REFERENCES

Adlercreutz, C. H. T., Goldin, B. R., Gorbach, S. L., Höckerstedt, K. A. V., Watanabe, S., Hämäläinen, E. K., Markkanen, M. H., Mäkela, T. H., Wähälä, K. T., Hase, T. A. and Fotsis, T. 1995. Soybean phytoestrogen intake and cancer risk. *Journal of Nutrition* 125:757S-770S.

Adlercreutz, H., Fotsis, T., Bannwart, C., Wahala, K., Makela, T., Brunow, G. and Hase, T. 1986. Determination of urinary lignans and phytoestrogen metabolites, potential antiestrogens and anticarcinogens, in urine of women on various habitual diets. *Journal of Steroid Biochemistry* 25:791-797.

Adlercreutz, H., Fotsis, T., Lampe, J., Wahala, K., Mäkelä, T., Brunow, G. and Hase, T. 1993. Quantitative determination of lignans and isoflavonoids in plasma of omnivorous and vegetarian women by isotope dilution gas chromatography- mass spectrometry. *The Scandinavian Journal of Clinical & Laboratory Investigation* 215:5-18.

Adlercreutz, H., Fotsis, T., Watanabe, S., Lampe, J., Wähälä, K., Mäkelä, T. and Hase T. 1994. Determination of lignans and isoflavonoids in plasma by isotope-dilution gas chromatography-mass spectrometry. *Cancer Detection and Prevention* 18: 259-271.

Adlercreutz, H., Hockerstedt, K., Bannwart, C., Bloigu, S., Hamalainen, E., Fotsis, T. and Ollus, A. 1987. Effects of dietary components, including lignans and phytoestrogens, on enterohepatic circulation and liver metabolism of oestrogens and on sex hormone binding globulin (SHBG). *Journal of Steroid Biochemistry* 27:1135-1144.

Adlercreutz, H., Yamada, T., Wahala, K. and Watanabe, S. 1999. Maternal and neonatal phytoestrogens in Japanese women during birth. *American Journal of Obstetrics & Gynecology* 180:737-743.

Adlercreutz. H., Honjo, H., Higashi, A., Fotsis, T., Hamalainen, E., Hasegawa, T. and Okada, H. 1991. Urinary excretion of lignans and isoflavonoid phytoestrogens in Japanese men and women consuming a traditional Japanese diet. *American Journal of Clinical Nutrition* 54:1093-1100.

Akiyama, T., Ishida, J., Nakagawa, S., Ogawara, H., Watanabe, S., Itoh, N., Shibuya, M. and Fukami, Y. 1987. Genistein, a specific inhibitor of tyrosine-specific protein kinases. *Journal of Biological Chemistry* 262: 5592-5595.

Aldercreutz, Mousavi, Y. Clark, J., Hockerstedt, K., Hamalainen, E. Wahala, K. Makel, T. and Hase, T. 1992. Dietary phytoestrogens and cancer: *In vitro*

and *in vivo* studies. *Journal of Steroid Biochemistry and Molecular Biology* 41(3-8): 331-337.

Alkel, D. L. Germain, A. S., Peterson, C. T., Hanson K. B., Stewart, J. W. and Toda, T. 2000. Isoflavone-rich soy protein isolate attenuates bone loss in the lumbar spine of perimenopausal women. *American Journal of Clinical Nutrition* 72: 844-852.

Anderson, J. J. B. and Garner, S. C. 1997. Phytoestrogens and human function. *Nutrition Today* 32:232-239.

Anderson, J. J. B., Anthony, M. Messina M. and Garner, S. 1999. Efffects of phyto-oestrogens on tissue. *Nutrition Research Reviews* 12: 75-116.

Anderson, J., Johnstone, B. and Cook-Newell, M., 1995. Meta-analysis of the effects of soy protein intake on serum lipids. *The New England Journal of Medicine* 333: 276-282.

Andlauer, W., Kolb, J. and Fürst, P. 2000. Absorption and metabolism of genistin in the isolated rat small intestine. *FEBS Letters* 475:127-130.

Anthony, M. S. 2000. Soy and cardiovascular disease: cholesterol lowering and beyond. *Journal of Nutrition* 130: 662S-663S.

Anuntalabhochai, S. and Jesrichai, S. 1986. Effect of high dosages of a local Thai plant, white gwow (*Pueraria mirifica* Shaw et. Suvat.) on coturnix quails: II-The changes of calcium, total protein and cholesterol concentration in blood serum. *Journal of the Science Faculty of Chiang Mai University* 13: 29-37. (in Thai)

Ashby, J., Odum, J., Paton, D., Lefevre, P.A., Beresford, N. and Sumpton, J.P. 2000. Re-evaluation of the first synthetic estrogen, 1-keto-1, 2, 3, 4-tetrahydrophenanthrene, and biphenol A using both the ovariectomized rat model used in 1933 and additional assays. *Toxicol Lett* 115: 231-238.

Ashton, E. and Ball, M. 2000. Effects of soy as tofu vs meat on lipoprotein concentrations. *European Journal of Clinical Nutrition* 54: 14-19.

Balk, J.L., Whiteside, D.A., Naus, G., DeFerrari, E. and Roberts, J.M. 2002. A pilot study of the effects of phytoestrogen supplementation on postmenopausal endometrium. *Journal Soc Gynecol Investig* 9: 238-242.

Barnes, S., Grubbs, C., Setchell, K. D. and Carlson, J. 1990. Soybeans inhibit mammary tumors in models of breast cancer. *Progress in Clinical and Biological Research* 347:239-253.

Barnes, S., Grubbs, C., Setchell, K. D. R. and Carlson, J. 1990. Soybeans inhibit mammary tumors in models of breast cancer. In: Pariza, M. (ed). *Mutagens and Carcinogens in the Diet* ,pp. 239-253. New York: Wiley-Liss New York.

Baum, J. A., Teng, H., Erdman, J. W. Jr., Weigel, R. M., Klein, B. P., Persky, V. W., Freels, S., Surya, P., Bakhit, R. M., Ramos, E., Shay, N. F. and Potter, S. M. 1998. Long-term intake of soy protein improves blood lipid profiles and increases mononuclear cell low-density-lipoprotein receptor messenger RNA in hypercholesterolemic, postmenopausal women. *American Journal of Clinical Nutrition* 68:545-551.

Bennets, H. W., Underwood, E. J. and Shier, F. L. 1946. A specific breeding problem of sheep on subterranean clover pastures in Western Australia. *Australian Veterinary Journal* 22: 2-12.

Benson, G. K., Cowie, A. T. and Hosking, Z. D. 1961. Mammogenic activity of miroestrol. *Journal of Endocrinology*.21: 401-409

Bingham, S. A., Atkinson, C., Liggins, J., Bluck, L. and Coward, A. 1998. Phyto-oestrogens: where are we know? *British Journal of Cancer* 79: 393-406.

Bound, D. G. and Pope, G. S. 1960. Light absorption and chemical properties of miroestrol, the oestrogenic substance of *Pueraria mirifica*. *Journal of the Chemical Society* 3196-3705.

