

REFERENCES

- Abreu Jr A., Zanetti S.M., Oliveira M.A.S., Thim G.P. 2005. Effect of urea on lead zirconatetitanate – Pb ($Zr_{0.52}Ti_{0.48}O_3$) Nanopowders synthesized by the Pechini method. J. of the Euro. Ceram Soc. 25:743-748.
- Abreu MT, Sparrow MP. 2007. The role of translation and research in inflammatory bowel disease. Rev Gastroenteral Mex 72: 146-53.
- Advantages of niosomes. 2010.[Online]. Available
<http://www.pharmainfo.net/Reviews/niosome-unique-drug-delivery-system>; Surender, V. et al., 2010 [2010, September 1].
- Akiyama, D., M.Okazaki ., K .Hirabayashi. 1993. Sericin protein. J. Seric Sci Jpn. 62: 392-396
- Alicia Ortiz Moreno, Dorantes L., Galíndez J., Guzmán R.I. 2003. Effect of different extraction method on fatty acid, volatile compounds and physical and chemical properties of avocado (*Persea Americana* Mill.) oil. J. Of Agric. and Food chem.51:2216-2221.
- Anti-cellulite cream gel O-001 4 2006. [Online]. Available. www.noveon.com [2006, December.17]
- Aparicio R., Roda L., Albi M A., Gutierrez F. 1999. Effect of various compounds on virgin olive oil stability measured by Rancimat. J. Agric Food Chem.47:4150 -4155.

- Ashawat, M.S., Saraf, S., Saraf, S. 2006. Sunscreen properties of natural skin care lotion. *Plant Arch.* 6,253–256.
- Aramwit P., Damrongsakkul S., Kanokpanont S., Srichana T. 2010. Properties and antityrosinase activity of sericin from various extraction methods. *Biotechnology and Applied Biochemistry* 55:91-98.
- Arouri A., Dathe M., Blume A. 2009. Peptide induced demixing in PG/PE lipid mixtures: A mechanism for the specificity of antimicrobial peptides towards bacterial membranes. *BBA - Biomembranes*, 1788(3): 650-659.
- Autthum T., Kunhasut, W., Areekul, S. 1996. Different kinds of feed plant for feeding wild silkworms. Research and Development Center, Kasetsart University, Bangkok. 15-25.
- Axtell B. L. 1992. *Jatropha curcas*, Minor oil crops. The Chief Editor, FAO Agricultural Services Bulletin No.94, Italy.
- Azmin, M.N., Florence, A.T., Handjani-Vila, R.-M., Stuart, J.F.B., Vanlerberghe, G. Whittaker, J.S. 1985. The effect of non-ionic surfactant vesicle (niosome) entrapment on the absorption and distribution of methotrexate in mice. *J. Pharm. Pharmacol.* 37, 237–242
- AOCS. 1983. Official and Tentative Method; Link, W.F., Ed.; American Oil Chemist's Society: Champaign, IL. Vol.1 and 2.
- AOCS. 1995. Official Methods and Recommended Practices of the American Oil Chemists' Society, 4th Ed., (D. Firestone, ed.) American Oil Chemists'
- Bangham A.D., Standish M.M., Walkins J.C. 1965. Diffusion of univalent ions across the lamellar of swollen phospholipids. *J Mol Biol.* 13: 238-252.

- Barriocanal L., Taylor K.M., Buckton G.A. 2004. Study of liposome formation using a solution (isoperibol) calorimeter. *Int J Pharm.* 287(1-2):113-21.
- Barbosa-Barros L., Barba C., Cócera M., Coderch L., López-Iglesias C., de la Maza A., López O. 2008. Effect of bicellar systems on skin properties. *Int J Pharm.* 352(1-2): 263-272.
- Baillie A.J., Florence A.T., Hume L.R, Rogerson A., Muirhead G.T. 1985. The preparation and properties of niosomes-non-ionic surfactant vesicles. *J. Pharm Pharmacol* 37(12):863–868.
- Bazin R., Fanchon C. 2006. Equivalence of face and volar forearm for the testing of moisturizing and firming effect of cosmetics in hydration and biomechanical studies. *Int J Cosmet Sci.* 28: 453-460.
- Banks W., Muir D.D., 1985. Effect of alcohol content on emulsion stability of cream liqueurs. *Food Chem.* 18:139-141.
- Barton S.P, Black D.R. 1998. Surface contour: Variability, significance and measurements. In: Marks R, Barton SP, Edwards C, eds. *The physical nature of skin*. Lancaster, England: MTP Press, 23-30.
- Beauty without cruelty. 2006. Silk [Online]. September, 2006. Available from:
URL: http://www.bwcindia.org/learn_about/learn_about.htm.
- Berardesca, E., Borroni, G. 1995. Instrumental evaluation of cutaneous hydration. *Clin in Dermatol.* 13: 323-327.
- Becker MA, Willman P, Tuross NC. 1995. The US first ladies gowns: A biochemical study of silk preservation. *J. of the Amer Inst for Conser.* 34: 141–152.

