

## References

- Auchair B., Berning S.E., Huitt G.A. and Peloquine C.A. 1999. Potential interaction between itraconazole and clarithromycin. *Pharmacotherapy* 19(12): 1439-1444.
- Auprayoon P., Sukontason K., Na-bangchang K., Banmairuoi V., Molunto P. and Karbwang J. 1995. Pharmacokinetics of quinine in chronic liver disease. *Br J Clin Pharmacol* 40: 494-497.
- Backman J.T., Kivistö K.T., Olkkola K.T. and Neuvonen P.J. 1998. The area under the concentration-time curve for oral midazolam is 400-fold larger during treatment with itraconazole than with rifampicin. *Eur J Clin Pharmacol* 54: 53-58.
- Bailey E.M., Krakovsky D.J. and Rybak M.J. 1990. The triazole antifungal agents: a review of itraconazole and fluconazole. *Pharmacotherapy* 10: 136-153
- Baldwin S.J., Bloomer J.C., Smith G.I., Ayrton A.D., Clarke S.E., 1995. Ketoconazole and sulphaphenazole as the respective selective inhibitors of P4503A and 2C9. *Xenobiotica* 25: 261-270.

- Barone J.A., Koh J.G., Bierman R.H., Colaizzi J.L., Swanson K.A., Gaffar M.C., Moskovitz B.L., Mechlinski W. and van de Velde V. 1993. Food interaction and steady-state pharmacokinetics of itraconazole capsules in healthy male volunteers. *Antimicrob Chemother* 37(4): 778-784.
- Barrow S.E., Taylor A.A., Horming E.C., Horming M.G. 1980. High performance liquid chromatographic separation and isolation of quinidine and quinine metabolism in rats urine. *J Chromatogr* 181: 219-266.
- Bastos F.L., Barcellos C., Lowndes C.M. and Friedman S.R. 1999. Coinfection with malaria and HIV in injecting drug users in brazil: a new challenge to public health?. *Addiction* 94: 1165-1174.
- Batt A.M., Magdalou J., Vincent-Viry M., Ouzzine M., Fournel-Gigleux S., Galteau M.M and Siest G. 1994. Drug metabolizing enzymes related to laboratory medicine: cytochromes P-450 and UDP-glucuronosyltransferases. *Clin Chim Acta* 226(2): 171-190.
- Bennett J.E. 1996. Antifungal agents. In: *Goodman and Gilman's the Pharmacological Basis of Therapeutics*. 9<sup>th</sup> ed, Hardman *et al*, eds, pp. 1175-1190. New York, Pergamon Press.

Birkett D.J. 1991. Bioavailability and first pass clearance. *Australian Prescriber* 14(1) : 14-16.

Boelaert J., Schurges M., Matthys E., Daneels R., Van Peer A., De Beule K., Woestenborghs R. and Heykants J. 1988. Itraconazole pharmacokinetics in patients with renal dysfunction. *Antimicrob Chemother* 32: 1595-1597.

Boland M.E., Brennan Roper S.M. and Henry J.A. 1985. Complications of quinine poisoning. *Lancet* 16: 384-385.

Brass C., Galgiani J., Blaschke T.F., Defelice R., O'Reilly R.A. and Stevens D.A. 1982. Disposition of ketoconazole, an oral antifungal, in humans. *Antimicrob Chemother* 21(1): 151-158.

Brown M.W., Maldonado A.M., Meredith C.G. and Speeg K.V. 1984. Effect of ketoconazole on the hepatic oxidative drug metabolism. *Clin Pharmacol Ther* 37(3): 290-297.

Cauwenbergh G., De Doncker P., Stoops K., De Dier A-M., Goyvaerts H. and Schuermans V. 1987. Itraconazole in the treatment of human mycoses: Review of three years of clinical experience. *Rev Infect Dis* 9 (suppl 1): s146-s152.

Correia, M.A. 1998. Drug Biotransformation. In *Basic and Clinical Pharmacology*. Katzung, B.G., ed 7<sup>th</sup> pp 50-51. New Jersy : Prentice-Hall Internation Inc.

Crane J.K. and Shih H-T. 1993. Syncope and cardiac arrhythmia due to an interaction between itraconazole and terfinadine. *Am J Med* 95:445-446.

Cupp M.J. and Tracy T. 1998. Cytochrome P450: New nomenclature and clinical implications. *American Family Physician* 57(1): 107-116.

Damkier P., Hansen L.L. and Brosen K. 1999. Effect of diclofenac, disulfiram, itraconazole, grapefruit juice and erythromycin on the pharmacokinetics of quinidine. *Br J Clin Pharmacol* 48: 829-830.

Daneshmend T.K., Warnock D.W., Turner A., Roberts C.J.F. 1981. Pharmacokinetics of ketoconazole in normal subjects. *J Antimicrob Chemother* 8: 299-304.

