



REFERENCES

- Altura, B.M. and Altura, B.T., "Differential effects of substrate depletion on drug-induced contraction of rabbit aorta" Am. J. Physiol. 219(1970) : 1698-1705.
- Bolton, T.B., "Mechanism of action of transmitters and other substances on smooth muscle" Physiological Review 59(1979) : 606-718.
- Burkill, I.H. A Dictionary of the Economic Product's of the Malay Peninsula Vol. I. pp.155, University Press, Oxford, 1970.
- Casteels, R. and Droogmans, G., "Exchange characteristics of the noradrenaline-sensitive calcium store in vascular smooth muscle" J. Physiol. 317(1981) : 263-279.
- Chen, Z.X., Wang, B.D., Qin, K.W., Zhang, B.E., Su, Q.L. and Lin, Q.C. "Isolation and Identification of the Alkaloids for *Ancistrocladus tectorius*" Yaoxue Xyebao, Acta Pharmaceutica Sinica. 16(1981) : 519-523.
- Chumnicharakij, T. Medical Statistics 1st ed. pp.291, Chulalongkorn University Press, Bangkok, 1982.
- Clement, G.J., "BaCl₂ induced contractions in the guinea pig ileum longitudinal muscle : role of presynaptic release of neurotransmitters and Ca²⁺ translocation in the postsynaptic membrane" Can. J. Physiol. 59(1981) : 541-547.
- Durand, T. and Jackson, B.D. Index Kewensis Supplement I, pp.11 Oxford University Press, 1906.

- Foucher, J.P., Pousset, J.L., Cave, A. and Paris, R.R., "Chemotaxonomy of the Ancistrocladaceae" : Plantes med. Phytother 9(1975) : 2699-2702.
- Gennaro, R.A., Remington's Pharmaceutical Sciences 17th ed., pp.792, 864, 792, 1044, 1046 Mack Publishing Company Easton, Pennsylvania, 18042, 1985.
- Golenhofen, K. in Differential of calcium activation processes in smooth muscle using selective antagonists in Smooth Muscle (Bulbring ed.) Oxford Press, Oxford 1980 : 157-170.
- Govindachari, T.R. and Parthasarathy, P.C., "Ancistrocladine a novel isoquinoline alkaloid for *Ancistrocladus heyneanus*" Chemical Abstracts 73(1970) : 66769W.
- Greenberg, S. and Long, J.P., "The effects of cocaine, norepinephrine and ionic stimulants on the isolated, superfused rat vas deferens : antagonism by adrenergic neuron blockers and reserpine" J. Pharmacol. exp. ther. 177(1971) : 136-145.
- Haeusler, G., "Differential effect of verapamil on excitatinn-contraction coupling in smooth muscle and on excitation-secretion coupling in adrenergic nerve terminals" J. Pharmacol. exp. ther. 180 (1972) : 672-682.
- Hay, D.W.P. and Wadsworth, R.M., "Effects of verapamil on rhythmic contractions in isolated rat vasa deferentia" Br. J. Pharmac. 68(1980) : 182P-183P.

- Hay, D.W.P. and Wadsworth, R.M., "Potassium contractions in the rat isolated vas deferens : the role of noradrenaline release and of extracellular calcium" Br. J. Pharmac. 72(1981) : 143P.
- Hay, D.W.P. and Wadsworth, R.M., "Effects of some organic calcium antagonists and other procedures affecting Ca²⁺ translocation on KCl induced contraction in the rat vas deferens" Br. J. Pharmac. 76(1982a): 103-113.
- Hay, D.W.P. and Wadsworth, R.M., "The effects of barium and methoxamine on calcium uptake in the rat bisected vas deferens" Br. J. Pharmac. 76(1982b): 297P.
- Hay, D.W.P. and Wadsworth, R.M., "Local anesthetic activity of organic calcium antagonist : relevance to their actions on smooth muscle" Eur. J. Pharmacol. 77(1982c) : 221-228,
- Hay, D.W.P. and Wadsworth, R.M., "The contractile effects of 5-hydroxytryptamine on the rat isolated vas deferens" Br. J. Pharmac. 77(1982d): 605-613.
- Hay, D.W.P. and Wadsworth, R.M., "The effects of calcium channel inhibitors and other procedures affecting calcium translocation on drug induced rhythmic contractions in the rat vas deferens" Br. J. Pharmac. 79(1983a): 347-362.
- Hay, D.W.P. and Wadsworth, R.M., "The effect of calcium channel inhibitors on twitches and noradrenaline contractions of the rat bisected vas deferens" Eur. J. Pharmacol. 87(1983b): 367-378.