Brown, N. M., and Lamartiniere, C. A. 2000. Genistein regulation of transforming growth factor-α, epidermal growth factor (EGF), and EGF receptor expression in the rat uterus and vagina. *Cell Growth & Differentiation* 111: 255–260.

Bulintanthikul, Y. 1978. *Effects of Pueraria mirifica crude extract on the serum calcium and the tibia cartilagenous plate in the gonado-parathyroidectocmized Weaning rat.* Master's Thesis. Kasetsart University 36 pp. (in Thai)

Cain, J. C. 1960. Miroestrol: an estrogen from the plant *Pueraria mirifica*. *Nature* 158: 774-777.

Cassidy, A., Bingham, S. and Setchell, K. 1995. Biological effects of isoflavones in young women: importance of the chemical composition of soyabean products. *The British Journal of Nutrition* 74:587–601.

Chansakaew, S., Ishikawa, T., Seki, H., Sekine, K., Okada, M. and Chaichantipyuth, C. 2000a. Identification of deoxymiroestrol as the actual rejuvenation principle of Kwao Keur", *Pueraria mirifica*. The known miroestrol may be an artifact. *Journal of Natural Products* 63: 173-175.

Chansakaew, S., Ishikawa, T., Seki, H., Sekine, K., Okada, M., Higuchi, Y and Chaichantipyuth, C. 2000b. Isoflavonoids from *Pueraria mirifica* and their estrogenic activity. *Planta Medica* 66: 572-575.

Cheewasopit, W. 2001. *Antiproliferative effects of Pueraria mirifica, Pueraria lobata, Butea superba and Mucuna collettii on human mammary carcinoma MCF-7 and cervical carcinom HeLa*. Master's Thesis, Chulalongkorn University. 89 pp.

Cheewasopit, W., Cherdshewasart, W. and Picha, P. 2003. Biotechnology of Phytoestrogen-Rich; *P. mirifica:* VII. Anti-proliferation effects on the growth of MCF-7 cells and HeLa cells by *Pueraria mirifica* and *Pueraria lobata*. *The 29th Congress on Science and Technology of Thailand at Khonkaen University*, 20-22 October 2003. Thailand.

Cherdshewasart , W., Cheewasopit, W. and Picha, P. 2004a. The differential anti-proliferation effect of white (*Pueraria mirifica*), red (*Butea superb*), and black (*Mucuna collettii*) Kwao Krua plants on the growth of MCF-7 cells. *Journal of Ethnopharmacology* 93: 255-260.

Cherdshewasart , W., Cheewasopit, W. and Picha, P. 2004b. Anti-proliferation effects of the white (*Pueraria mirifica*), red (*Butea superb*), and black (*Mucuna collettii*) Kwao Krua plants on the growth of HeLa cells. *Journal of Scientific Research of Chulalongkorn University* 29 (1):27-32.

Cherdshewasart, W. 2003. Toxicity tests of a phytoestrogen-rich herb; *Pueraria mirifica*. *Journal of Scientific Research of Chulalongkorn University* 28:1-12.

Cherdshewasart, W., Malaivijitnond, S., Wattanasermkit, K., Panriansaen, R., Sittiwicheanwong, P., Temcharoen, P., Choung, S. Y., and Son, J. K. 2000. Toxicity tests of White Kwao Krua (*Pueraria mirifica)* cultivar Wichai-III in experimental animals. *The Fifth Joint Seminar Natural Medicines, NRCT-JSPS Core University system on Pharmaceutical Science, Chulalongkorn University*, Bangkok, Thailand.

Cherdshewasart, W., Sompornpailin. K., and Reecharoen, S. 1996. Tissue culture and field trial of *Pueraria mirifica* (Airy Shaw& Suvatabandhu). Principles Regulating Biosynthesis and Storage of Secondary Products. *The Phytochemical Society of Europe and the Martin-Luther-University*, Halle-Wittenberg. The Federal Republic of Germany.

Cherdshewsart, W. and Nimsakul, N. 2003. The clinical trial of *Butea superba* as an herbal alternative treatment for erectile dysfunction. *Asian Journal of Andrology* 5: 243-246.

Chivapat, S. Chavalittumrong, P. Rattanajarasroj and Panyamang, S. 2000. Toxicity study of *Pueraria mirifica* Airy Shaw et Suvatabandu. *Bulletin Department of Medical Science* 42 : 202-223. (in Thai)

Cimino, C. O., Shelnutt, S. R., Ronis, M. J. J., and Badger, T. M. 1999. An LC-MS method to determine concentrations of isoflavones and their sulfate and glucuronide conjugates in urine. *Clinica Chimica Acta* 287:69-82

Clark, R., Hilakivi-Clake, L., Cho, E., James, M. R. and Leonnessa, F. 1996. Estrogens, phytoestrogens, and breast cancer. *Advance in Experimental Medicine and Biology* 401: 63-85.

Clarkson, T. B., Anthony, M. S., and Hughes, C. L. 1995. Estrogenic soybean isoflavones and chronic disease risks and benefits. *Trends in Endocrinology and Metabolism* 6: 11-16.

Cornwell, T., Cohick, W. and Raskin, I. 2004. Dietary phytoestrogens and health. *Phytochemistry* 65(8):995-1016.

Coward, L., Kirk, M., Albin, N., and Barnes, S. 1996. Analysis of plasma isoflavones by reversed-phase HPLC-multiple reaction ion monitoring-mass spectrometry. *Clinica Chimica Acta* 247:121-142.

Crouse, J. R., Morgan, T., Terry, J. G, Ellis, J., Vitolins, M. and Burke, G. L. 1999. A randomized trial comparing the effect of casein with that of soy protein containing varying amounts of isoflavones on plasma concentrations of lipids and lipoproteins. *Archives of Internal Medicine*159: 2070-2076.

Dai, Q., Shu, X. O., Jin, F., Potter, J. D., Kushi, L. H., Teas, J., Gao, Y. T. and Zheng, W. 2001. Population-based case-control study of soyfood intake and breast cancer risk in Shanghai. *The British Journal of Nutrition* 85: 372-378.

Dalais, F. S., Ebeling, P. R., Kotsopoulos, D., McGrath, B. P. and Teede, H. J. 2003. The effects of soy protein containing isoflavones on lipids and indices of bone resorption in postmenopausal women. *Clinical Endocrinology (Oxf)* 58: 704-709.

Davis, J. N., Singh, B., Bhuiyan, M. and Sarkar, F. H., 1998. Genistein-induced upregulation of p21WAF1, downregulation of cyclin B, and induction of apoptosis in prostate cancer cells. *Nutrition and Cancer* 32: 123-131.

Dewick, P. M. 1993. Isoflavonoids. In: J. B. Harborne, J. B. (ed.), *The Flavonoids. Advances in Research since 1986*, pp. 117-238. London: Chapman and Hall.

Diel, P., Smolnikar, K. and Michna, H. 1999. *In vitro* test systems for the evaluation of the estrogenic activity of natural products. *Planta Medica* 65: 197-203.

Doerge, D. R., Churchwell, M. I., and Delclos, K. B. 2000. On-line sample preparation using restricted-access media in the analysis of the soy isoflavones, genistein and daidzein, in rat serum using liquid chromatography

electrospray mass spectrometry. *Rapid Communications in Mass Spectrometry* 14:673-678.