Danneshmend T.K., Warnock D.W., Enu M.D., Johnson E.M., Parker G., Richardson M.D. and Roberts C.J. 1983. Multiple dose pharmacokinetics of ketoconazole and their effects on antipyrine kinetics in man. *J Antimicrob Chemother* 12:185-188.

Daneshmend T.K. and Warnock D.W. 1988. Clinical pharmacokinetics of ketoconazole. *Clin Pharmacokinet* 14:13-34.

Davis T.M.E., White N.J., Looareesuwan S., Silamut K. and Warrell D.A. 1988. Quinine pharmacokinetics in cerebral malaria: predicted plasma concentrations after rapid intravenous loading using a two-compartment model. *Trans Soc Trop Med Hyg* 82: 542-547.

Davis T.M.E., Supanaranond W., Pukrittayakamee S., Karbwang J., Molunto P., Mekthon S. and White N.J. 1990. A safe and effective consecutive -infection regimen for rapid quinine loading in severe falciparum malaria. *J Infect Dis* 161: 1305-1308.

De Wildt S.N., Kearns G.L., Leeder J.S. and Van den Anker J.N. 1999. Cytochrome P450 3A: Ontogeny and Drug disposition. *Clin Pharmacokinet* 37(6): 485-505.

Dismukes W.E., Stamm A.M., Graybill J.R., Craven P.C., Steven D.A., Stiller R.L., Sarosi G.A., Medoff G., Gregg C.R., Gallis H.A., Fields B.T., Marier R.L., Kerkering T.A., Kaplowitz L.G., Cloud G., Bowles C. and Shadomy S. 1983. Treatment of systemic mycoses with ketoconazole: emphasis on toxicity and clinical response in 52 patients. *Ann Intern Med* 98(1):13-20.

- Daneshmend T.K. and Warnock D.W. 1988. Clinical pharmacokinetics of ketoconazole. *Clin Pharmacokinet* 14:13-34.
- Davis T.M.E., White N.J., Looareesuwan S., Silamut K. and Warrell D.A. 1988. Quinine pharmacokinetics in cerebral malaria: predicted plasma concentrations after rapid intravenous loading using a two-compartment model. *Trans Soc Trop Med Hyg* 82: 542-547.
- Davis T.M.E., Supanaranond W., Pukrittayakamee S., Karbwang J., Molunto P., Mekthon S. and White N.J. 1990. A safe and effective consecutive -infection regimen for rapid quinine loading in severe falciparum malaria. *J Infect Dis* 161: 1305-1308.
- De Wildt S.N., Kearns G.L., Leeder J.S. and Van den Anker J.N. 1999. Cytochrome P450 3A: Ontogeny and Drug disposition. *Clin Pharmacokinet* 37(6): 485-505.
- Dismukes W.E., Stamm A.M., Graybill J.R., Craven P.C., Steven D.A., Stiller R.L, Sarosi G.A., Medoff G., Gregg C.R., Gallis H.A., Fields B.T., Marier R.L., Kerkering T.A., Kaplowitz L.G., Cloud G., Bowles C. and Shadomy S. 1983. Treatment of systemic mycoses with ketoconazole: emphasis on toxicity and clinical response in 52 patient. *Ann Intern Med* 98(1):13-20.

- Dollery C. 1999. Itraconazole, Ketoconazole, Quinine. In: *Therapeutic Drugs*. 2<sup>nd</sup>. vol 2, pp. I120-126, K13-17, Q 16-21. London: Hardout brace company limited.
- Donadio J.Y., Whelton A. and Kazyaak L. 1968. Quinine therapy and peritoneal dialysis in acute renal failure complicating malarial haemoglobinuria. *Lancet* 1: 375-379.
- Dresser G.K., David Spence J. and Bailey D.G. 2000. Pharmacokinetic-pharmacodynamic consequences and clinical relavance of cytochrome P450 3A4 inhibition. *Clin Pharmacokinet* 38(1): 41-57.
- Dyer J.R., Davis T.M.E., Giele C., Annus T., Garcia-Webb P. and Robson J. 1994. The pharmacokinetics and pharmacodynamics of quinine in the diabetic and non-diabetic elderly. *Br J Pharmacol* 38: 205-212.
- Dyson E.H., Proudfoot A.T., Prescott L.F. and Heyworth R. 1985. Death and blindness due to overdose of quinine. *Br Med J* 291: 31-33.
- Eagling V.A., Profit L. and Back D.J. 1999. Inhibition of the CYP3A4 Mediated metabolism and P-glycoprotein-mediated transport of the HIV-I protease inhibitor saquinavir by grapefruit juice components. *Br J Clin Pharmacol* 48: 543-552.

Edstein M.D, Prasitthipayong A., Sabchareon A., Chongsuphajaisiddhi T. and Webster H.K.. 1990. Simultaneous measurement of quinine and quinidine in human plasma, whole blood, and erythrocytes by high-performance liquid chromatography with fluorescence detection. *Ther Drug Monit* 12: 493-500.