Boonlerd D. 1994. Applying the silk chrysalis as protein source to replace the fish meal in cockerel and layer foods. Master's Degree Thesis. Kasetsart University.

Borror, D.J., C.A. Triplehorn, Johnson N.F. 1989. An introduction to the study of Insects. Sixth edition. Saunders College Publishing, Philadelphia.

Boontawan A, 1994. Special problem report: consumable silk worm oil.

Department of Food Sciences and Technologies, Faculty of Agricultural Industry, Chiang Mai University.

Boonman, S. 2000. Thai silk worm varieties. *In* Proceeding of the workshop on polyvoltine sericulture and postharvest technology., by Tsubouchi, K., Ragsang, V., and Chaosattakul,P. (eds). 21st November 2000, Nakhon Ratchasima Sericultural Research Center, Nakhon Ratchasima, Thailand.

Breimer D.D.,Speiser R. Topics in pharmaceutical Sciences. 5 Elsevier Science Publishers, New York, USA. 1985.

Bredeson D. 1983. Mechanical oil extraction. J. of the Amer Oil Chem Soc. 60:211-213.

Brown S, Diffey BL, 1986. The effect of applied thickness on sunscreen protection: In vivo and in vitro studies. Photochem Photobiol. 44: 509-513.

Cable C. 1989. An examination of the effects of surface modifications on the physicochemical and biological properties of non-ionic surfactant vesicles PhD thesis. Glasgow: University of Strathclyde,

- Cao G., Alessio H.M., Cutler R.G. 1993. Oxygen-radical absorbance capacity assay for antioxidants. *Free Radic Biol Med.* 14: 303-311.
- Casper P.J., Lucassen G.W., Puppels G.J. 2003. Combined *in vivo* confocal raman spectroscopy and confocal microscopy of human skin. *Biophys J.* 85: 572-580.
- Chauhan S., Luorence M.J. 1989. The preparation of polyoxyethylene containing non-ionic surfactant vesicles. *J. Pharm. Pharmacol.* 41-46.
- Chaiya Ui-soongnern, 1996. Department of Agriculture, Ministry of Agriculture and Cooperatives, Bangkok.
- Chandraprakash K.S., Udupa N., Umadevi P. and Pillai G.K. 1990. Pharmacokinetic evaluation of surfactant vesicles containing methotrexate in tumor bearing mice. *Int. J. Pharma.* R1-R3: 61.
- Chattopadhyay P., Gupta R.B. 2002. Protein nanoparticles formation by supercritical antisolvent with enhanced mass transfer. *AIChE J.* 48: 235-244.
- Chen, X., Chen X, Knight DP, Shao Z, Vollrath F. 2001. Regenerated *Bombyx* silk solutions studied with rheometry and FTIR. *Polymer.* 42, 9969-9974
- Chen W.Q., Priewalder H., Pradeep John J.P., Lubec G. 2010. Silk cocoon of *Bombyx mori*: proteins and posttranslational modifications heavy phosphorylation and evidence for lysine-mediated cross links. *Proteomics.* 10:369-379.
- Chen, Hua., Zhu, Liang-Jun., Min, Si-Jia., Hu, Guo-Liang. 2001. Structure, properties and utilization of silk sericin. protein. *Peop. Rep. China.* 14(3):344-348 pp. (Abstract).
- Cholesterol.2010. [Online]. Available. <http://www.serva.de>. [2010, Frbruary 12].