- Hay, D.W.P. and Wadsworth, R.M., "Effects of KCl on ^{45}Ca uptake and efflux in the rat vas deferens" Br. J. Pharmac. 81(1984a): 441-447.
- Hay, D.W.P. and Wadsworth, R.M., "Calcium channels mediating the barium contraction in the rat vas deferens" Br. J. Pharmac. (1984b): 505P.
- Hof, P.R. and Vuorela, J.H., "Assesing calcium antagonism on vascular smooth muscle : a comparison of three methods" J. Pharmac. Meth. 9(1983) : 41-52.
- Holman, E.M. Methods in Pharmacology. Smooth muscle. Vol. III. pp. 403-417, Plenum Press, New York and London, 1975.
- Hooker, J.D. and Jackson, B.D. Index Kewensis Vol. I. pp.119-120 Clarendon Press, Oxford, 1893.
- Hooker, J.D. Flora of British Indian Vol. I. pp.299-300, L. Reeve and Co., 1897.
- Hutchinson, J. The families of Flowering Plants Vol. I. pp.287, Oxford University Press, London, 1959.
- Jain-Etcheverry, G. and Zieher, L.M., "Ultrastructure cytochemistry and pharmacology of 5-hydroxytryptamine in adrenergic nerve endings. I. Localization of exogenous 5-hydroxytryptamine in the autonomic nerves of the rat vas deferens" J. Pharmac. Exp. Ther. 166(1969) : 264-271.

- Malogodi, M.H. and Chiou, C.Y., "Pharmacological evaluation of a new Ca^{2+} antagonist, 8-(N, N-Diethylamino)-octyl-3, 4, 5-trimethoxybenzoate hydrochloride (TMB-8) : studies in smooth muscles" Eur. J. Pharmacol. 27(1974) : 25-33.
- Manske, R.H.F. The Alkaloids, pp.253-263, Academic Press, New York, 1954.
- Na Songkla, B. Thai Medicinal Plants Part I. pp.74, New Thammada Press, Bangkok, 1976.
- Nishino, K., Trikura, T. and Takayanaki, I., "Mode of action of 5-hydroxytryptamine on isolated rat vas deferens" Nature 228 (1970) : 564-565.
- Ozawa, H. and Katsuragi, T., "Ouabain-induced potentiation on the contractions of the guinea-pig vas deferens" Eur. J. Pharmacol. 25(1974) : 147-154.
- Pasupat, S., "Antispasmodic effect of ancistrotoecrine" Master's thesis, Department of Pharmacology, Graduate School, Chulalongkorn University, 1985.
- Paton, W.D.M. Methods in Pharmacology. Smooth muscle, pp.273-320, Plenum Press, New York and London, 1975.
- Ruangrungsi, N., Wongpanich, V. and Tantivatana, P., "Traditional medicinal plants of Thailand V. ancistrotoecrine, a new naphthalene-isoquinoline alkaloid from *Ancistrocladus tectorius* (*Ancistrocladaceae*)" J. Nat. Prod. 48(1985) : 529-535.

- Smitinand, T. Plants of Khao Yai National Park. pp.55, New Thumada Press Ltd. Part, Bangkok, 1977.
- Smitinand, T. Thai Plant Names (Botanical Names-Vernacular Names). pp.22, Funny Publishing Ltd. Part, Bangkok, 1980.
- Swamy, V.C., Triggle, C.R. and Triggle, D.J., "The effects of lanthanum and thulium on the mechanical responses of rat vas deferens" J. Physiol. 254(1976) : 55-62.
- Thorens, S. and Haeusler, G., "Effects of some vasodilators on calcium translocation in intact and fractionated vascular smooth muscle" Eur. J. Pharmacol. 54(1979) : 79-91.
- Van Den Broucke, C.O., and Lemli, J.A., "Antispasmodic activity of *Origanum Compactum*" Planta Medica 45(1982) : 188-190
- Van Rossum J.M., "Cumulative dose-response curves. II, Technique for making of dose-response curves in isolated organs and the evaluation of drug parameters". Arch. Intern. Pharmacodyn. 143(1963) : 299-330.
- Van Steenis, C.G.G.J. Flora Malesiana Ser I., Vol. 4. pp.8-10, P., Noordhoff Ltd., 1948,
- Wadsworth, R.M., "Excitatory and inhibitory effects of noradrenaline on the isolated guinea-pig vas deferens" Clin. Exp. Pharmac. Physiol. 1(1974) : 135-142.
- The Wealth of Indian. A Dictionary of Indian Raw Materials and Industrial Products. Vol. I. pp.77, Council of Scientific and Industrial Research, New Delhi 1948

Weiss, G.B., "Cellular Pharmacology" A. Rev. Pharmac. 14(1974) :
343-354.

Willis, J.C. A Dictionary of Flowering Plants and Ferns 8th ed. p.59,
Cambridge University Press, Cambridge, 1966.