Fleishaker J.C., Pearson P.G., Wienkers L.C., Pearson L.K. and Peters G.R. 1996. Biotransformation of tirilazad in human: 2. Effect of ketoconazole on tirilazad clearance and oral bioavailability. *J Pharmacol Exp Ther* 227(2): 991-998.

Frake U., Proksch B., Muller M., Risler T. and Ehninger G. 1987. Drug monitoring of quinine by HPLC in cerebral malaria with renal failure treated by hemofiltration. *Eur J Clin Pharmacol* 33: 293-296.

Gascoine E.W., Barton G.J., Michaels M., Meuldermans W., Haykant J. 1982. The kinetics of ketoconazole in animal and man. *Clin Research*. (Reviews) 1: 177-187.

Glynne P., Salama A., Chaudhry A., Swirsky D. and Lightstone L. 1999. Quinine-induced immune thrombocytopenic purpura followed by hemolytic uremic syndrome. *Am J Kidney Dis* 33(1):133-137.

- Goldsmith R.S. 1996. Infectious diseases: Protozoal & Helmenthic. In: *Current Medical diagnosis & Treatment*. 35<sup>th</sup> ed, Tierney LM *et al*, eds., Prentice-Hall International, Inc., pp. 1246-1305.
- Grant S.M. and Clissold S.P. 1989. Itraconazole, a review of its pharmacodynamic and pharmacokinetic properties and therapeutic use in superficial and systemic mycoses. *Drugs* 37: 310-344.
- Graybill J.R., Lundberg D., Donovan W., Levine H.B., Rodriguez M.D. 1980. Treatment of coccidioidomycosis with ketoconazole: clinical and laboratory studies of 18 patients. *Rev Infect Dis* 2: 661-673.
- Graybill J.R., Stevens D.A., Galgiani J.N., Dismukes W.E. and Cloud G.A. 1990. Itraconazole treatment of coccidioidomycosis. *Am J Med* 89:282-290.
- Hall A.P. 1977. The treatment of severe falciparum malaria. *Trans Res Soc Trop Med Hyg* 71: 367- 379.
- Hadjokas N. and Goodfriend T. 1991. Inhibition of aldosterone production and angiotensin action by drugs affecting potassium channels. *Pharmacology* 43(3): 141-150.

Halpert J.R. 1995. Structural basis of selective cytochrome P450 inhibition.  
*Ann Rev Pharmacol Toxicol* 35: 29-53.

Hardin T.C., Graybill R., Fetchick R., Woestenborghs R., Rinaldi R. and Kuhn J. 1988. Pharmacokinetics of itraconazole following oral administration to normal volunteers. *Antimicrob Agents Chemother* 32: 1310-1313.

Hashimoto H., Toide K., Kitamura R. and Fujita M., Tagawa S., Itoh S. and Kamataki T. 1993. Gene structure of CYP3A4, an adult-specific form of cytochrome P450 in human livers and its transcriptional control. *Eur J Biochem* 218: 585- 595.

Heel R.C., Brogden R.N., Carmine A., Mortey P.A., Speight T.M., 1982. Ketoconazole: a review of its therapeutic efficacy in systemic fungal infections. *Drugs* 23: 1-36.

Heeres J., Backx L.J.J. and Van Cutsem J. 1984. Antimycotic azoles. 7 Synthesis and antifungal properties of a series of novel triazole-3 ones. *J Med Chem* 27:894-900.

Heinig R., Adelmann H.G. and Ahr G. 1999. The effect of ketoconazole on the pharmacokinetics, Pharmacodynamics and safety of nisoldipine. *Eur J Clin Pharmacol* 55: 57-60.

Henquin J.C., Horemans B., Nenquin M., Verniers J and Lambert A.E. 1975. Quinine induced modifications of insulin release and glucose metabolism by isolated pancreatic islets. *FEBS Lett* 57(3): 280-284.

Herman B.D., Fleishaker J.C. and Brown M.T. 1999. Ketoconazole inhibits the clearance of the enantiomers of the antidepressant reboxetine in humans. *Clin Pharmacol Ther* 66(4): 374-379.

Heykants J., Van Peer A., Van de Velde V., Van Rooy P., Meuldermans W., Lavrijsen K., Woestenborghs R., Van Cutsem J. and Cauwenbergh G. 1989. The clinical pharmacokinetics of itraconazole: an overview. *Mycoses* 3(suppl 1): 67-87.

Heykants J., Van Peer A., Lavrijsen K., Meuldermans W., Woestenborghs R., Cauwenbergh G. 1990. Pharmacokinetics of oral antifungals and their clinical implications. *Br J Clin Pract Suppl* 4: 50-56.

Ho P.C., Chalcroft S.C., Coville P.F. and Wanwimolrak S. 1999. Grapefruit juice has no effect on quinine pharmacokinetics. *Eur J Clin Pharmacol* 55:393-398.

Honig P.K., Wortham D.C., Zamani K. Conner D.P. Mullin J.C. Cantilena L.R. 1993. Terfinadine-ketoconazole interaction: pharmacokinetic and electrocardiographic consequences. *JAMA* 269: 1535-1539.

