochloride prostaglandin E<sub>1</sub>-induced contraction in isolated fundus and ileum of guinea pigs. *Comp. Biochem. Physiol.* 107:259-263.
- Horowitz, A., Menice, C.B., Laporte, R. and Morgan K.G. 1996. Mechanisms of smooth muscle contraction. *Physiol. Rev.* 76:967-1003.
- Hossain, M.M., Ljungstrom, I.; Glass, R.I., Lundin, L., Stoll, B.J. and Huldt, G. 1983. Amoebiasis and giardiasis in Bangladesh : parasitological and serological studies. *Tran. R. Soc. Trop. Med. Hyg.* 77 : 552-554.
- Hoyer, D., Clarke, D.E., Fozard, J.R., Hartic, P.R., Martin, G.R., Mylecharne, E.J., Saxena, P.R. and Humphrey, P.P. 1994. International union of pharmacology classification of receptor for 5-hydroxytryptamine (serotonin). *Pharmacol. Rev.* 46 : 157-203.
- Hurwitz, L., McGuffee, L.J., Little, S.A. and Blumberg, H. 1980. Evidence for two distinct types of potassium-activated calcium channels in an intestinal smooth muscle. *J. Pharmacol. Exp. Ther.* 214:574-580.
- Hussein, G., Miyashiro, H., Nakamura, N., Hattori, M., Kakiuchi, N. and Shimotohno, K. 2000. Inhibitory effects of Sudanese medicinal plant extracts on Hepatitis C virus (HCV) protease. *Phytother. Res.* 14 : 510-516.
- Hwang, J.K., Kong, T.W., Baek, N.I. and Pyun, Y.R. 2000. Alpha-glucosidase inhibitory activity of hexagalloyglucose from the galls of *Quercus infectoria*. *Plant Med.* 66 : 273-274.
- Ilundain, A. and Naftajin, R.J. 1979. Role of Ca<sup>2+</sup>-dependent regulator protein in intestinal secretion. *Nature.* 279 : 446-448.
- in intestinal smooth muscle of the guinea-pig. *Eur. J. Pharmacol.* 135:69-75.
- Inoue, R. and Isenberg, G. 1990. Acetylcholine activates nonselective cation channels in guinea pig ileum through a G protein. *Am. J. Physiol.* S58:C1173-C1178.

- Itoh, H., Shimamura, A., Okubo, S., Ichikawa, K., Ito, M., Konish, T., and Nakano, T. (1993). Inhibition of myosin light chain phosphatase during  $Ca^{2+}$ -independent vasoconstriction. *Am. J. Physiol.* 265: C1319-C1324.
- Jackson, T.F. 1987. *Entamoeba histolytica* cyst passer-to treat or not to treat. *S. Afr. Med. J.* 72 : 657-658.
- Jackson, T.F., Gathiram, V. and Simjee, A.E. 1985. Seroepidemiological study of antibody responses to the zymodemes of *Entamoeba histolytica*. *Lancet.* 1(8431) : 716-719.
- Jafri, S. and Pasricha, P.J. (2001). Agents used for diarrhea, constipation, and inflammatory bowel diseases; agents used for biliary and pancreatic disease. pp.1037-1058. In : G. Hardman and L.E. Limbird (eds.), Goodman and Gilman's The Pharmacological Basis of Therapeutics, McGraw-Hill, New York.
- Johnson, L.R. (ed.) 1992. Regulation. pp.449-460. In: Gastrointestinal Physiology. Raven Press, New York.
- Johnson, P.J. 1993. Metronidazole and drug resistance. *Parasitol.* 9 : 183-186.
- Jokipii, L. and Jokipii, A.M. 1980. *In vitro* susceptibility of *Giardia lamblia* trophozoites to metronidazole and tinidazole. *J. Infect. Dis.* 141 : 317-325.
- Jones, W.R. 1946. The experimental infection in rats with *Entamoeba histolytica*, with a method for evaluating the anti-amoebic properties of new compounds. *Ann. Trop. Med. Parasitol.* 40 : 130-140.
- Joshi, B.S., Kamat, V.N. and Saksena, A.K. 1968. The structure of pipratine and a synthesis of dihydropipratine. *Tetrahedron. Lett.* 20 : 2,395-2,400.
- Joue, P., Sarna, S.K., Singaram, C., Ryan, R.P., Hillard, C.J., Telford, G.L., Fink, J. and Henderson, J.D. 1995. Immonocytes and abnormal

gastrointestinal motor activity during ilicitis in dogs. *Am. J. Physiol.* 269 : G913-G924.