Dweck, A. C. 2002. The *Pueraria* family with special interest in *Pueraria mirifica*. *Personal Care Magazine* 3(1):7-10.

Enmark, E. and Gustafsson, J. A. 1999. Oestrogen receptors-an overview. *Journal of International Medicine* 246: 133-138.

Evans, B. A. J., Griffiths, K. and Morton, M. S. 1995. Inhibition of 5α-reductase in genital skin fibroblasts and prostate tissue by dietary lignans and isoflavonoids. *Journal of Endocrinology* 147:295-302.

Fanti, P., Monier-Faugere, M. C., Geng, Z., Schmidt, J., Morris, P. E., Cohen, D. and Malluche, H. H. 1998. The phytoestrogen genistein reduces bone loss in short-term ovariectomized rats. *Osteoporosis International* 8: 274-281.

Finlay, E. M. H., Wilson, D. W., Adlercreutz, H. and Griffiths, K. 1991. The identification and measurement of 'phyto-oestrogens' in human saliva, plasma, breast aspirate or cyst fluid, and prostatic fluid using gas chromatography-mass spectrometry. *Journal of Endocrinology* 129: 49 (Abstract).

Fitzpatrick, L. A. 1999. Selective estrogen receptor modulators and phytoestrogens: new therapies for the postmenopausal women. *Mayo Clinic Proceedings* 74: 601-607.

Folman, Y. and Pope, G. S. 1966. The interaction in the immature mouse of potent estrogen with coumesterol, genistein and other utero-vaginotrophic compounds of lower potency. *Journal of Endocrinology.* 34:215-225.

Fotsis, T., Pepper, M., Adlercreutz, H., Fleischmann, G., Hase, T., Montesano, R. and Schweigerer, L. 1993. Genistein, a dietary-derived inhibitor of *in vitro* angiogenesis. *Proceedings of the National Academy of Sciences, USA* 90: 2690-2694.

Franke, A. A. and Custer, L. J. 1996. Daidzein and genistein concentrations in human milk after soy consumption. *Clinical Chemistry* 42:955-964.

Franke, A. A. Custer, L. J., Cerna, C. M. and Narala, K. K. 1994. Quantitation of phytoestrogens in legumes by HPLC. *Journal of Agricultural and Food Chemistry* 42: 1905-1913.

Goodman, M. T., Wilkens, L. R., Hankin, J. H., Lyu, L. C., Wu, A. H. and Kolonel, L. N. 1997. Association of soy and fiber consumption with the risk of endometrial cancer. *American Journal of Epidemiology* 146:294-306.

Gotoh, T., Yamada, K., Yin, H., Ito, A., Kataoka, T. and Dohi, K. 1998b. Chemoprevention of *N*-nitroso-*N*-methylurea-induced rat mammary

carcinogenesis by soy foods or biochanin A. *Japanese Journal of Cancer Research* 89:487-495.

Gotoh, T., Yamamda, K., Yin, H., Ito, H. Kataoka, T. and Dohi, K. 1998a. Chemoprevention of N-nitroso-N-methylurea-induced rat mammary cancer by miso and tamoxifen, alone and in combination. *Japanese Journal of Cancer Research* 89: 137-142.

Greaves, K. A., Wilson, M. D., Rudel, L. L., Williams, J. K. and Wagner, J. D. 2000. Consumption of soy protein reduces cholesterol absorption compared to casein protein alone or supplemented with an isoflavone extract or conjugated equine estrogen in ovariectomized cynomolgus monkeys. *Journal of Nutrition* 130:820-826.

Hargreaves, D. F., Potten, C. S., Harding, C., Shaw, L. E., Morton, M. S., Roberts S. A., Howell, A. and Bundred, N. J. 1999. Two-week dietary soy supplementation has an estrogenic effect on normal premenopausal breast. *Journal of Clinical Endocrinology and Metabolism* 84:4017-4024.

Herbert, J. R., Hurley, T. G., Olendzki, B. C., Tea, J., Ma, Y. and Hampl, J. S. 1998. Nutritional and socioeconomic factors in relation to prostate cancer mortality: a cross-national study. *Journal of the National Cancer Institute* 90(21): 1637-1647.

Hillman, G. G., Forman, J. D., Kucuk, O., Yudelev, M., Maughan, R., Rubio, J., Layer, A., Tekyi-Mensah, S., Abrams, J. and Sarkar, F. H. 2001. Genistein potentiates radiation effect on prostate carcinoma cells. *Clinical Cancer Research* 7: 382-390.

Hirose, K., Tajima, K., Hamajima, N., Inoue, M., Takezaki, T., Kuroishi, T., Yoshida, M. and Tokudome, S. 1995. A large-scale, hospital-based case-control study of risk factors of breast cancer according to menopausal status. *Japanese Journal of Cancer Research* 86: 146-154.

Hodgson, J. M., Croft, K. D., Puddey, I. B., Mori, T. A. and Beillin, L. J. 1996. Soybean isoflavonoids and their metabolic products inhibit *in vitro* lipoprotein oxidation in serum. *Journal of Nutritional Biochemistry* 7 : 664-669.

Horn-Ross, P. L., Hoggatt, K. J. and Lee, M. M. 2002. Phytoestrogens and thyroid cancer risk: the San Francisco Bay area thyroid cancer study. *Cancer Epidemiology, Biomarkers & Prevention* 11(1):43-49.

Hoyodom, M. 1971. *Constituents of the tuberous roots of Pueraria mirifica.* Master's Thesis, Chulalongkorn University. 33 pp. (in Thai)

Hsu, J. T., Hung, H. C., Chen, C. J., Hsu, W. L. and Ying, C. 1999. Effects of the dietary phytoestrogen biochanin A on cell growth in the mammary carcinoma cell line MCF-7. *The Journal of Nutritional Biochemistry* 10(9):510-7.

Hsu, J. T., Ying, C. and Chen, C. J. 2000. Regulation of inducible nitric oxide synthetase by dietary phytoestrogen in MCF-7 human mammary cancer cells. *Reproduction Nutrition Development* 40:11-18.

Imoto, M., Yamashita, T., Sawa, T., Kurasawa, S., Naganawa, H., Takeuchi, T, Bau-quan, Z. and Umezawa, K. 1988. Inhibition of cellular phosphotidylinositol turnover by psitectorigenin. *FEBS Letters* 230: 43-46.

Ingham, J. L., Tahara, S and Dziedzic, S.Z 1986. A chemical investigation of *Pueraria mirifica* root. *Z Naturforsh Ser C* 41: 403-408.

Ingham, J. L., Tahara, S and Dziedzic, S.Z 1988. Coumestan from the roots of *Pueraria mirifica* root. *Zeitschrift fur Naturforschung Section C: Biosciences* 43: 5-10.

Ingham, J. L., Tahara, S. and Dziedzic, S. Z. 1989. Minor isoflavones from the root of *Pueraria mirifica* . *Zeitschrift fur Naturforschung Section C: Biosciences* 44 (9/10): 724-726.