Hostetler J.S., Heykants J., Clemons K.V., Woestenborghs R., Hanson L.H. and Stevens D.A. 1993. Discrepancies in bioassay and chromatography determinations explained by metabolism of itraconazole to hydroxyitraconazole: Studies of interpatient variations. *Antimicrob Agents Chemother* 37(10): 2224-2227.

Inoue K., Inazawa J., Nakagawa H., Shimada T., Guengerich F.P., Abe T. 1992. Assignment of the human cytochrome P450 Nifedipine oxidase gene (CYP3A4) to chromosome 7 at band q22.1 by fluorescence in situ hybridization. *Jpn J Hum Genet* 37:133-138.

Jacobson M.A., Hanks D.K. and Ferrell L.D. 1994. Brief clinical observations: Fatal acute hepatic necrosis due to fluconazole. *Am J Med* 96: 188-190.

Jalava K-M., Olkkola K.T. and Neuvonen P.J. 1997. Itraconazole greatly increases plasma concentrations and effect of felodipine.  
*Clin Pharmacol Ther* 61(4): 410-415.

Jamaludin A., Mohamed M., Navaratnam V., Mohamed N., Yeoh E. and Wernsdorfer W. 1988. Single-dose comparative kinetics and bioavailability study of quinine hydrochloride, quinine sulfate and quinidine bisulfate sustained-release in healthy male volunteers.  
*Acta Leidensia* 57(1): 39-46.

Jamis-Dow C.A., Pearl M.L., Watkins P.B., Blake D.S., Klecker R.W. and Collins J.M. 1997. Predicting drug interactions *in vivo* from experiments *in vitro*, human studies with paclitaxel and ketoconazole.  
*Am J Clin Oncol* 20: 592-599.

Karbwang J., Na Bangchang K., Molunto P. and Bunnang D. 1989. Determination of quinine and quinidine in biological fluids by high performance liquid chromatography. *Southeast Asian J Trop Med Public health* 20(1): 65-69.

Karbwang J., Thanavibul A., Molunto P. and Na-Bangchang K. 1993(a). The pharmacokinetics of quinine in patients with hepatitis. *Br J Clin Pharmacol* 35: 444-446.

- Karbwang J., Davis T. M. E., Looareesuwan S., Molunto P., Bunnag D. and White N. J. 1993(b). A comparison of the pharmacokinetic and pharmacodynamic properties of quinine and quinidine in healthy Thai males. *Br J Clin Pharmacol* 35: 265-271.
- Karbwang J. and Na-Bangchang K. 1993. Clinical Pharmacology of antimalarials. In: *Clinical Pharmacology in Parasitic Diseases*. 1<sup>st</sup> ed. Karbang et al, eds., Bangkok, Thai Wattana Panich Press, pp.104-122.
- Karbwang J. and Cross J.H. 1997. Protozoal ifection: Malaria. In: *Common Parasitic Diseases*. Karbwang J and Cross J.H. eds., Bangkok, Thailand, Saksopa Press, pp.1-6.
- Karle J.M., Karle I.L., Gerena L. and Milhous W.K. 1992. Stereochemical evaluation of the relative activities of the cinchona alkaloids against *Plasmodium falciparum*. *Antimicrob Agents Chemother* 36(7): 1538-1544.
- Kaukonen K-M., Olkkola K.T. and Neuvonen P.J. 1997. Itraconazole increases plasma concentrations of quinidine. *Clin Pharmacol Ther* 62 (5): 510-517.
- Kivistö K.T., Lamberg T.S., Kantola T. and Neuvonen P.J. 1997. Plasma buspirone concentrations are greatly increased by erythromycin and itraconazole. *Clin Pharmacol Ther* 62(3): 348-354.

- Kofi-Ekue J.M., Phiri D.E.D. and Mukunyandela M. 1988. Severe orthostatic hypotension during treatment of falciparum malaria. *Br Med J* 296: 396.
- Krishna S. and White N.J. 1996. Pharmacokinetics of quinine, chloroquine and amodiaquine: clinical implications. *Clin Pharmacokinet* 30(4): 263-299.
- Leeder J.S. and Kearns G.L. 1997. Pharmacokinetics in pediatrics. *Pediatr Clin North Am* 44(1): 55-77.
- Lehmann C.R., Boran K.J., Pierson W.P., Melikian A.P. and Wright G.J. 1986. Quinine assays: Enzyme immunoassay versus high performance liquid chromatography. *Ther Drug Monit* 8: 336-339.
- Lehnert M., Dalton W.S., Roe D., Emerson S. and Salmon S.E. 1991. Synergistic Inhibition by verapamil and quinine of P- Glycoprotein mediated multidrug resistance in a human myeloma cell line model. *Blood* 77(2): 348-354.
- Lewis J.H., Zimmerman H.J., Benson G.D. and Ishak K.G. 1984. Hepatic injury associated with ketoconazole therapy. *Gastroenterology* 86: 503-513.
- Lin J.H. and Lu A.Y.H. 1998. Inhibition and induction of cytochrome P450 and the clinical implications. *Clin Pharmacokinet* 35(5): 361-390.