- Chrit L., Bastien P., Biatry B., Simonnet J.T., Potter A., Minondo A.M., Flament F., Bazin R., Sockalingum G.D., Leroy F., Manfait M., Hadjur C. 2007. *In vitro* and *in vivo* confocal raman study of human skin hydration: assessment of a new moisturizing agent, pMPC. *Biopolymers.* 85(4): 359-369.
- Composition of fibroin.2009. [Online]. Available
<http://www.smiss.com.cn/smissenglish/silk%20derivatives/silkraw.asp>
[2009, October 28].
- Chompreeda P. and Rimkhiri H., 2002. Consumer test and sensory evaluation test.
deparment of product development Faculty of agro industry Kasetart
university
- Cooper D.R., Schindler P.S. 1998. Business Research Methods. 6th ed., Irwin
McGraw-Hill, Singapore.
- Crommelin D.J.A., Schreier H. 1994. Liposomes in colloidal drug delivery systems.
In: Kreuter J., eds. Marcel Dekker Inc, New York. . 66: 119.
- David W.L. Ma, Antoni A. Wierzbicki, Catherine J. Field., Michael T. Clandinin.
1999. Preparation of conjugated linoleic acid from safflower oil. *J. of the Amer Oil Chem Society* 76:729-730.
- 3D Structure of β-form of fibroin in silk. 2007 [Online]. Available
<http://www.biochem.usyd.edu.au> [2007, October 2].
- Department of Agriculture. 2000. Documents to the meeting of research result
presentations of the sericulture institute Vol. 2, Department of Agriculture,
Ministry of Agriculture and Cooperatives; p. 114-134.
- Dobrev H. 2005. Application of cutometer area parameters for the study of human
skin fatigue. *Skin Research and Technology* 11:120-122.

- Di Lullo, Gloria A.; Sweeney, Shawn M.; Körkkö, Jarmo; Ala-Kokko, Leena; San Antonio, James D. 2002. Mapping the ligand-binding sites and disease-associated mutations on the most abundant Protein in the human, Type I Collagen. *J. Biol. Chem.* 277 (6): 4223–4231.
- Doneanu, C., V., Radulescu, D.M., Efstatiade, V. Rusu., A.Covaci. 1997. Capillary GC/MS/ characterization of fatty acid from indigenous silkworm oil. *J. Microcolumn.Sep.* 9 (1); 37-41.
- Don A. Van H., Joke A.B., Hans E.1997. Non ionic surfactant vesicles containing estradiol for topical application. Ph.D. thesis. Centre for drug research. 330-339.
- Draize J.H. 1959. Dermal toxicity in appraisal of the safety of chemicals in food, drugs and cosmetics. The Association of Food and Drug Officials of the United States, Bureau of Food and Drugs, Austin, TX. 46-59.
- El Maghraby G.M., Williams A.C., Barry B.W. 2000b. Skin delivery of oestradiol from lipid vesicles: importance of liposome structure. *Int J Pharm.* 204: 159-69.
- Engel W, Hoppe U. 1987. Aqueous hair preparations containing sericin and pelargonic acids. *Ger Offen DE 3603595 A1.* p. 4.
- Eiichi, K 2002. Lipid profiles and oxidative stability of silkworm pupal oil. *J. Oleo Science.* 51(11): 681-690.
- Elmahjoubi E., Frum Y., Eccleston G.M., Wilkinson S.C., Meidan V.M. 2009. Transepidermal water loss for probing full-thickness skin barrier function: Correlation with titrated water flux, sensitivity to punctures and diverse surfactant exposures. *Toxicol. In Vitro.* 23: 1429-1435.

- Elizabeth H, Monica G, Joel S, Michael V. .2004. Ultrasound enhancement of drug release across non ionic surfactant vesicle membranes. Proceedings of the 26th. September 1-5, Annual International Conference of the IEEE EMBS San Francisco, CA, USA
- Elias P.M. 1983. Epidermal lipids, barrier function, and desquamation. J Invest Dermatol. 80: 44S-49S.
- Epler S., Iv E.C., Kemp K.E. 1998. Hedonic scales are a better redictor than just-about right scales of optimal sweetness in lemonade1.J.of Sensor Stud 13:191-197.
- Eyres L, Sherpa N., Hendriks G. 2010. Avocado oil: a new edible oil from Australasia.
- European Union Commission. Off. 1992. J. Commission Eur.Communities. Regulation no.1429/92.
- Ezure T., Hosoi J., Amano S., Tsuchiya T. 2009. Sagging of the cheek is related to skin elasticity, fat mass and mimetic muscle function. Skin Research and Technology 15:299-305
- Fan JB, Wu LP, Chen LS, Mao XY, Ren FZ. 2009. Antioxidant activity of silk sericin from silkworm *Bombyx mori*. J Food Biochem 33: 74–78.
- Farhoosh R. 2007. The effect of operational parameters of the rancimat method on the determination of the oxidative stability measures and shelf-life prediction of soybean oil. JAOCs, Journal of the American Oil Chemists' Society 84:205-209.