Ingram, D. Sanders, K. Kolybaba, M. and Lopez, D. 1997. Case-control study of phyto-eostrogens and breast cancer. *The Lancet* 350: 990-994.

Izumi, T., Piskula, M. K., Osawa, S., Obata, A., Tobe, K., Saito, M., Kataoka, S., Kubota, Y. and Kikuchi, M. 2000. Soy isoflavone aglycones are absorbed faster and in higher amounts than their glucosides in humans. *Journal of Nutrition* 130:1695-1699.

Jacobsen, B. K., Knutsen, S. F. and Fraser, G. E. 1998. Does high soy milk intake reduce prostate cancer incidence? The Adventist Health Study (United States). *Cancer Causes Control* 9:553-557.

Ji, S., Willis, G. M., Frank, G. R., Cornelius, S. G. and Spurlock, M. E. 1999. Soybean isoflavones, genistein and genistin, inhitbit rat myoblast proliferation, fusion and myotube protein synthesis. *Journal of Nutrition* 129: 1291-1297.

Jones, H. E. H., and Pope, G. S. 1960. A study of the action of miroestrol and other oestrogens on the reproductive tract of the immature female mouse. *Jounal of Endocrinology* 20: 229-235.

Julsiri, M. and Cherdshewasart, W. 2003. Biotechnology of Phytoestrogen-Rich; *P. mirifica*: IV. Mutagenicity and antimutagenicity by Ames. *The 29th Congress*

on Science and Technology of Thailand at Khonkaen University, 20-22 October 2003. Thailand.

Kao, Y. C., Zhou, C., Sherman, M., Laughton, C. A. and Chen, S. 1998. Molecular basis of the inhibition of human aromatase (oestrogen synthetase) by flavone and isoflavone phytoestrogens: a site-directed mutagenesis study. *Environmental Health Perspectives* 106:85-92.

Kellis, Jr. J. T. and Vickery, L. E. 1984. Inhibition of human estrogen synthetase (aromatase) by flavones. *Science* 225: 1032-1034.

Key, T. J., Sharp, G. B., Appleby, P. N., Beral, V., Goodman, M. T. and Soda, M. 1999. Soya foods and breast cancer risk: a prospective study in Hiroshima and Nagasaki. *British Journal of Cancer* 81:1238–1256.

Kim, H. Y., Hong, J. H., Kim, D. S., Kang, K. J., Han, S. B., Lee, E. J., Chung, H. W., Song, K. H., Sho, K. A., Kwack, S. J., Kim, S. S., Park, K. L., Kim, M. C., Kim, C. M. and Song, I. S. 2003. Isoflavone Content and Estrogen Activity in Arrowsoot Purerariae Radix. *Food Science Biotechnology* 12(1): 29-33.

Kim, M. K, Chung, B. C., Yu, V. Y., Nam, J. H., Lee, H. C., Huh, K. B., Lim, S. K. 2002. Relationships of urinary phyto-oestrogen excretion to BMD in postmenopausal women. *Clinical Endocrinology (Oxf)* 56: 321-328.

King, R. A. and Bursill, D. B. 1998. Plasma and urinary kinetics of the isoflavones daidzein and genistein after a single soy meal in humans. *American Journal of Clinical Nutrition* 67: 867-872.

Kitsamai, Y.,2004. *Ouantitative estrogenicactivity of WHITE KWAO KRUA Pueraria mirifica from various parts of Thailand in ovariectomize rats.* Master's Thesis, Chulalongkorn University. 135 pp.

Kolonel, L. N., Hankin, J. H., Whittemore, A. S., Wu, A. H., Gallagher, R. P., Wilkens, L. R., John, E. M., Howe, G. R., Dreon, D. M., West, D. W. and Paffenbarger, R. S. Jr. 2000. Vegetables, fruits, legumes and prostate cancer: a multiethnic case-control study. *Cancer Epidemiology, Biomarkers & Prevention* (8):795-804.

Krazeisen, A., Breitling, R., Moller, G. and Adamski, J. 2001. Phytoestrogens inhibit human 17 beta-hydroxysteroid dehydrogenase type 5. *Molecular and Cellular Endocrinology* 171:151-162.

Kuiper, G. G., Carlsson, B., Grandien, K., Enmark, E., Haggblad, J., Nilsson, S., and Gustafsson, J. A. 1997. Comparison of the ligand binding specificity and transcript tissue distribution of estrogen receptors alpha and beta. *Endocrinology* 138:863-870.

Kuiper, G. G., Enmark, E., Pelto-Huikko, M., Nilsson, S. and Gustafsson, J. A. 1996. Cloning of a novel receptor expressed in rat prostate and ovary. *Proceedings of the National Academy of Sciences, USA* 93: 5930-5935.

Kuiper, G. G., Lemmen, J. G., Carlsson, B., Corton, J. C., Safe, S. H., van der Saag, P. T., van der Burg, B. and Gustafsson, J. -A., 1998. Interaction of estrogenic chemicals and phytoestrogens with estrogen receptor beta. *Endocrinology* 139, 4252–4263.

Kuo, S.-M. 1996. Antiproliferative potency of structurally distinct dietary flavonoids on human colon cancer cells. *Cancer Letters* 110:41-48.

Kurzer, M. S. and Hu, X. 1997. Dietary phytoestrogens. *Annual Review of Nutrition* 17: 353-381

Lakshnakara, K. M. C. and Suvatabandhu, K. 1952. A new species of *Pueraria* (leguminosae) from Thailand, yielding and oestrogenic principle. *Kew Bulletin* : 263-266.

Lamartiniere, C. A., Moore, J. B., Brown, N. M., Thompson, R., Hardin, M. J., and Barnes, S. 1995a. Genistien suppresses mammary cancer in rats. *Carcinogenesis* 16: 2833-2840.

Lamartiniere, C. A., Moore, J., Holland, M. and Barnes, S. 1995b. Neonatal genistein chemoprevents mammary cancer. *Proceedings of the Society for Experimental Biology and Medicine* 208:120-123.

Langkalichan, Y. and Smitasiri, Y 1985. Effect of white Qwow (*Pueraria mirifica*) on reproduction in male albino rat. *The 11th Conference Science & Technology.* Kasetsart university, Bangkok, Thailand : 334-335. (in Thai)

Lee, H. P., Gourley, L., Duffy, S. W., Esteve, J. and Day, N. E. 1991. Dietary effects on breast-cancer risk in Singapore. *The Lancet* 337: 1197-1200.

Lee, Y. S., Park, J. S., Cho, S. D., Son, J. K., Cherdshewasart, W. and Kang, K. S. 2002. Requirement of metabolic activation for estrogenic activity of *Pueraria mirifica*. *Journal of Veterinary Science* 3(4): 273-277.

Loukovaara, M., Carson, M., Palotie, A. and Adlercreutz, H. 1995. Regulation of sex hormone-binding globulin production by isoflavonoids and patterns of isoflavonoid conjugation in HepG2 cell cultures. *Steroids* 60: 656-661.

Lu, L.-J. W., Anderson. K. E., Grady, J. J. and Nagamani, M. 1996. Effects of soya consumption for one month on steroid hormones in premenopausal women: implications for breast cancer risk reduction. *Cancer Epidemiology, Biomarkers and Prevention* 5:63–70.