List A.F. 1996. Role of multidrug resistance and its pharmacological modulation in acute myeloid leukemia. *Leukemia* 10: 937-942.

Looareesuwan S., White N.J., Silamut.K., Phillips R.E. and Warrell D.A. 1987. Quinine and severe malaria in late pregnancy. *Acta Leidensia*. 55: 115-120.

Looareesuwan S. and Chongsuphajaisiddhi T. 1994. Malaria. In : *Clinical tropical medicine I*. 1<sup>st</sup> ed, Looareesuwan *et al*, eds. Bangkok, Medical Media, pp.1-61.

Looareesuwan S. 1995. *Malaria 1994*. Clinic 11: 171-176.

Looareesuwan S. 1996. Malaria. In *the Textbook of Tropical Medicine*, pp 4-10. 1<sup>st</sup> eds. Rumtuss Companny Ltd. Bangkok.

Lyman C.A. and Walsh T.J. 1992. Sytemoically administered antifungal agent: a review of their clinical pharmacology and therapeutic application. *Drugs* 44(1): 18-34.

Maksymink A.M., Levine H.B., Bodey G.P. 1982. Pharmacokinetics of Ketoconazole in patients with neoplastic disease. *Animicrob Agents Chemother* 22: 43-46.

- Mansor S.M., Molyneux M., Taylor T.E., Ward S.A., Wirima J.J. and Edwards G. 1991. Effect of *Plasmodium falciparum* malaria infection on the plasma concentration of  $\alpha_1$ -acid glycoprotein and the binding of quinine in Malawian Children. *Br J Clin Pharmacol* 32: 317-321.
- Mackie , M.A. and Davidson J. 1995. Prescribing of quinine and cramp inducing drug in general practice. *Br Med J* 311: 1541.
- Mihaly G.W., Ching M.S., Klejn M.B. Paull J. and Smallwood R.A. 1987. Differences in the binding of quinine and quinidine to plasma proteins. *Br J Clin Phamacol* 24: 769-774.
- Mikami Y., Sakamoto T., Yazawa K. 1994. Comparison of *in vitro* Antifungal activity of itraconazole by colometric MTT assay. *Mycoses* 37: 27-33.
- Mirghani R.A., Hellgren U., Westerberg P.A., Ericsson O., Bertilsson L. and Gustafsson L.L. 1999. The roles of cytochrome P4503A4 and 1A2 in the 3-hydroxylation of quinine *in vivo*. *Clin Pharmacol Ther* 66(5): 454-460.
- Miyama T., Taganaka H., Matsuo H., Yamano K., Yamamoto K., Iga T., Naito M., Tsuruo T., Ishizuka H., Kawahara Y. and Sawada Y. 1998. P-glycoprotein-mediated transport of itraconazole across the blood-brain barrier. *Antimicrob Agents Chemother* 42(7): 1738-1744.

- Neuvonen P.J. and Jalava K-M. 1996. Itraconazole drastically increases plasma concentrations of lovastatin and lovastatin acid. *Clin Pharmacol Ther* 60(1): 54-61.
- Olkkola K.T., Backman J.T. and Neuvonen P.J. 1994. Midazolam should be avoided in patients receiving the systemic antimycotics ketoconazole or itraconazole. *Clin Pharmacol Ther* 55(5): 481-485.
- Paintaud G., Alvan G and Ericsson O. 1993. The reproducibility of quinine bioavailability. *Br J Clin Pharmacol* 35: 305 -307.
- Painisko D.M. and Keystone J.S. 1990. Review Article: Treatment of Malaria. 1990. *Drugs* 39(2): 160-189.
- Palkama V.J., Neuvonen P.J. and Olkkola K.T. 1999. Effect of itraconazole on the pharmacokinetics of bupivacaine enantiomers in healthy volunteers. *Br J Anesth* 83(4): 659-661.
- Peel S.A.A., Bright P., Yount B., Handy J. and Baric R.S. 1994. A strong association between mefloquine and halofantrine resistance and amplification, overexpression, and mutation in the P- glycoprotein gene homolog (*pfmdr*) of *Plasmodium falciparum* *in vitro*. *Am J Med Hyg* 51(5): 648-658.