- Jarumilinta, R. and Maegraith, B.G. 1961. Intestinal amoebiasis associated with amoebic liver abscess produced by intracaecal inoculation of *Entamoeba histolytica* in hamsters. *Ann. Trop. Med. Parasitol.* 55 : 383-388.
- Kamm, K.E. and Stull, J.T. 1989. Regulation of smooth muscle contractile elements by second messengers. *Annu. Rev. Physiol.* 51:299-313.
- Karaki, H., Ozaki, H., Hori, M., Mitsui-Saito, M., Amano, K., Harada, K., Miyamoto, S., Nakazawa, H., Won, K. J. and Sato, K. 1997. Calcium movements, distribution, and functions in smooth muscle. *Pharmacol. Rev.* 49 : 157-230.
- Katzung, B.G. 1997. Antiprotozoal drug. In : Katzung, B.G. (ed.), Basic and Clinical Pharmacology, (7<sup>th</sup> eds), pp. 838-661,. New Jewsey : Printice Hall International.
- Katzung, B.G. and Julius, D.J. 2001. Histamine, serotonin & the ergot alkaloids. pp.265-291. In: B.G. Katzung (ed.), Basic & Clinical Pharmacology, McGraw-Hill, New York.
- Kenakin, T.P. and Beek, D. 1982. A comparison of loperamide to four calcium channel inhibitors on isolated tissues; loperamide as a calcium channel blocker. *The Pharmacologist* 24:193.
- Kirchgessner, A.L., Tamir, H. and Gershon, M.D. 1992. Identification and stimulation by serotonin of intrinsic sensory neurons of the submucous plexus of the guinea pig gut: activity-induced expression of Fos immunoreactivity. *J. Neurosci.* 12:235-248.
- Komori, S., Kawai, M., Takewaki, T. and Ohashi, H. 1992. GTP-binding protein involvement in membrane currents evoked by carbachol and histamine in guinea-pig ileal muscle. *J. Physiol.* 450: 105-126.
- Kotlikoff, M.I., Dhulipala, P. and Wang, Y.X. 1999. M<sub>2</sub> signaling in smooth muscle cells. *Life Sci.* 64:437-442.

- Koul, I.B. and Kapil, A. 1993. Evaluation of the liver protective potential of piperine, an active principle of black and long peppers. *Planta Med.* 59 : 413-417.
- Krogstad, D.J., Spencer, H.C. and Healy, G.R. 1978. Amebiasis: epidemiologic studies in the United States, 1971-1975. *Ann. Int. Med.* 88 : 89-97.
- Kuemmerle, J.F., Murthy, K.S. and Makhlof, G.M. 1994. Agonist-activated, ryanodine-sensitive,  $IP_3$ -insensitive  $Ca^{2+}$ -release channels in longitudinal muscle of intestine. *Am. J. Physiol.* 266: C1421-C1431.
- Kuemmerle, J.F., Murthy, K.S., Grider, J.R., Martin, D.C. and Makhlof, G.M. 1995. Coexpression of 5-HT<sub>2A</sub> and 5-HT<sub>4</sub> receptors coupled to distinct signaling pathways in human intestinal muscle cells. *Gastroenterol* 109:1791-1800.
- Kume, H., Takai, A., Tokuno, H. and Tomoto, T. 1989. Regulation of  $Ca^{2+}$ -dependent  $K^+$ -channel activity in tracheal myocytes by phosphorylation. *Nature* 341 : 152-154.
- Lau, A.H., Lam, N.P., Piscitelli, S.C., Wilkes, L. and Danzinger, L.H. 1992. Clinical pharmacokinetic of metronidazole and other nitroimidazole anti-infectives. *Clin. Pharmacol.* 23 : 328-364.
- Lecci A., Santicioli, P. and Maggi, C.A. 2002. Pharmacology of transmission to gastrointestinal smooth muscle. *Cur Opin. Pharmacol.* 2: 630-641.
- Legator, M.S., Connor, T.H. and Stoeckel, M. 1975. Detection of mutagenic activity of metronidazole and niridazole in body fluids of humans and mice. *Sci.* 188 : 1,118-1,119.
- Leurs, R., Brozius, M., Smit, M.J., Bast, A. and Timmerman H. 1991. Effects of histamine  $H_1$ -,  $H_2$ - and  $H_3$ -receptor selective drugs on the mechanical activity of guinea-pig small and large intestine. *Br. J. Pharmacol.* 102:179-185.
- Levine, N.D., Corliss J.O., Cox F.E., Deroux, G, Grain, J, Honigberg, B.M., Leedale, G.F., Loeblich, A.R. 3 rd, Lom, J., Lynn, D., Merinfeld, E.G.,