APPENDIX

The data required to reduce the contraction by 50 % (ID_{50}) was calculated for each individual dose-response curve using logarithmic linear regression line analysis (Chumnicharakij, 1982) where by dosages are converted to a logarithm scale and percent effect to probits; thus data can be plotted as a straight line by the equation below.

$$Y' = \log_e \left(\frac{Y}{100-Y} \right)$$

Y is percent of response

when Y = 50 then

$$Y' = 0$$

Therefore X intercept is the value of antagonist that produced 50 % inhibition. Graph of linear regression lines of antagonist are demonstrated in Fig. 24.

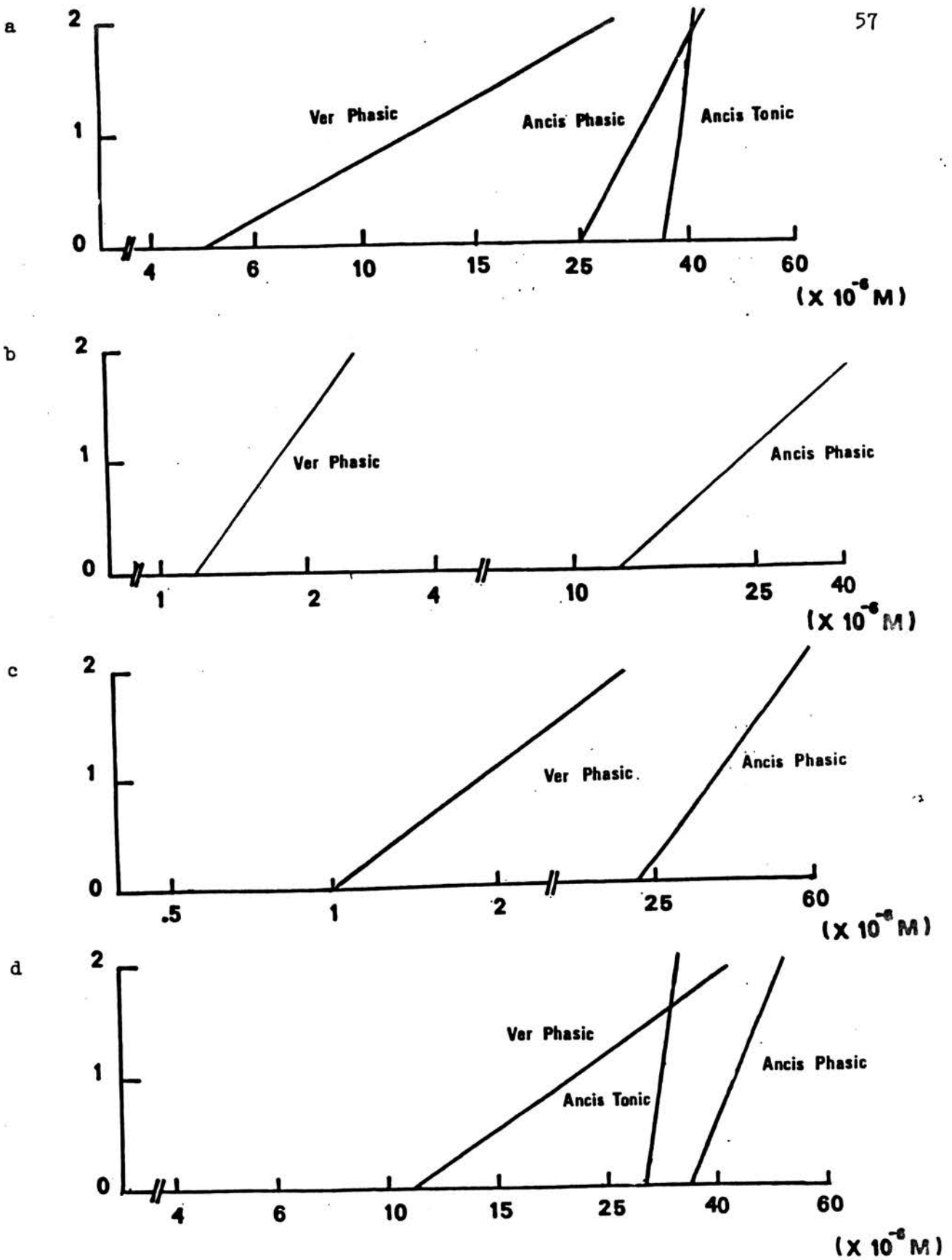


Figure 24. Samples of linear regression line of log dose response curve of ancistrotectorine and verapamil produced by KCl(a), $BaCl_2$ (b), 5-HT(c) and NA(d),

BIOGRAPHY

Miss Chantana Ketkosol was born on 28th November 1958 in Bangkok. She received her high school certificate from Strividhaya, Bangkok in 1976 and her B.Sc. in Physical therapy from Mahidol University, Bangkok in 1980.