Lu, L-J. W., Anderson, K. E., Grady, J. J., Kohen, F. and Nagamani, M. 2000 Decreased ovarian hormones during a soya diet: implications for breast cancer prevention. *Cancer Research* 60(15): 4112-4121.

Makela, S., Poutanen, M., Kostian, M. L., Lehtimaki, N., Strauss, L., Santti, R. and Vihko, R. 1998. Inhibition of 17 beta-hydroxysteroid oxidoreductase by flavonoids in breast and prostate cancer cells. *Proceedings of the National Academy of Sciences, USA* 217:310-316.

Makela, S., Poutanen, M., Lehtimaki, J., Kostian, M. L., Santti, R. and Vihko, R. 1995. Estrogen-specific 17 beta-hydroxysteroid oxidoreductase type 1 (E.C.1.1.1.62) as a possible target for the action of phytoestrogens. *Proceedings of the Society for Experimental Biology and Medicine.* 208: 51–59.

Malaivijitnond, S., Jaroenporn, S., Wattanasemkit, K. and Cherdshewasart, W. 2003a. Biotechnology of phytoestrogen-rich; *Pueraria mirifica:* XII Effects of *Pueraria mirifica* on fertility in mice, *The 29th Congress on Science and Technology of Thailand at Khonkaen University,* 20-22 October 2003. Thailand.

Malaivijitnond, S., Jaroenporn, S., Wattanasemkit, K. and Cherdshewasart, W. 2003b. Biotechnology of Phytoestrogen-rich; *Pueraria mirifica:* XIII Sex differences in response of anterior pituitary to *P.* mirifica phytoestrogens in rats. *The 29th Congress on Science and Technology of Thailand at Khonkaen University,* 20-22 October 2003. Thailand.

Malaivijitnond, S., Kiatthaipipat, P., Cherdshewasart, W., Watanabe, G. and Taya, K. 2004. Different effects of *Pueraria mirifica*, a herb containing phytoestrogens, on LH and FSH secretion in gonadectomized female and male rats. *Journal of Pharmacological Sciences* 96: 428-435.

Markiewicz, L., Garey, J., Adlercreutz, H., and Gurpide, E. 1993. In vitro bioassays of nonsteroidal phytoestrogens. *Journal of Steroid Biochemistry and Molecular Biology* 45:399-405.

Martin-Cordero, C., Lopez-Lazoro, M., Pinero, J., Ortiz, T., Cortes, F. and Ayuso, M. J. 2000. Glucosylated isoflavones as DNA topoisomerase II poisons. *Journal of Enzyme Inhibition (Chur)* 15: 455-460.

Mazur, W., Fotsis, T., Wahala, K., Ojala, S., Salakka, A. and Adlercreutz, H. 1996. Isotope dilution gas chromatographic-mass spectrometric method for the determination of isoflavonoids, coumestrol, and lignans in food samples. *Analytical Biochemistry* 233: 169-180.

Mesiano, S. Katz, S. L., Lee J. Y. and Jaffe, R. B. 1999. Phytoestrogens alter adrenocortical function: genistein and daidzein suppress glucocorticoid and stimulate androgen production by cultured adrenal cortical cells. *The Journal of Clinical Endocrinology & Metabolism* 84 (7): 2443-2448.

Milligan, S. R., Kalita, J. C., Pocock, V., van de Akuter, V., Stevens J. F., Deinzer, M. L., Rong, H. and De Keukeleire, D. 2000. The endocrine activities of 8-prenylnaringenin and related hop (*Humulus lupulus* L.) flavonoids. *Journal of Clinical Endocrinology and Metabolism* 85: 4912-4915.

Morton, M. S., Wilcox, G., Wahlquist, M. L. and Griffiths, K. 1994. Determination of lignans and isoflavonoids in human female plasma following dietary supplementation. *Journal of Endocrinology* 142:251-259.

Mosselman, S., Pohlman, J. and Dijkema, R. 1996. ERß: identification and characterization of a novel human estrogen receptor. *FEBS Letters* 392: 49–53.

Mousavi, Y. and Adlercreutz, H. 1993. Genistein is an effective stimulator of sex hormone-binding globulin production in hepatocarcinoma human liver cancer cells and suppresses proliferation of these cells in culture. *Steroids* 58:301-304.

Muangman, V. and Cherdshewasart, W. 2001. Clinical trail of the phytoestrogen-rich herb, *Pueraria mirifica* as a crude drug in the treatment of symtoms in menopausal women. *Siriraj Hospital Gazette* 53: 300-309.

Murkies, A. L., Wilcox, G. and Davis, S. R. 1998. Clinical review 92-Phytoestrogen. *The Journal of Clinical Endocrinology & Metabolism* 83: 297-303.

Murrill, W. B., Brown, N. M., Zhang, J. X., Manzolillo, P. A., Barnes, S. and Lamartiniere, C. A. 1996. "Prepubertal genistein exposure suppresses mammary cancer and enhances gland differentiation in rats, *Carcinogenesis* 17:1451-1457.

Nagata, C. 2000. Ecological study of the association between soy product intake and mortality from cancer and heart disease in Japan. *International Journal of Epidemiology* 29(5):832-836.

Nesbitt, P. D., Lam, Y., and Thompson, L. U. 1999. Human metabolism of mammalian lignan precursors in raw and processed flaxseed. *American Journal of Clinical Nutrition* 69:549-555.

Nilandihi, T., Kamthong, B., Isarasena, K. and Shiengthong, D. 1957. Constituents of the tuberous roots of *Pueraria mirifica*. *Zeitschrift fur Naturforschung Section C: Biosciences* 5: 41.

Panriansaen, R. 2000. *Characterization of Pueraraia mirifica populations from various parts of Thailand.*Master's Thesis, Chulalongkorn University. 7-8 pp.

Panriansaen, R. 2005. *Evaluation of preventive and antitumor activities of Pueraraia mirifica and Butea superba in DMBA-induced mammary carcinoma in the rat.* Doctor 's Thesis, Chulalongkorn University. 184 pp.

Panriansaen, R. and Cherdshewasart, W . 2003. Biotechnology of Phytoestrogen-Rich; *P. mirifica*: II. F_1 analysis and the 2 clones of field grown plant. *The 29th Congress on Science and Technology of Thailand at Khonkaen University,* 20-22 October 2003. Thailand.

Pelissero, C., Lenczowski, M. J., Chinzi, D., Davail, Cuisset, B., Sumpter, J. P. and Fostier, 1996. A. Effects of flavonoids on aromatase activity, an *in vitro* study. *Journal of Steroid Biochemistry and Molecular Biology* 57: 215-223.

Picherit, C., Coxam, V., Bennetau-Pelissero, D. C., Kati-Coulibaly, S., Davicco, M. J., Lebecque, P. and Barlet, J. P. 2000. Daidzein is more efficient than genistein in preventing o variectomy-induced bone loss in rats. *Journal of Nutrion* 130: 1675-1681.

Pisetpakasit, R.1976. *A Pharmaconostical study of Pueraria mirifica.* Master's thesis, Chulalongkorn University (in Thai).