- Page, P.C., Poljansky, G., Sprague, V., Vavra, T., Wallace, F.G. 1980. A newly revised classification of the protozoa. *J. Protozool.* 27 (1) : 37-58.
- Li, H., Jia, Z., Zhang, M. and Zhou, J. 1986. Determination of piperine in *Piper longum* L. by HPLC. *Yaowu. Fenxi. Zashi.* 6 : 346-348.
- Likhitwitayawuid, K. Ruangrunsi, N. Lange. G.L. and Decicco, C.P. 1987. Structural elucidation and synthesis of New components Isolated from *Piper sarmentosum*, *Tetrahedon.* 43 (16) : 3689-3694.
- Lockerby, D.L., Rabin, H.R. and Laishley, E.J. 1985. Role of the phosphoroclastic reaction of *Clostridium pasteurianum* in the reduction of the metronidazole. *Antimicrob. Agents Chemother.* 27 : 863-867.
- Lodish, H. , Berk, A., Zipursky, S.L., Matsudaira, P., Baltimore and Darnell, J. (eds.) 1999. Cell motility and shape I: Microfilament. pp.751-794. In: *Molecular Cell Biology.* 4<sup>th</sup> ed. W.H. Freeman and Company, New York.
- Makhlouf, G.M. 1991. Smooth muscle of the gut. In : Yamada, T (ed.). *Textbook of Gastroenterology* pp. 61-84 Philadelphia, PA : J.B. Lippincott.
- Makhlouf, G.M. and Murthy, K.S. 1997. Signal transduction in gastrointestinal smooth muscle. *Cell Signal.* 9:269-276.
- Maltz, G. and Knauer, C.M. 1991. Amoebic liver abscess: a 15-year experience. *Am.J. Gastroenterol.* 86 : 704-710.
- Manavalan, R. and Singh, J. 1979. Chemical and some pharmacological studies on leaves of *Piper longum* Linn. *Indian J. Pharm. Sci.* 41 : 190-191.
- Markell, E.K. and Kuritsubo, R.A. 1981. Intestinal protozoan infections: prevalence in the San Francisco Bay area. *West. J. Med.* 135 : 188-190.
- Martinole, J.P., Garcia-Villar, R., Fioramonti, J. and Bueno, L. 1997. Altered contractility of circular and longitudinal muscle in TBNS-inflamed guinea pig ileum. *Am. J. Physiol.* 272: G1258-G.1267.