- Feitosa E., Barreleiro P.C.A., Olofsson G. 2000. Phase transition in dioctadecyldimethyl-ammonium bromide and chloride vesicles prepared by different methods. *Chem Phys Lipids.* 105(2): 201-213.
- Freddi G., Bianchi Svilokos A., Ishikawa H., Tsukada M. 1993. Chemical composition and physical properties of *Gonometa rufobrunnae* silk. *J. of App Polym Sci.* 48:99-106
- Firming cream gel. 2006. [Online]. Available. www.arch.com. [2006, December.15]
- Firm up firming cream ST-50. 2005. [Online]. Available. www.arch.com. [2005, December.12]
- Firming and moisturizing care. 2006. [Online]. Available. www.seppic.com, [2006, December.12]
- Fiedler M, Meier W-D, Hoppe U. 1999. Texture analysis of the surface of the human skin. *Skin Pharmacol.* 8: 252-265.
- Fong S, Hung L, Cheng J. 1997. The cutometer and ultrasonography in the assessment of postburn hypertrophic scar: a preliminary study. *Burns.* 23(1):S12–18
- Grit M., Crommelin D.J.A. 1993. The effect of surface charge on the hydrolysis kinetics of partially hydrogenated egg phosphatidyl choline and egg phosphatidyl glycerol in aqueous liposome dispersion. *Biochem Biophys Acta.* 1167: 49-55.
- Gulrajani, ML. Arora, S., Aggarwal, S. 1997. Degummase treatment of spun silk fabric. *India J. of Fiber and Text Res.* Vol.22 (2), 119 -123.

- Gayatri D.S., Venkatesh P., Udupa N. 2000. Niosomal sumatriptan succinate for nasal administration. Int. J. Pharm. Sci. 62(6), 479-481.
- Groskery P., Iype, C. 1999. Yarn production; theoretical Aspects. The Textile Institute International: South Carolina. 205.
- Garthright W.E., Blodgett R.J. 2003. FDA's preferred MPN methods for standard, large or unusual tests, with a spreadsheet. Food Microbiol. 20: 439-445.
- Gacula M.C., Washam R.W., Beard S.A., Heinze J.E. 1986. Estimates of carry-over effects in two-product home usage consumer test. J. of Sens Stud.1:47-53.
- Gil E.S., Frankowski D.J., Bowman M.K., Gozen A.O., Hudson S.M., Spontak R.J. 2006. Mixed protein blends composed of gelatin and *Bombyx mori* silk fibroin: effects of solvent-induced crystallization and composition. Biomacromolecules 7:728-735.
- Hamada Y, Yamashita O, Suzuki Y. 1982. Haemolymph control of sericin gene expression studied by organ transplantation. Cell Differentiation. 20: 65–76.
- Handjani V.R.M., Ribier A., Rondot B., Vanlerberghe G. 1979. Dispersions of lamellar phases of non-ionic lipids in cosmetic products. Int. J. Cosmetic Sci. 1:303–314.
- Hashmi F., Malone-Lee J. 2007. Measurement of skin elasticity on the foot. Skin Research and Technology 13:252-258.
- Hadimani V.V., Vijayeendra, M.K., Prabhuswamy, N. 1998. Standards for degumming of silk. Indian. Tex. J. 108(10): 62-66.
- Hata.O. 1987. Cosmetics containing sericin hydrolysates. Jpn Kokai Tokkyo Koho Jap 62036308 A2. p. 7.

Hemachantorn, K. 1987. Silk technology I. Department of Industrial Promotion, Bangkok.

Hedrick J.L., Smith A.J. 1968. Size and charge isomer separation and estimation of molecular weights of proteins by disc gel electrophoresis. Archi of Biochemis and Bioph. 126:155-164.

Henne W, Hoppe U. Light and screening composition. Ger Offen DE.3408406 A1. 1985.