- Phillips R.E., Looareesuwan S., White N.J., Silamut K., Kietinun S., Warrell D.A. 1986. Quinine pharmacokinetics and toxicity in pregnant and lactating women with falciparum malaria. *Br J Pharmacol* 21(6): 677-83.
- Phillips-Haward and Kuile, T. 1995. Antimalarial agents: CNS adverse events. *Drug Safety* 12: 376-382.
- Polk R.E., Crouch M.A., Israel D.S., Pastor A., Sadler B.M., Chittick G.E., Symonds W.T., Gouldin W. and Lou Y. 1999. Pharmacokinetic interaction between ketoconazole and amprenavir after single doses in healthy men. *Pharmacol Ther* 19(12): 1378-1384.
- Pont A., Graybill J.R., Craven P.C., Galgiani J.N., Dismukes W.E., Reitz R.E. and Stevens D.A. 1984. High-dose ketoconazole therapy and adrenal and testicular function in humans. *Arch Intern Med* 144: 2150-2153.
- Powell D. and McNamara J.V. 1972. Quinine: side effect and plasma levels. *Proc Helminth Soc Wash* 39:51.
- Raderer M., and Scheithauer W. 1993. Clinical trials of agents to reverse multidrug resistance. *Cancer* 72(12): 3553-3563.

- Ratanasavanh D., Beaune P., Morel F., Flinois J-P., Guengerich F.P. and Guillouzo A. 1991. Intralobular distribution and quantitation of cytochrome P450 enzymes in human liver as a function of age. *Hepatology* 13(6): 1142-1151.
- Ridtitid W., Wongnawa M., Kleepkaew A., Mahatthanatrakul W. and Sunbhanich M. 1998. Cholestyramine does not significantly decrease the bioavailability of quinine in healthy volunteers. *Asia Pac J Pharmacol* 13: 123-127.
- Sabchareon A., Chongsuphajaisiddhi T. and Attanath P. 1982. Serum quinine concentrations following the initial dose in children with falciparum malaria. *Southeast Asian J Trop Med Public Health* 13(4): 556-562.
- Salako L.A. and Sowunmi A. 1992. Disposition of quinine in plasma, red blood cells and saliva after oral and intravenous administration to healthy adult africans. *Eur J Clin Pharmacol* 42: 171-174.
- Schafer-Korting M. 1993. Pharmacokinetic optimisation of oral antifungal therapy. *Clin Pharmacokinet* 25: 329-341.
- Shann F., Stace J. and Edstein M. 1985. Pharmacokinetics of quinine in children. *J Pediatrics* 106(3): 506-510.

- Sharkey P.K., Rinaldi M.G., Dunn J.F., Hardin T.C., Fetchick R.J. and Graybill J.R. 1991. High-dose itraconazole in the treatment of severe mycoses. *Antimicrob Agents Chemother* 35: 707-713.
- Silamut K., White N.J., Looareesuwan S. and Warrell D.A. 1985. Binding of quinine to plasma proteins in falciparum malaria. *Am J Trop Med Hyg* 34(4): 681-686.
- Silamut K., Molunto P., Ho M., Davis T.M.D. and White N.J. 1991.  $\alpha_1$ -acid glycoprotein (orosomucoid) and plasma protein binding of quinine in falciparum malaria. *Br J Clin Pharmacol* 32: 311-315.
- Smith A.G. 1984. Short reports: potentiation of oral anticoagulants by ketoconazole. *Br Med J* 288: 188-189.
- Smit J.W., Duin E., Steen H., Oosting R., Roggeveld J. and Meijer D.K.F. 1998. Interactions between P-glycoprotein substrates and other cationic drugs at the hepatic excretory level. *Br J Pharmacol* 123: 361-370.
- Tanprasert S., Sangwanlloid O., Tonghong O., Jantasiriyakon S., Kumtalod S. and Sawangsri S. 2000. Situation of HIV in Thailand. In: *Monthly Epidemiological Surveillance Report*. Division of Epidemiology Ministry of Public Healthy 31(3): 1-3.

Sowanmi A. and Salako L.A. 1996. Effect of dose size on the pharmacokinetics of orally administered quinine. *Eur J Clin Pharmacol* 49: 383-386.

Sugar A.M., Alsip S., Galgiani J.N., Graybill J.R., Dismukes W.E., Could G.A., Craven P.C. and Stevens D.A. 1987. Pharmacology and toxicity of high-dose ketoconazole. *Antimicrob Agents Chemother* 31: 1874-1878.

Supanaranond W., Davis T.M.E., Pukrittayakamee S., Silamut K. Karbwang J., Molunto P., Chanond L. and White N.J. 1991. Disposition of oral quinine in acute falciparum malaria. *Eur J Clin Pharmacol* 40: 49-52.

Taggart J.V., Earl D.P., Berliner R.W., Zubrod C.G., Welch W.J., Bowman-Wise N., Schroeder E.F., London I.M. and Slannon J.A. 1988. Studies on the chemotherapy of human malaria. III. The physiological disposition and antimalarial activity of the cinchona alkaloids. *J Clin Invest* 27: 80-86.

Tanaka E. 1998(a). *In vivo* age-related changes in hepatic drug-oxidizing capacity in humans. *J Clin Pharm Ther* 23:247-255.

Tanaka E. 1998(b). Review article: Clinically important pharmacokinetic drug-drug interactions: role of cytochrome P450 enzymes. *J Clin Pharm Ther* 23: 403-416.