- Masuda, T., Inazumi, A., Yamada, Y., Padolina, W.G., Kikuzaki, H. and Nakatani, N. 1991. Antimicrobial phenylpropanoids from *Piper sarmentosum*. *Phytochem.* 30 : 3,227-3,228.
- Masuo, M., Reardon, S., Ikebe, M. and Kitawaza, T. (1994). A novel mechanism for the  $Ca^{2+}$ -sensitizing effect of protein kinase C on vascular smooth muscle: inhibition of myosin light chain phosphatase. *J. Gen. Physiol.* 104:265-286.
- Mathur, T.N. and Kaur, J. 1973. The Frequency of excretion of cysts of *Entamoeba histolytica* in known cases of non-dysenteric amoebic colitis based on 21 stool examinations. *Indian J. Med. Res.* 61 : 330-334.
- McDaniel, N.L., Chen, X.L., Singer, H.A., Murphy, R.A. and Rembold, C.M. 1992. Nitrovasodilators relax arterial smooth muscle by decreasing  $[Ca^{2+}]$  and uncoupling stress from myosin phosphorylation. *Am. J. Physiol.* 263 : C461-C467.
- Meldolesi, J. and Pozzan, T. 1987. Pathways of  $Ca^{2+}$  at the plasma membrane : voltage-, receptor-, and second messenger-operated channels. *Exp. Cell Res.* 171 : 271-283.
- Miller-Hance, W.C., Miller, J.R., Wells, J.N., Stull, J.T. and Kamm, K.E. 1988. Biochemical events associated with activation of smooth muscle contraction. *J. Biol. Chem.* 263:13979-13982.
- Morel, N., Hardy, J.P. and Godfraind, T. 1987. Histamine-operated calcium channels in intestinal smooth muscle of the guinea-pig. *Eur.J. Pharmacol.* 135 : 69-75.
- Morgan, I. 1978. Metronidazole treatment in pregnancy. *Int. J. Gynecol. Obs.* 15 : 501-502.
- Morini, G., Kuemmerle, J.F., Impicciatore, M., Grider, J.R. and Makhoulf, G.M. 1993. Coexistence of histamine  $H_1$  and  $H_2$  receptors coupled to distinct signal transduction pathways in isolated intestinal muscle cells. *J. Pharmacol. Exp. Ther.* 264:598-603.

- Muller, M. 1981. Action of clinically utilized 5-nitroimidazoles on microorganisms. *Scand. J. Infect. Dis.* 26 (Suppl.) : 31-41.
- Murthy, K.S. and Makhlouf, G.M. 1995. Interaction of cA-kinase and cG-kinase in mediating relaxation of dispersed smooth muscle cells. *Am. J. Physiol.* 268:C171-C180.
- Murthy, K.S., Grider, J.R. and Makhlouf, G.M. 1991. InsP<sub>3</sub>-dependent Ca<sup>2+</sup> mobilization in circular but not longitudinal muscle cells of intestine. *Am. J. Physiol.* 261:G937-G944.
- Murthy, K.S., Severi, C., Grider, J.R. and Makhlouf, G.M. 1993. Inhibition of IP<sub>3</sub> and IP<sub>3</sub>-dependent Ca<sup>2+</sup> mobilization by cyclic nucleotides in isolated gastric muscle cells. *Am. J. Physiol.* 264:G967-G974.
- Nadar, T.S. and Pillai, M.M. 1989. Effect of ayurvedic medicines on beta-glucuronidase activity of Brunners glands during recovery from cysteamine-induced duodenal ulcers in rats. *Indian J. Exp. Biol.* 27 : 959-962.
- Nahorski, S.R., Tobin, A.B. and Willars, G.B. 1997. Muscarinic M<sub>3</sub> receptor coupling and regulation. *Life Sci.* 60:1039-1045.
- Najib Nik A., Rahman, N., Furuta, T., Kojima, S., Takane, K. and Ali Mohd, M. 1999. Antimalarial activity of extracts of Malaysian medicinal plants. *J. Ethnopharmacol.* 64 : 249-254.
- Nanda, R., Baveja, U. and Anand, B.S. 1984. *Entamoeba histolytica* cyst passers : clinical features and outcome in untreated subjects. *Lancet.* 2 : 301-303.
- Nathan, R.D. (2003). Human Physiology 5302 Nathan Chapter IX-Muscle (on line). Available: <http://www.ttuhsc.edu/SOM/physiology/courses/HumanPhysiology/Nathan/HumanPhysiologyMuscle.pdf> [12 January 20 04]
- Neal, R.A. 1951. Some observations on the variation of virulence and response to chemotherapy of strains of *Entamoeba histolytica* in rats. *Trans. R. Soc. Trop. Med. Hyg.* 44 : 439-452.