Hisao A. 1994. Principles of sericulture. Translated from Japanese.

Helena A., Veronika A. 2005. Physico-chemical properties, composition and oxidative stability of *Camelina sativa* Oil. Food Technol. Biotechnol. 43 (1) 63–70

High W.A., Pandya A.G. 2006. Pilot trial of 1% pimecrolimus cream in the treatment of seborrheic dermatitis in African American adults with associated hypopigmentation. J Am Acad Dermatol. 54(6): 1082-1088.

Huang J., Valluzzi R., Bini E., Vernaglia B., Kaplan D.L. 2003 Cloning, expression, and assembly of sericin-like protein. J. of Biolo Chem. 278:46117-46123.

Hoppe U, Koerbaecher K, Roeckl M. 1984. Hair and bath preparations containing sericin. Ger Offen DE 3233388 A1.

Hao Y., Zhao F., Li N., Yang Y., Li K.a., 2002. Studies on a high encapsulation of colchicine by a niosome system. International Journal of Pharmaceutics 244:73-80.

Hu C., Rhodes D.G. 1999. Proniosomes: A novel drug carrier preparation. Intern J. of Pharma. 185:23-35

Hua, C., Zhu, L., Min, S., Hu, G. 2002. Progress of study on the utilization of silk sericin protein. Peop. Rep. China.28(3):132-136 pp. (Abstract).

- Hyogo S., Yoshiko A. 1967. Carbohydrate content of fibroin and sericin of the silkworm, *Bombyx mori*. J. Biochemistry, Vol.62. No. 1. 129-130.
- IUPAC. 1992. Standard methods for analysis of oils, fats, and derivatives, 1st supplement to the 7th Ed., international union for pure and applied chemistry, commission on oils, fats and derivatives, Blackwell Scientific Publications, Osney Mead, Oxford, UK. Society Press, Champaign, IL.
- Ishay J.S., Kirshboim S. 2000. Grid formation in hornet cuticle induced by silk spun during pupation. Biomacromolecules 1:224-231. DOI: 10.1021/bm000290b.
- Industrial Standards Institute. 1996. Cosmetics: general specification. TISI 152-1996
- Industrial Standards Institute. 1994. Coconut oil: general specification. TISI 670-1994
- International Organization for Standardization. 2003. Determination of ash. ISO 6245:2001
- Iva J., Patrick B., Ilse S. 2003. Determination of trace elements in pumpkin seed oils and pumpkin seeds by ICP-AES. J. Anal. At. Spectrom., 2003, 18, 54–58
- Joachim, W.H., Pascual, F.P. 2000. Handbooks on ingredients for aquaculture feeds. Kluwer Academic Publishers, Dordrecht.
- Jolly, M.S., Sen, S.K., Sonwalkar, T.N., Prasad, G.K. 1979. Non-mulberry silks. FAO agricultural services bulletin 29. food and agriculture organization of the united nations rome. V.4. 5-6.
- Jin, H.J., J. Park, R. Valluzzi, P. Cebe and D.L. Kaplan, 2007. Biomaterial films of *Bombyx mori* silk fibroin with poly (ethylene oxide). Biomacromolecules, 3: 1233-1239.

- Jung, H. A., B. H. Su, W. J. Keller, R. G. Mehta., Kinghorn A. D. 2006. Antioxidant xanthones from the pericarp of *Garcinia mangostana* (Mangosteen). *J. Agric. Food. Chem.* 54: 2077-2082.
- Khazaka R ., Min M. 2005. Nonlinear macromodeling using model order reduction, electrical performance of electronic packaging. IEEE 14th Topical Meeting on.131-134.
- Khan M.M.R., Tsukada M., Gotoh Y., Morikawa H., Freddi G., Shiozaki H. 2010. Physical properties and dyeability of silk fibers degummed with citric acid. *Bioreso Techno* 101:8439-8445.
- Kato, N., Sato, S., Yamanaka, A., Yamada, H., Fuwa, N., Nomura, M. 1998. Silk protein sericin inhibits lipid peroxidation and tyrosinase activity. *Biosci. Biotechno. Biochem.* 62: 145-147.
- Kim J.B., Cho K.J., König G.M., Wright A.D. 2006. Antioxidant activity of 3,4,5-trihydroxybenzaldehyde isolated from *geum japonicum*. *J. of Food and Drug Analysis* 14:190-193.
- Kim W.S., Park B.S., Park S.H., Kim H.K., Sung J.H. 2009. Antiwrinkle effect of adipose-derived stem cell: activation of dermal fibroblast by secretary factors. *J of Dermatol Sci.* 53: 96-102.
- Kaewruang W. 1997. Mulberry and silk, multi-useful pant and insect. sericultural research institute, department of agroculture, ministry of agriculture and co-operation, 21.
- Kotake N.E., Yamamoto K., Nozawa M., Miyashita K., Murakami T. 2002. Lipid profiles and oxidative stability of silkworm pupae oil. *J. of Oleo Scie.* 51:681-690.