- Tracy J M. and Webster L.T. 1996. Drugs used in the chemotherapy of protozoal infections: malaria. In *Goodman & Gilman's The pharmacological Basis of Therapeutics* (9<sup>th</sup> ed). Hardman *et al.* eds. New York, pp. 965- 985.
- Trachtenberg J. 1984. Ketoconazole therapy in advanced prostatic cancer. *J Urology* 132: 61-63.
- Tsunoda S.M., Velez R.L., von Moltke L.L. and Greenblatt D.J. 1999. Differentiation of intestinal and hepatic cytochrome P450 3A activity with use of midazolam as an *in vivo* probe: Effect of ketoconazole. *Clin Pharmacol Ther* 66(5): 461-471.
- Tucker R.M., Haq Y., Dening D.W. and Stevens D.A. 1990. Adverse events associated with itraconazole in 189 patients on chronic therapy. *J Antimicrob Chemother* 26: 561-566.
- Van Boxtel J. and Kager P.A. 1996. Quinine pharmacokinetics in young children with severe malaria. *Am J Trop Med Hyg* 54(3): 237-242.
- Van Cauteren H., Heykants J., De Coster R. and Cauwenbergh G. 1987. Itraconazole: Pharmacologic studies in animals and humans. *Rev J Infect Dis* 9(suppl 1): s43-s46.

- Van Der Mer J.W.M., Kening J.J., Scheijrond H.W., Heykants J., Van Cutsem J. et al. 1980. Influence of gastric acidity on the bioavailability of ketoconazole. *J Antimicrob Chemother* 6: 522-524.
- Van Hensbroek M.B., Kwiatkowski D., Van Den Berg B. Hoek F.J., Van Boxtel C.J. and Kager P.A. 1996. Quinine pharmacokinetics in young children with severe malaria. *Am J Trop Med Hyg* 54(3) : 237-242.
- Van Tyle J.H., 1984. Ketoconazole, mechanism of action spectrum of activity pharmacokinetics, drug interactions, adverse reaction and therapeutic use. *Pharmacotherapy* 4: 343-373.
- Varhe A., Olkkola K.T., and Neuvonen P. J. 1994. Oral triazolam is potentially hazardous to patients receiving systemic antimycotics ketoconazole or itraconazole. *Clin Pharmacol Ther* 56: 601-607.
- Venkatakrishnan K., von Moltke L. and Greenblatt D.J. 2000. Clinical relevance: Effect of the antifungal agents on oxidative drug metabolism. *Clin Pharmacokinet* 38(2): 111-180.
- Von Moltke L.L., Greenblatt D.J., Schmider J., Harmatz J.S. and Shader R.I. 1995. Metabolism of drugs by cytochrome P450 3A isoforms: Implications for drug interactions in psychopharmacology. *Clin Pharmacokinet* 29(suppl 1): 33-44.

- Von Moltke L.L., Greenblatt D.J., Harmatz J.S., Su Xiang Duan, Harrel L.M. Cotreau-bibbo M.M., Pritchard G.A., Wright C.E. and Shader R.I. 1996. Triazolam biotransformation by human liver microsomes *in vitro*: Effects of metabolic inhibitors and clinical confirmation of a predicted interaction with ketoconazole. *J Pharmacol Exp Ther* 276(2): 370-379.
- Warnock D.W. 1989. Itraconazole and fluconazole: new drugs for deep fungal infection. *J Antimicrob Chemother* 24: 275-277.
- Wanwimolruk S., Sunbhanich M., Pongmarutai M. and Pattamasucon P. 1986. Effects of cimetidine and ranitidine on the pharmacokinetics of quinine. *Br J Clin Pharmacol* 22: 346-350.
- Wanwimolruk S., Chalcroft S., Coville P.F. and Campbell A.J. 1991. Pharmacokinetics of quinine in young and elderly subjects. *Trans Soc Trop Med Hyg* 85: 714-717.
- Wanwimolruk S. and Denton J.R. 1992. Plasma protein binding of quinine: Binding to human serum albumin,  $\alpha_1$ -acid glycoprotein and plasma from patients with malaria. *J Pharm Pharmacol* 44: 806-811.
- Wanwimolruk S., Wong S.M., Coville P.F., Viriyayudhakorn S. and Thitiarchakul S. 1993. Cigarette smoking enhances the elimination of quinine. *Br J Clin Pharmacol* 36: 610-614.