- Neal, R.A. and Harris, W.G. 1977. Attempts to infect inbred strains of rats and mice with *Entamoeba histolytica*. *Protozool.* 3 : 197-199.
- Neal, R.A. and Vincent, P. 1955. Strain variation in *Entamoeba histolytica*. I. correlation of invasiveness in rats with the clinical history and treatment of experimental infections. *Parasitol.* 45 : 152.
- Niamsa, N. and Chantrapromma, K. 1983. Chemical constituents isolate from *Piper sarmentosum* Roxb. *Songkhlanakarin Sci Tech.* 5(2) : 151-152
- Nigam, S.S. and Radhakrishnan, C. 1968. Chemical examination of the essential oil derived from the berries of *Piper longum*. *Bull. Nat. Inst. Sci. India.* 37 : 189-196.
- Nishizawa, M., Yamagishi, T., Nonaka, G.I. and Nishioka, I. 1983. Tannins and related compounds, part 9, isolation and characterization of polygalloylglucose from Turkish galls (*Q. infectoria*). *J. Chem. Soc. Perkin. Trans.* 5 : 961-965.
- Oh, S.T., Yedidag, E., Conklin, J.L., Martin, M. and Bielefeldt, K. 1997. Calcium release from intracellular stores and excitation-contraction coupling in intestinal smooth muscle. *J. Surg. Res.* 71:79-86.
- Owen, D.G. 1985. A mouse model for *Entamoeba histolytica* infection. *Lab. Animals.* 19 : 297-304.
- Pacaud, P. and Bolton, T.B. 1991. Relation between muscarinic receptor cationic current and internal calcium in guinea-pig jejunal smooth muscle cells. *J. Physiol.* 441:447-499.
- Petri, W.A. Jr and Mann, B.J. 1993. Molecular mechanisms of invasion by *Entamoeba histolytica*. *Sem. Cell Biol.* 4 : 305-313.
- Peungvicha, P., Thirawarapan, S.S., Temsiririrkkul, R., Watanabe, H., Kumar Prasain, J. and Kadota, S. 1998. Hypoglycemic effect of the water extract of *Piper sarmentosum* in rats. *J. Ethnopharmacol.* 60 : 27-32.
- Phillips, B.P., Diamond, L.S., Bartgis, I.L., Stuppler, S.A., 1972. Results of intracaecal inoculation of germfree and conventional ginea pigs and



germfree rats with axenically cultivated *Entamoeba histolytica*. *protozoo.* 19: 498-499.

- Phillips, B.P. 1973. *Entamoeba histolytica* : Concurrent irreversible loss of infectivity/pathogenicity and encystment potential after prolonged maintenance in axenic culture *in vitro*. *Exp Parasitol.* 34 : 163-167.
- Pittman, F.E., El-Hashimi, W.K. and Pittman, J.C. 1973. Studies of human amoebiasis. II. light and electron-microscopic observations of colonic mucosa and exudate in acute amoebic colitis. *Gastroenterol.* 65 : 588-603.
- Piyachaturawat, P., Glinsukon, T. and Peungvicha, P. 1982. Postcoital antifertility effect of piperine. *Contracep.* 26 : 625-633.
- Piyachaturawat, P., Sriwattana, W., Damrongphol, P. and Pholpramool, C. 1991. Effects of piperine on hamster sperm capacitation and fertilization *in vitro*. *Int. J. Androl.* 14 : 283-290.
- Pongmarutai, M. 1980. M.Sc. Thesis, Mahidol University Bangkok.
- Prathap, K. and Gilman, R. 1970. The histopathology of acute intestinal amoebiasis. *Am J. Pathol.* 60 : 229-239.
- Rang, H.P., Dale, M.M. and Ritter, J.M. (eds.) 1999. The vascular system. p.278-300. In : Pharmacology. 4<sup>th</sup> ed. Churchill Livingstone, Edinburgh.
- Ravdin, J.I. and Petri, W.A., Jr 1995. *Entamoeba histolytica* (amebiasis). In : W.A.Mandell, G.L., Bennett, J.E. and Dolin, R. (eds.). Principles and practice of infectious disease. (4<sup>th</sup> eds), pp. 2,395-2,408, New York, Churchill Livingstone.
- Ravdin, J.I., Murphy, C.F. and Salata, R.A. 1985. The *N-acetyl*-D-galactosamine-inhibitable adherence lectin of *Entamoeba histolytica*. I. Partial purification and relation to amoebic virulence *in vitro*. *J. Infect. Dis.* 151 : 804-815.
- Ravdin, R. 1995. Amebiasis. *Clin. Infect. Dis.* 20 : 1,453-1,466.