Kobkol S., Yaowapa S., Supreeya S. 2002. Study on chemical components and fatty acid from silkworm pupae for processing. In: XIX Congress of the international sericultural commission proceedings, 21st–25th september, queen sirikit national convention center, Bangkok, Thailand, pp. 550–552.

Kobkul S., Yaowapa S., Supreeya S., Araporn S., Udorn L., Suwit I. 2000. Study on the chemical composition and fatty acid of chrysalis for processing. 2000 research report, Mukdahan Sericulture Institute, Department of Agriculture, Ministry of Agriculture and Cooperatives.

Khandare J.N., Madhavi G. and Tamhankar B.M. 1994. Niosomesnovel drug delivery system. The Eastern Pharmacist.37: 61-64.

Kikuchi K., Tagami H. 2008. The Japanese cosmetic scientist task force for skin care of atopic D. noninvasive biophysical assessments of the efficacy of a moisturizing cosmetic cream base for patients with atopic dermatitis during different seasons. British Journal of Dermatology. 158:969-978.

Kundu S.C., Dash B.C., Dash R., Kaplan D.L. 2008. Natural protective glue protein, sericin bioengineered by silkworms: potential for biomedical and biotechnological applications. Progress in Polymer Science 33:998-1012.

Kirikawa M, Kasaharu T, Kishida K, Akiyama ,D. 2000. Silk protein micropowders for coating with excellent feeling, antistaticity and moisture absorbability and releasability and there manufacture. Jpn Kokai Tokkyo Koho Jap 2000044598 A 2.

Kligman AM, Zheng P, Lavker RM. 1985. The anatomy and pathogenesis of wrinkles. Br J Dermatol; 113: 37-42

- Leonards, K.S. 1988. Changes in the surface charge properties of isolated cardiac sarcolemmal vesicles measured by light scattering. I. Characteristics of rat and canine preparations. *BBA-Biomembranes*. 938(2): 293-309.
- Lentz, B.R. 1993. Use of fluorescent probes to monitor molecular order and motions within liposome bilayers. *Chem Phys Lipids*. 64(1-3): 99-116.
- Lasch, J. 1995. Interaction of detergents with lipid vesicles. *Biochim Biophys Acta*. 1995 Jul 17;1241(2):269–292.
- Lizardi, P.M. 1979. Genetic polymorphism of silk fibroin studied by two - dimensional translation pause fingerprints. *Cell*. 18,581-589.
- Lakhana ,R .,Oratai K. 1999. Complete research report “studies on production and utilization of processed oil from silk worm (chrysalis) for consumption (1st Year), Folk Product Research and Development Unit, Science and Technology Research and Development Institute, Chiang Mai University.
- Lakhana ,R. 1995. Analysis result of silk worms’oil through HPLC Process, Department of Food Sciences and Technologies, Faculty of Agricultural Industry, Chiang Mai University.
- Laemmli, U.K. 1970. Cleavage of structural proteins during the assembly of the head of bacteriophage T4. *Nture*.227:680-685.
- Lawless HT, Heymann H. 1998. Sensory evaluation of food: principles and practices. Aspen Publishers, Inc. Gaithersburg, Maryland.
- Laguerre M., Lecomte J., Villeneuve P. 2007. Evaluation of the ability of antioxidants to counteract lipid oxidation: existing methods, new trends and challenges. *Prog Lipid Res*. 46 : 244-282.