Pope, G. S., Gruny, H. M., Jones, H. E. D. and Tait, S. A. S. 1958. The oestrogenic substance (miroestrol) from the tuberous root of *Pueraria mirifica*. *Journal of endocrinology* 17: 15-16.

Potter, S. M., Baum, J. A., Teng, H., Stillman, R. J., Shay, N. F. and Erdman, J. W. 1998. Soy protein and isoflavones: their effects on blood lipids and bone density i n p ostmenopausal women. *A merican J ournal o f C linical N utrition* 68: 1375S-1379S.

Price K. R. and Fenwick, G. R. 1985. Naturally occurring oestrogens in foods-a review. *Food Additives and Contaminants* 2:73-106.

Rauth, S., Kichina, J., Green, A. 1997. Inhibition of growth and induction of differentiation of metastatic melanoma cells *in vitro* by genistein: chemosensitivity is regulated by cellular p53. *British Journal of Cancer* 75:1559-1566.

Ren, M. Q., Kuhn, G., Wegner, J. and Chen, J. 2001. Isoflavones, substances with multi-biological and clinical properties. *European Journal of Clinical Nutrition* 40: 135-146.

Ridley, H. N. 1967. *The flora of the Malay Penisula I* Holland: A. Asher&Co. Amsterdam 555-556.

Roberts-Kirchhoff, E. S., Crowley, J. R., Hollenberg, P. F. and Kim, H. 1999. Metabolism of genistein by rat and human cytochrome P450s. *Chemical Research in Toxicology* 12: 610-616.

Roengsumran, S., Petsom, A., Ngamrojanavanich, N., Rugsilp, T., Sittiwicheanwong, P., Khorphueng, P., Cherdshewasart, W. and Chaichantipyuth, C. 2000. Flavonoid and flavonoid glycoside from *Butea superba* and their cAMP Phosphodiesterase inhibitory Acitvitiy. *Journal of the Science Faculty of Chulalongkorn University* 1: 170-176.

Salti, G. I., Grewal, S., Mehta, R. R., Das, G. T., Boddie, A. W. and Constantinou, A. I. 2000. Genistein induces apoptoesis and topoisomerase II-mediated DNA breakage in colon cancer cells. *European Journal of Cancer* 36: 796-802.

Sangkaew, D. and Smitasiri, Y. 1985. Effects of white Qwow (*Pueraria mirifica*) on mid-and late pregnancy in rats. *The 11th Congress on Science and Technology of Thailand,* Central Plaza Hotel, Bangkok, Thailand : 340-341. (in Thai)

Santibanez, J. F., Navarro, A. and Martinez, J. 1997. Genistein inhibits proliferation and *in vitro* invasive potential of human prostatic cancer cell lines. *Anticancer Research* 17(2A):1199-1204.

Sathyamoorthy, N., Wang, T. T. and Phang, J. M. 1994. Stimulation of pS2 expression by diet-derived compounds. *Cancer Research* 54: 957-961.

Sawatdipong, S. 1981. Deveopment of screenin tests for oestrogenic activity of extracts of some northern Thai plants and investigations of their effect on mammary gland development in mice. *Journal of the Science Faculty of Chiang Mai University* 4: 3-4. (in Thai)

Schoeller, W., Dohrn, M. and Hohweg, W. 1940. An estrogenic substance from the tubers of the Siamese vine, *Butea superba*. *Nuturwissenschaften* 28: 532.

Seow, A., Poh, W. T., The, M., Eng, P., Wang, Y. T., Tan, W. C., Chia, K. S., Yu, M. C. and Lee, H. P. 2002. Diet, reproductive factors and lung cancer risk among Chinese women in Singapore, evidence for a protective effect of soy in nonsmokers. *International Journal of Epidemiology* 97:365-71.

Setchell, K. D. 1998. Phytoestrogens: The biochemistry, physiology, and implications for human health of soy isoflavones. *American Journal of Clinical Nutrition* 68: 1333S–1346S.

Setchell, K. D., Zimmer-Nechemias, L., Cai, J. and Heubi J. E. 1998. Isoflavone content of infant formulas and the metabolic fate of these phytoestrogens in early life. *American Journal of Clinical Nutrition* 68:1453S–1461S.

Shao, Z. M., Wu, J., Shen, Z. Z. and Barsky, S. H. 1998. Genistein inhitbits both constitutive and EGF-stimulated invasion in ER-negative human breast carcinoma cell lines. *Anticancer Research* 18: 1435-1439.

Shu, X. O., Jin, F., Dai, Q., Wen, W., Potter, J. D., Kushi, L. H., Ruan, Z., Gao, Y. T. and Zheng, W. 2001. Soyfood intake during adolescence and subsequent risk of breast cancer among Chinese women. *Cancer Epidemiology, Biomarkers & Prevention* 10: 483-488.

Shukla, S., Mathur, R and Prakash, A. 1987. Effect of butanolic extract of *Pueraria tuberosa* DC. on the oestrous cycles of adult rats. *Indian J Pharmac* 19: 49-53.

Shutt, D. A. and Braden, A. W. H. 1968. The significance of equol in relation to the oestrogenic responses in sheep ingesting clover with a high formononetin content. *Australian Journal of Agricultural Research* 19: 545-53.

Smart, R. C. 2004. Chemical Carcinogenesis. In Hogson, E. (ed.), A *Textbook of Modern Toxicology* (3rd), John Wiley & Sons, Inc.

Smitasiri, Y. 1988. *Pueraria mirifica* : An antifertility plant for dogs. *The 2nd Conference, Chiangmai University*: 85. (in Thai)

Smitasiri, Y. and Pangjit, S. 1986. Antifertility effects of *Pueraria mirifica* in albino rats. *Journal of the Science Faculty of Chiang Mai University* 13: 75-80. (in Thai)

Smitasiri, Y. and Wungjai, C. 1986. Some biological aspects of *Pueraria mirifica* :1) flower, pod and seed. *Journal of the Science Faculty of Chiang Mai University* 14 (1) : 67-74.

Smitasiri, Y., Pangjit, S. and Anantalabhochai, S. 1986. Inhibition of lactation in latating rats with *Pueraria mirifica* compared with estrogen. *Journal of the Science Faculty of Chiang Mai University* 16:7-11. (in Thai)

Smitasiri, Y., Yunyatum, U., Songjitsawad, A., Sripromma, P., Trisisilp, S. and Anuntalabhochai, S. 1986. Postcoital antifertility effects of *Pueraria mi*rifica in rat. *Journal of the Science Faculty of Chiang Mai University* 13: 19-28

Sompornpailin, K, Cherdshewasart, W. and Reecharoen, S. Biotechnology of Phytoestrogen-Rich; *P. mirifica:* XVI. Micro-propagation and field trials. *The 29th Congress on Science and Technology of Thailand at Khonkaen University,* 20-20 October 2003. Thailand.

Spinozzi, F., Pagliacci, M. C., Migliorati, G., Moraca, R., Grignani, F., Riccardi, C. and Nicoletti, I. 1994. The natural tyrosine kinase inhibitor genistein produces cell cycle arrest and apoptosis in Jurkat T-leukemia cells. *Leukemia Research* 18(6):431-439.