- Ray, D.K. and Chatterjee, D.K. 1981. Caecal amoebiasis in albino mice-an experimental model. *Ann. Trop. Med. Parasitol.* 75 : 255-256.
- Rees, C.W., Taylor, D.J. and Reardon, L.V. 1954. The presence of *Entamoeba histolytica* in the liver of guinea-pigs with experimental intestinal amoebiasis. *J. Parasitol.* 40 : 390-391.
- Reitz, M., Rumpf, M. and Knitza, R. 1991. DNA single-strand breaks in lymphocytes after metronidazole therapy. *Arz.-Fors.* 41 : 155-156.
- Reynolds, I.J., Gould, R.J. and Snyder, S.H. 1984. Loperamide : blockade of calcium channels as a mechanism for antidiarrheal effects. *J. Pharmacol. Exp. Ther.* 231 : 628-632.
- Reynolds, I.J., Gould, R.J. and Snyder, S.H. 1984. Loperamide: Blockade of calcium channels as a mechanism for antidiarrheal effects. *J. Pharmacol. Exp. Ther.* 231:628-632.
- Rhodes, J.M. and Tsai, H.H. 1995. Diarrhoea in clinical problems. In : *Gastroenterology*. pp. 63-100, Mosby Wolfe, Italy.
- Riditid, W., Rattanaprom, W., Thaina, P., Chittrakarn, S., and Sanbhanich, M. 1998. Neuromuscular blocking activity of methanolic extract of *Piper sarmentosum* leaves in the rat phrenic nerve-hemidiaphragm preparation. *J. Ethnopharmacol.* 61 : 135-142.
- Roe, F.J.C. 1977. Metronidazole : review of uses and toxicity. *J. Antimicrob. Chem.* 3 : 205-212.
- Roe, F.J.C. 1979. A critical appraisal of the toxicity of metronidazole. In : Phillips, I., Collier, J.(eds), *Metronidazole., Proceedings of the 2<sup>nd</sup> international symposium on anaerobic infections, Geneva, April 25-27.* pp. 215-222, Royal Society of Medicine, Academic Press, London : Grune and Stratton, New York.
- Rustia, M. and Shubik, P. 1972. Induction of lung tumors and malignant lymphomas in mice by metronidazole. *J. Nat. Can. Inst.* 48 : 721-729.