- Letelier M.E., Berrios A.M., Troncoso J.C., Sandoval J.J., Holst M., Palma K., Montoya M., Miranda D., Lira. V.G. 2008. DPPH and oxygen free radicals as pro-oxidant of biomolecules. *Toxicol In Vitro.* 22(2): 279-286.
- Lee H.K., Seo Y.K., Baek J.H., Koh J.S. 2008. Comparison between ultrasonography (Dermascan C version3) and transparency profilometry (skin visiometer SV 600). *Skin Res and Technol.* 14: 8-12.
- Leibovitz B., Siegel, B. 1980. Aspects of free radical reactions in biological systems. *Aging. J. Gerontal.* 35: 45-56.
- Lee M.S., Lee K.H., Sin H.S., Um S.J., Kim J.W., Koh B.K. 2006. A newly synthesized photostable retinol derivative (retinyl N-formyl aspartamate) for photodamaged skin: profilometric evaluation of 24-week study. *J Am Acad Dermatol.* 55(2): 220-224.
- Lee K., Kweon H., Yeo J.H., Woo S.O., Lee Y.W., Cho C.-S., Kim K.H., Park Y.H., 2003. Effect of methyl alcohol on the morphology and conformational characteristics of silk sericin. *Inter. J. of Biolo Macromo.* 33:75-80.
- Liyana-Pathirana C.M., Shahidi F. 2007. Antioxidant and free radical scavenging activities of whole wheat and milling fractions. *Food Chem.* 101(3): 1151-1157.
- Life-cycle-of-silkworm. 2008. [Online]. Available <http://mulberrysilkworm.blogspot.com/2008/06/life-cycle-of-silkworm.htm> [2008, September 12].
- LG Wade J. 2000. Organic chemistry, Fourth edition, Prentice hall international editions1, 221.

- Lu P., Chacko E. 1998. Evaluation of granier's sap flux sensor in young mango trees. Agronomie 18:461-471
- Long, Z.P., R.P Hyang, K.P Yun, K.L Seung, H.P Jeong, and K.P Man. 2000. Mushroom tyrosinase inhibition activity of some chromones. J. Chem. Pharm. Bull. 50(3): 309-311.
- Lu, P., Lai, B., Yan, X., Wang, Y., Zheng, C., and Tan, Y. 1998. GC-MS analysis of fatty acid composition in silkworm pupa oil. Peop. Rep. China.Zhongguo Yaoxue Zazhu (Beijing). 33(3), 138-140.
- Manosroi A., Wongtrakul P., Manosroi J., Midorikawa U., Hanyu Y., Yuasa M., Sugawara F., Sakai H., Abe M. 2005. The entrapment of kojic oleate in bilayer vesicles. Int J Pharm 298, 13-25.
- Manosroi A., Chutoprapat R., Abe M., Manosroi J. 2008. Characteristics of niosomes prepared by supercritical carbon dioxide (scCO₂) fluid. Int J Pharm. 352: 248-255.
- Manosroi A, Khanrin P, Lohcharoenkal W, Werner R.G. , Gotz F, Manosroi W, Manosroi J. 2010. Transdermal absorption enhancement through rat skin of gallidermin loaded in niosomes. Inter. J. of Pharmac, 392: 304-310
- Marvin J.H. 1973. Textile Processing Vol.1. State department of education office of vocation education : South Carolina.
- Martin K. 1999. Infrared and raman studies of skin and hair: a review of cosmetic spectroscopy. Internet J. Vib Spectro. 3(2). <http://www.ijvs.com/volume3/edition2/section2.htm>, Perkin-Elmer
- Manit S., Nattripop, P. 2000. Eating soybean. Kasikorn.73 (2):172-176.