Strauss, L., Makela, S., Joshi, S., Huhtaniemi, I. and Santi, R. 1998a. Genistein exerts estrogenic-like effects in male mouse reproductive tract. *Mol Cell Endocrinol* 144: 83-93.

Strauss, L., Santti, R., Saarinen, N., Streng, T., Joshi, S. and Makela, S. 1998b. Dietary phytoestrogens and their role in hormonally dependent disease. *Toxicology Letters* 102–103: 349–354.

Strobl, J.S. and Lippman, M.E. 1979. Prolonged retention of estradiol by human breast cancer cells in tissue culture. *Cancer Res* 39: 3319-3327.

Stroheker, T., Chagnan, M-C., Pinner, M-F., Berges, R. and Canivenc-Lavier, M-C. 2003 Estrogenic effects of food wrap packaging xenoestrogens and flavoniods in female rats: a comparative study. *Reprod Toxicol* 17: 421-432.

Subtaeng, S. and Cherdshewasart, W. 2003. Biotechnology of Phytoestrogen-Rich; *P. mirifica:* I. HPLC fingerprint and quantification of major isoflavonoids, *The 29th Congress on Science and Technology of Thailand at Khonkaen University,* 20-22 October 2003. Thailand.

Subtang, S. 2002. *Comparative isoflavone HPLC fingerprints from the extracts of White Kwao Krua Pueraria mirifica in Thailand* Master's Thesis, Chulalongkorn University. 165 pp.

Sukhavachana, P. 1949. The comparison of the effects from *Pueraria mirifica* extract with oestrogenic Hormone. *J Med Assoc Thai* 3: 104-110 (in Thai).

Suntara, L.A. 1931. *The Kwoa Krua Tuber Pamplet.* Upatipong Printing. Chiangmai: 18pp (in Thai).

Suntara, A. 1931. *The remedy pamphlet of Kwao Krua tuber of Luanganusarn-suntarakromkarnphiset* Chiang Mai: Upatipongsa Press Chiang Mai. pp. 1-13 (in Thai).

Suvatti, C. 1978. *Flora of Thailand* Thailand, Kurusapha Ladpro press: 680.

Tekel, J., Daeseleire, E., Heeremans, A. and van Peteghem, C. 1999. Development of a simple method for the determination of genistein, daidzein, biochanin A, and formononetin (biochanin B) in human urine. *Journal of Agricultural and Food Chemistry* 47:3489-3494.

Terenius, L. 1971. The allen doisy test for estrogens reinvestigated. *Steroids* 17: 653-618

Thaiyanun, P., Trakulboon, P. and Anuntalabhochai, S. 1992. Effect of white Gwow on quail : II. Red blood cell and white blood cell production. *Journal of Associated Medical Science Chaingmai University* 25 (3) : 107-114. (in Thai)

Tham, D. M., Gardner, D. D. and Haskell, W. L. 1998. Clinical review 97-potential health benefits of dietary phytoestrogen-a review of the clinical, epidemiological, and mechanistic evidence. *The Journal of Clinical Endocrinology & Metabolism* 83: 2223-2235.

Thomas, B. F., Zeisel, S. H., Busby, M. G., Hill, J. M., Mitchell, R. A., Scheffler, N. M., Brown, S. S., Bloeden, L. T., Dix, K. J. and Jeffcoat, A. R. 2001. Quantitative analysis of the principle soy isoflavones genistein, daidzein and glycitein, and t heir primary conjugated metabolites in human plasma and urine using reversed-phase high-performance liquid chromatography with ultraviolet detection. *Journal of Chromatograpy B* 760:191-205.

Tovar-Palacio, D. Pottor, S. M. , Haermann, J. C. and Shay, N. F. 1998. Intake of soy protein and soy protein extracts influences lipid metabolism and heptic gene expression in gerbils. *Journal of Nutrition* 128: 839-842.

Trisap, V., Cherdshewasart, W. and Picha, P. 2003. Biotechnology of Phytoestrogen-Rich; *P. mirifica*: VIII. Comparative proliferative and anti-proliferation effects on the growth of MCF-7 cells of *P. mirifica* from various sites. *The 29th Congress on Science and Technology of Thailand at Khonkaen University*, 20-22 October 2003. Thailand.

Trisomboon, H., Malaivijitnond, S., Watanabe, G. and Taya, K. 2005. Ovulation block by *Pueraria mirifica*. *Journal of Endocrin* 26 :33-39.

Trisomboon, H., Malaivijitnond, S., Watanabe, G. and Taya, Kazuyoshi. 2004b. Estrogenic effects of *Pueraria mirifica* on the mentrual cycle and hormone-related ovarian functions in cyclic female cynomolgus monkeys. *Journal of Pharmacological Sciences* 94: 51-59.

Trisomboon, H., Malaivijitnond, S., Watanabe, G., Cherdshewasart, W . and Taya, K.2006a. The estrogenic effect of *Pueraria mirifica* on gonadotropin levels in aged monkeys. *Journal of Endocrin* 29 :129-134.

Trisomboon,H., Malaivijitnond, S., Cherdshewasart, W., Watanabe, G. and Taya, K. 2006b. Effect of *Pueraria mirifica* on the sexual skin coloration of aged menopausal cynomolgus monkeys. *Journal of Reproductive.Development* 52 :537-542.

Trisub, V., Cherdshewasart, W. and Picha, P. 2003. Biotechnology of Phytoestrogen-Rich; *P. mirifica*: VIII. Comparative proliferative and anti-proliferation effects on the growth of MCF-7 cells of *P. mirifica* from various sites. *The 29th Congress on Science and Technology of Thailand at Khonkaen University*, 20-22 October 2003. Thailand.

Uesugi, T., Toda, T., Tsuji, K. and Ishida, H. 2001. Comparative study on reduction of bone loss and lipid metabolism abnormality in ovariectomized rats by soy isoflavones, daidzin, genistin, and glycitin. *Biological & Pharmaceutical Bulletin* 24: 368-372.

Wagner, J. D., Zhang, L., Greaves, K. A., Shadoan, M. K. and Schwenke, D. C. 2000. Soy protein reduces the arterial low-density lipoprotein (LDL) concentration and delivery of LDL cholesterol to the arteries of diabetic and nondiabetic male cynomolgus monkeys. *Metabolism, Clinical and Experimental* 49:1188-1196.

Wang, G., Kuan, S. S., Francis, O. J., Ware, G. M. and Carman, A. S. 1990. A simplified HPLC method for the determination of phytoestrogens in soybean and its processed products. *Journal of Agricultural and Food Chemistry* 38: 185-190.

Wang, T. T. Y., Sathyamoorthy, N. and Phang, J. M. 1996. Molecular effects of genistein on estrogen receptor mediated pathways. *Carcinogenesis* 17: 271-275.

Wang, W., Higuchi, C. M. and Zhang, R. 1997. Individual and combinatory effects of soy isoflavones on the *in vitro* potentiation of lymphocyte activation. *Nutrition and Cancer* 29: 29-34.

Wilcox, G., Wahlqvist, M.L., Burger, H.G. and Medley, G. 1990. Oestrogenic effects of plants foods in postmenopausal women. *Br Med J* 301: 905-906.