- Salata, R.A. and Ravdin, J.I. 1985. The *N-acetyl-D-galactosamine*-inhibitable adherence lactin of *Entamoeba histolytica*. II. Mitogenicity for human lymphocytes. *J. Infect. Dis.* 151 : 816-822.
- Samueli, F., Bonabello, A. and Grassi, A. 1984. Antagonistic activity of verapamil and diltiazem against different smooth muscle stimuli. *Arzeimittelforschung* 34:181-184.
- Sander-Bush, E. and Mayer S.E. 2001. 5-Hydroxytryptamine (serotonin): receptor agonists and antagonists. p.269-290. In : G. Hardman and L.E. Limbird (eds.), Goodman and Gilman's The Pharmacological Basis of Therapeutics, McGraw-Hill, New York.
- Sato, K., Sanders, K.M., Gerthoffer, W.T. and Publicover, N.G. 1994. Sources of calcium utilized in cholinergic responses in canine colonic smooth muscle. *Am. J. Physiol.* 36:C1666-C1673.
- Sawangaroen, N., Luke, R. and Prociw, P. 1993. Diagnosis by faecal culture of *Dientamoeba fragilis* infections in Australian patients with diarrhoea. *Trans. R. Soc. Trop. Med. Hyg.* 87 : 163-165.
- Saxena, A., Chugh, S. and Vinayak, V.K. 1985. Modulation of host immune responses by metronidazole. *Indian J. Med. Res.* 81 : 387-390.
- Sengmak, K. 2003. *In vitro* effect of some medicinal plants against intestinal protozoa (*Entamoeba histolytica* and *Blastocystis hominis*). Master of Science Thesis in Microbiology, Prince of Songkhla University.
- Shah, A.H., Al-Shareef, A.H., Ageel, A.M. and Qureshi, S. 1998. Toxicity studies in mice of common spices, *Cinnamomum zeylanicum* bark and *Piper longum* fruits. *Plant Foods. Hum. Nutr.* 52 : 231-239.
- Shankaracharya, N.B., Rao, L.J. Naik, J.P. And Nagalakshmi, S. 1997. Characterization of chemical constituents of Indian long pepper (*Piper longum* L.). *J Food. Sci. Technol.* 34 : 73-75.
- Shubik, P. 1972. Current status of chemical carcinogen. *Proceed Nat. Sci.* 69 : 1052-1055.

- Shulman, S.T., Phair, J.P., Peterson, L.R. and Warren, J.R. 1997. Common intestinal parasitic infections. In : The Biologic and Clinical Basis of infectious Disease, (5<sup>th</sup>) pp.263-270,. Philadelphia.
- Sigeti, J.S., Guiney, D.G. and Davis, C.E. 1983. Mechanism of action of metronidazole on *Bacteroides fragilis*. *J. Infect. Dis.* 148 : 1,083-1,089.
- Sims, S.M., Sigger, J.J. Walsh, J.V. Jr. 1985. Cholinergic agonist suppresses a potassium current in freshly dissociated smooth muscle cells of the toad. *J. Physiol.* 367:503-529.
- Sohni, Y.R. and Bhatt, R.M. 1996. Activity of a crude extract formulation in experimental hepatic amoebicidal and in immunomodulation studies. *J. Ethnopharmacol.* 54 : 119-124.
- Sohni, Y.R., Kaimal, P. and Bhatt, R.M. 1995. The antiamebic effect of a crude drug formulation of herbal extracts against *Entamoeba histolytica* *in vitro* and *in vivo*. *J. Ethnopharmacol.* 45 : 43-52.
- Somlyo, A.P. and Somlyo, A.V. 1994. Signal transduction and regulation in smooth muscle. *Nature* 372: 231-236.
- Stanley S.L., Jr. 1997. Progress towards development of a vaccine for amebiasis. *Clin. Microb. Rev.* 10 : 637-649.
- Sudan, E.H., Camera, G.M., Krup, I.M. and Allain, D.S. 1950. Effect of single inocula of *Entamoeba histolytica* trophozoites in guinea-pigs. *Proc. Soc. Exp. Biol.* 73 : 362.
- Symposium (Various authours.) 1977. Proceedings of the international metronidazole conference, International Congress series. No. 438 (Finegold, S.M., ed.) Excerpta Medica : Amsterdam.
- Takeuchi, A. and Phillips, B.P. 1975. Electro microscopic studies of experimental *Entamoeba histolytica* infection in the guinea-pig. I. Penetration of the intestinal epithelium by trophozoites. *Ann. J. Trop. Med. Hyg.* 24 : 34-48.