- Wanwimolruk S., Wong S-M., Zhang H., Coville P.R. and Walker R.J. 1995. Metabolism of quinine in man: Identification of a major metabolite, and effects of smoking and rifampicin pretreatment. *J Pharm Pharmacol* 47 :957-963.
- Watkins B., Wrighton S.A., Schnets E.G., Molowa D.T. and Guzelian P.S. 1987. Identification of glucocorticoid-inducible cytochromes P450 in the intestinal mucosa of rats and man. *J Clin Invest* 80(4): 1029-1036.
- Wattanagoon Y., Phillips R.E., Warrell D.A., Silamut K., Looareesuwan S., Nagachinta B. and Back D.J. 1986. Intramuscular loading dose of quinine for falciparum malaria: pharmacokinetics and toxicity. *Br Med J* 293: 11-13.
- Webster L.T. 1991. Drugs used in the chemotherapy of protozoal infections: malaria. In *Goodman & Gilman's The pharmacological Basis of Therapeutics* (8<sup>th</sup> ed). Hardman *et al.* eds, New York, pp. 978-998.
- White N.J., Looareesuwan S., Warrell D.A., Warrell M.J., Bunnag D. and Harinasuta T. 1982. Quinine pharmacokinetics and toxicity in cerebral and uncomplicated falciparum malaria. *Am J Med* 73: 564-572.

White N.J., Looareesuwan S., Warrell D.A., Warrell M.J., Chanthavanich P.,  
Bunnag D. and Harinasuta T. 1983(a). Quinine loading dose in cerebral  
malaria. *Am J Trop Med Hyg* 32(1): 1-5.

White N.J., Warrell D.A., Chanthavanich P., Looareesuwan S. Warrell M.J.,  
Path M.R.C., Krishna S. Williamson D.H. and Turner R.C. 1983(b).  
Severe hypoglycemia in falciparum malaria. *New Eng J Med* 309(2):61-66.

White N.J. 1985. Clinical Pharmacokinetics of antimalarial drugs.

*Clin Pharmacokinet* 10: 187-215.

White N.J. 1988. Drug treatment and prevention of malaria. *Eur J Clin  
Pharmacol* 34: 1-14.

WHO. 1990. WHO model prescribing information. *Drug used in parasitic  
diseases*. Geneva.

WHO, 2000. Current global malaria situation. *WHO Technical Report Series:*  
WHO Expert Committee on Malaria 892: 3-6.

Winstanley P., Newton C., Watkins W., Mberu E., Ward S., Warn P.,  
Mwangi I., Waruiru C., Pasvol G., Warrell D. and Marsh K. 1993.  
Towards optimal regimens of parenteral quinine for young African  
children with cerebral malaria: the importance of unbound quinine  
concentration. *Trans Soc Trop Med Hyg* 87: 201- 206.

- Winstaley P.A., Mberu E.K., Watkins W.M., Murphy S.A., Lowe B. and Marsh K. 1994. Towards optimal regimens of parenteral quinine for young African children with cerebral malaria: unbound quinine concentrations following a simple loading dose regimen. *Trans Soc Trop Med Hyg* 88: 577-580.
- Wishart J.M. 1987. The influence of food on the pharmacokinetics of itraconazole in patients with superficial fungal infection. *J A Acad Dermatol* 17: 220-223.
- Woosley R.L., Chen Y., Freiman J.P. and Gillis R.A. 1993. Mechanism of the cardiotoxic action of terfinadine. *JAMA* 269: 1532-1536.
- Wrighton S.A. and Stevens J.C. 1992. The human hepatic cytochromes P450 involved in drug metabolism. *Crit Rev Toxicol* 22(1):1-21.
- Yumoto R., Murakami T., Nakamoto Y., Hasegawa R., Nagai J. and Tagamono M. 1999. Transport of rhodamine 123, a P-glycoprotein substrate, across rat intestine and Caco-2 cell monolayers in the presence of cytochrome P-450 3A-related compounds. *J Pharmacol Exp Ther* 289(1): 149-155.

Yun C.H., Okerholm R.A., Guengerich F.P. 1993. Oxidation of the antihistaminic drug terfinadine in human liver microsomes: role of cytochrome P450 3A(4) in N-dealkylation and C-hydroxylation. *Drug Metabol Dispos* 21:403-409.

Zhang H., Coville P.F., Walker R.J., Miner D.J., Birkett D.J. and Wanwimolruk S. 1997. Evidence for involvement of human CYP3A in the 3-hydroxylation of quinine. *Br J Clin Pharmacol* 43: 245-252.

Zhao X-J., Yokoyama H., Chiba K., Wanwimolruk S. and Ishizaki T. 1996. Identification of human cytochrome P450 involved in the 3-hydroxylation of quinine by human liver microsomes and nine recombinant human cytochromes P450. *J Pharmacol Exp Ther* 279: 1327-1334.

Zhao X-J., Kawashiro T. and Ishizaki T. 1997. Short communication mutual inhibition between quinine and etoposide by human liver microsomes: evidence for cytochrome P4503A4 involvement in their major metabolic Pathways. *Am Soc pharmacol Exp Ther* 26(2): 188-191.

Zhao X-J. and Ishizaki T. 1997. Metabolic interactions of selected antimalarial and non-antimalarial drugs with the major pathway (3-hydroxylation) of quinine in human liver microsomes. *Br J Clin Pharmacol* 44: 505-511.

Zhao X-J. and Ishizaki T. 1999. An *in vitro* study on the metabolism of rokitamycin and possible interactions of the drug with rat liver microsomes. *J Pharm Pharmacol* 51:1167-1174.