Witte, J. S. Ursin, G., Siemiatycki, J., Thomson, W. D., Paganini-Hill, A. and Haile, R. W. 1997. Diet and premenopausal bilateral breast cancer: case-control study. *Breast Cancer Research and Treatment* 42: 243-251.

Wuttke, W., Jarry, H., Becker, T., Schultens, A., Christoffel, V., Gorkow, C. and Seidlova-Wuttke, D. 2003. Phytoestrogens: endrocrine disrupter or replacement for hormone replacement therapy? *Marturitas* 44 (suppl.1): S9-S20.

Xu, X., Duncan, A. M., Merz, B. E. and Kurzer, M. S. 1998. Effects of soy isoflavones on estrogen and phytoestrogen metabolism in premenopausal women. *Cancer Epidemiology, Biomarkers & Prevention* 7: 1101-1108.

Xu, X., Duncan, A. M., Wangen, K. E. and Kurzer, M. S. 2000. Soy consumption alters endogenous estrogen metabolism in postmenopausal women. *Cancer Epidemiology, Biomarkers & Prevention* 9: 781-786.

Xu, X., Harris, K. S., Wang, H. -J., Murphy, P. A. and Hendrich, S. 1995. Bioavailability of soybean isoflavones depends upon gut microflora in women. *Journal of Nutrition* 125: 2307-2315.

Yamaguchi, M., Gao, Y. H. and Ma, Z. J. 2000. Synergistic effect of genistein and zinc on bone components in the femoral-metaphyseal tissues of female rats. *Journal of Bone and Mineral Metabolism* 18: 77-83.

Yamashita, Y., Kawada, S. and Nakano, H. 1990. Induction of mammalian topoisomerase II dependent DNA clevage by nonintercalative flavonoids, genistein and orobol. *Biochemical Pharmacology* 39: 737-744.

Yanagihara, K., Ito, A., Toge, T. and Numoto, M. 1993. Antiproliferative effects of isoflavones on human cancer cell lines established from the gastrointestinal tract. *Cancer Research* 53(23):5815-5821.

Yuan, J. M., Wang, Q. S., Ross R. K., Henderson, B. E. and Yu, M. C. 1995. Diet and breast cancer in Shanghai and Tianjin, China. *The British Journal of Nutrition* 71:1353–1358.

Zhang, R., Li, Y. and Wang, W., 1997. Enhancement of immune function in mice fed high doses of soy daidzein. *Nutrition and Cancer* 29: 24-28.

Zhang, W., Dai, Q., Custer, L. J., Shu, X. O., Wen, W. Q, Jin, F. and Franke, A. A. 1999. Urinary excretion of isoflavonoids and th risk of breast cancer. *Cancer Epidemiology, Biomarkers & Prevention* 8: 35-40.

APPENDIX

HISTOLOGICAL STUDY

1. Chemicals

- Ethyl alcohol
- n-butyl alcohol
- Xylene
- Canada balsam
- Haematoxylin
- Eosin
- Paraffin
- Ammonia alum
- Glacial acetic acid
- 40% Formaldehyde
- Picric acid

2. Equipments

- Slide
- Cover glass
- Microtome
- Microtome blade
- Hot air oven
- Tissue floating bath
- Light microscope
- pH meter
- Hot plate

3. Procedures and methods

This study used the standard histological techniques (Humanson, 1979) using haematoxylin and eosin staining to study the structural feathers of the sections of the liver, ovary, uterus and mammary tumor. The processes were examined 5 steps as follows.

3.1 Fixation: All above tissues were fixed in 10% buffer formalin at least 24 hours after sacrification. The tissues were transferred to newly 10% buffer formalin replacing the turbid one.

3.2 Dehydation: All tissues were cut into small pieces and transferred into ethyl alcohol as follows.

Step 1	90% ethanol	1 time	1 hour/time
Step 2	95% ethanol	2 time	6 hours/time
Step 3	N-butyl alcohol	1 time	1 hour/time
Step 4	Xylene	1 time	1 hour/time

3.3 Embedding: Then the tissue was impregnated in the hot air oven (58 °C). The tissue was placed in the embedding compound. Once the tissue had been infiltrated; it is placed into a mold and surrounded by wax and allowed to solidify into a block. The step wises were following.

Step 1	Xylene+molten wax (1:1)	1 time	½ hour/time
Step 2	Wax I	1 time	½ hour/time
Step 3	Wax II	1 time	1 hour/time
Step 4	Embedded and orientated in filtered wax.		

3.4 Sectioning: The blocks containing tissue were mounted onto a microtome. All tissue blocks were sectioned at 5 μm. Paraffin sections were mounted onto glass microscopic slides by egg albumin for further processing.

3.5 Hydration and staining: The glass microscopic slides containing paraffin sections were deparaffined and staining as follows.

1) 2 x 5 minutes	xylene
2) 1 x 3 minutes	n-butyl alcohol
3) 1 x 3 minutes	95% ethyl alcohol
4) 1 x 3 minutes	70% ethyl alcohol
5) 1 x 3 minutes	tap water
6) 10-12 minutes	Hematoxylin solution
7) 5-10 seconds	Acid alcohol
8) 10 minutes	running tap water
9) 1 x 3 minutes	70% ethyl alcohol
10) 1 x 3 minutes	90% ethyl alcohol
11) 3-5 minutes	Eosin staining solution
12) 15-30 seconds	95% ethyl alcohol
13) 1 x 5 minutes	n-butyl alcohol
14) 1 x 5 minutes	xylene

Then sides were mounted with cover slip by Canada balsam and laid slides flat while drying.

4. Preparation of histological reagents

1. 10% buffer formalin

- Formalin (40%)	100	ml
- Di-distilled water	900	ml
- Natrium dihydrogen phosphate-monohydrated ($NaH_2PO_4.H_2O$)	4	g
- Disodium hydrogen phosphate anhydrous (Na_2HPO_4)	6.5	g

These chemical substances were mixed together in the dark bottle, the solution was shaked until it was completely dissolved. This solution was stored at room temperature.

2. Ehrlich's acid haematoxylin and eosin

- Haematoxylin	8	ml
- Absolute ethanol	400	ml
- Ammonium alum	8	g
- Di-distilled water	400	ml
- Glycerine	400	ml
- Glacial acetic acid	40	ml

Haematoxylin was dissolved in absolute ethanol in water bath at 40-50°C. When the solution was cool, it was filtered with filtered paper. Then ammonium alum was dissolved in warm di-distilled water. These two solution were mixed together, then glycerine and glacial acetic acid were added and stirred until these substances were completely dissolved. The solution need to expose to daylight to ripen for at least 6 weeks.

3. Eosin

- Eosin Y	0.5	g
- 95% Ethanol	100	ml

Eosin was dissolved in ethanol until the solution was completely dissolved and stored at room temperature.

BIOGRAPHY

Miss Patcharaporn Sooksawat was born on October 27, 1981 in Suphanburi province, Thailand. She received her Bachelor of Science in Biology, Faculty of Science, Chulalongkorn University in 2004. She has studied for Program of Biotechnology, Faculty of Science Chulalongkorn University since 2004.