- Taylor, D.J., Greenberg, J., Highman, B. and Coatney, G.R. 1950. Experimental infection of guinea-pigs with *Entamoeba histolytica*. *Am.J. Trop. Med.* 30 : 817-828.
- Tracy, J.W. and Webster, L.T. 1996. Drugs used in the chemotherapy of protozoal. In Goodman, L.S. and Gilman, A.G (eds.) *The pharmacological Basis of Therapeutics*, (9<sup>th</sup> ed.), pp. 987-1,008, New York : Pergamon.
- The Staff of the Department of Pharmacology, University of Edinburgh 1970. In : *Pharmacological Experimental on Isolated Preparation*, pp. 112-115.
- Triggle, C.R., Swamy, V.C. and Triggle, D.J. 1979. Calcium antagonists and contractile responses in rat vas deferens and guinea pig ileal smooth muscle. *Can. J. Physiol. Pharmacol.* 57:804-818.
- Tripathi, D.M., Gupta, N., Lakshmi, V., Saxena, K.C. and Agrawal, A.K. 1999. Antigiardial and immunostimulatory effect of *Piper longum* on giardiasis due to *Giardia lamblia*. *Phytother. Res.* 13 : 561-565.
- Tsutsumi, V., Mena-lopez, R. and Anaya-Velazquez, F. 1984. Cellular basis of experimental amoebic liver abscess formation. *Am. J. Pathol.* 117 : 81-91.
- van Breeman, C. and Saida K. 1989. Cellular mechanisms regulating  $[Ca^{2+}]_i$  smooth muscle. *Ann. Rev. Physiol.* 51:315-329.
- van Nueten J.M., Helsen, L., Michiels, M. and Heykants, J.J.P. 1979. Distribution of loperamide in the intestinal wall. *Biochem. Pharmacol.* 28:1433-1434.
- van Steenis, C.G. 1975. *Quercus* in flora Malasiana botanical garden of Indonesia, pp. 385-389.
- van Zwet, A.A., Thijs, J.C., Schievink-de Vries, W., Schiphuis, J. and Snijder, J.A.M. 1994. *In vitro* studies on stability and development of metronidazole resistance in *Helicobacter pylori*. *Antimicrob. Chem.* 38 : 360-362.

- Varma, N., Srivastava, V., Tandon, J.S., Krishna Prasad, B.N. and Chitravanshi, V.C. 1990. Effect of *Coleus forskohlii* against caecal amoebiasis of rats. *Int. J. Crude Drug R.* 28 : 1-3.
- Voogd, C.E., van der Stel, J.J. and Jacobs, J.J. 1974. The mutagenic action of nitroimidazole. Imetronidazole, nimorazole, dimetridazole and ornidazole. *Mut Res.* 26 : 483-490.
- Walsh, J.A. 1986. Problems in recognition and diagnosis of amebiasis: estimation of the global magnitude of morbidity and mortality. *Rev. Inf. Dis.* 8 : 228-238.
- Walsh, J.A. 1988. Prevalence of *Entamoeba histolytica* infection. In : J I Ravdin (ed.), Amebiasis : human infection by *Entamoeba histolytica*, pp. 93-105, John Wiley and Sons : New York.
- Williams, G.A.H. 1959. Experimental hepatic amoebiasis and its application to chemotherapeutic studied. *Bri. J. Pharm. Chem.* 14 : 488-492.
- Yagasaki, O., Suzuki, H. and Sohji, Y. 1978. Effects of loperamide on acetylcholine and prostaglandin release from isolated guinea pig ileum. *Jpn. J. Pharmacol.* 28:873-882.
- Yang, L.Q., Singh, M., Yap, E.H., Ng, G.C., Xu, H.X. and Sim, K.Y. 1996. *In vitro* response of *Blastocystis hominis* against traditional Chinese medicine. *J. Ethnopharmacol.* 55 : 35-42.
- Zavec, J.H., Jackson, T.E., Limp, G.L. and Yellin, T.O. 1982. Relationship between antidiarrheal activity and binding to calmodulin. *Eur. J. Pharmacol.* 78:375-377.
- Zhang, K., Chen, C., Wang, D. and Wu, Y. 1996. A new amide dimer from *Piper longum*. *Yunnan Zhiwu. Yanjiu.* 18 : 353-355.