- McCormack B. and Gregordias G. 1998. Drugs-in-cyclodextrins-in-liposomes: an approach to controlling the fate of water insoluble drugs in vivo. Int. J. Pharm. 162: 59-69.
- Michael J.B., Barbara B., Paul M.C., Keith D.I., Jan B.F.N.E., Lisette S. 2000. Vesicle- α -amino acid and vesicle-amide interactions: effects of added α -amino acids and amides on gel to liquid-crystal transitions for four aqueous vesicular systems. Thermochimica Acta. 364(1-2): 173-179.
- Mi Y.A., Jung E.H., Jae-H.R., Hyekyoung J., Wan T.C. 2007. Antioxidant activity of cholesterol derived from silkworm pupae. Natural product science.13 (3):220-224.
- Minamoto, T., Hiroya,I. 1999. Extraction of sericin and powdery sericin. Patent abstracts of Japan. Publication No. 2001-039999.
- Minakawa M. 1985. Science silk. translated and compiled by *Kawaae, Aeeshi* and *Khemachai Hemchan*. committee product Thai promotion. Department of Industrial promotion.387.
- Mita K., Ichimura S., Zama M., James T.C. 1988. Specific codon usage pattern and its implications on the secondary structure of silk fibroin mRNA. Journal of Molecular Biology 203:917-925
- Miteva M., Richter S., Elsner P., Fluhr J.W. 2006. Approaches for optimizing the calibration standard of tewameter TM300. Exp Dermatol. 15: 904-912.
- Miyashita T. 1999. Sweat and sebum absorbing cosmetics containing cellulose fibres. Jpn Kokai Tokkyo Koho Jap 11152206 A2.
- Motoii M., Aeechi K., and Kemchai H. 1987. Silk technology no1. Department of Industrial Promotion, Bangkok.386.

- Mori K., Tanaka K., Kikuchi Y., Waga M., Waga S., Mizuno S. 1995. Production of a chimeric fibroin light-chain polypeptide in a fibroin secretion-deficient naked pupa mutant of the silkworm *Bombyx mori*. *J. of Molecu Biol.* 251:217-228
- Moreno A.O., Dorantes L., Galíndez J., Guzmán R.I. 2003. Effect of different extraction methods on fatty acids, volatile compounds, and physical and chemical properties of avocado (*Persea americana Mill.*) oil. *J. of Agric.and Food Chem.* 51:2216-2221.
- Mondal. M., K. Trivedy , Nirmal Kumar. S. 2007. The silk proteins, sericin and fibroin in silkworm; *Bombyx mori*.*Linn.*, - a review.*Caspian J. Env. Sci.* Vol. 5 No. 2. 63-76
- Müller, Werner E. G. 2003. The origin of metazoan complexity: porifera as integrated animals. *Integrated Computational Biology* 43 (1): 3–10.
- Nagaraju, J., A. Sharma, B.N., Sethuraman, G.V. Rao., Singh ,L. 1995. DNA fingerprinting in silkworm *Bombyx mori* using banded krait minor satellite DNA. Derived probe. *Electrophoresis* 16(9): 1639- 1642.
- Nandeesha M.C., Srikanth G.K., Keshavanath P., Varghese T.J., Basavaraja N., Das S.K. 1990. Effects of non-defatted silkworm-pupae in diets on the growth of common carp, *Cyprinus carpio*. *Biological Wastes* 33:17-23.
- Nirmala X, Mita K, Vanisree V, Zurovec M, Sehnal F. 2001b. Identification of four small molecular mass proteins in the silk of *Bombyx mori*. *Insect Molecular Biology*. 10: 437–445.
- Nipha B., Arunyakorn, J. 1997. Insect as food: how to consider for safety. *J. of Food.* 27(3):168-173.

- Niki E., Yoshida Y., Saito Y., Noguchi N. 2005. Lipid peroxidation: mechanisms, inhibition, and biological effects. *Biochem Biophys Res Commun.* 338: 668-676.
- Nipa B., Uruyakorn J. 1997. Edible insects, how to choose the safe meals, *Foods*, 27(3): p. 168-173.
- Niosome. 2010. [Online]. Available
<http://www.pharmainfo.net/..%20structure.jpg> [2010, August 8].
- Niosome unique drug delivery system. 2010. [Online]. Available
<http://www.pharmainfo.net/Reviews/niosome-unique-drug-delivery-system>
- Nutsawan C., Watchree P. 2002. The experimental study of silk protein cream in anti-aging effect. Department of Pharmacy, Faculty of Pharmacy, Mahidol University.
- Obrev H. 2005. Application of cutometer area parameters for the study of human skin fatigue. *Skin Rese and Techno* 11:120-122.
- Oratai K. 1998. Chemical composition and storage period of processed silk worm oil. Master of Sciences, Department of Food Sciences and Technologies, Chiang Mai University.
- Oxtoby E. 1987. Spun yarn technology. Butterworth & Co., (Publisher) Ltd. London. 250.
- Okamoto H., Ishikawa E., Suzuki Y. 1982. Structural analysis of sericin genes. homologies with fibroin gene in the 5' flanking nucleotide sequences. *Journal of Biological Chemistry* 257:15192-15199.
- Ou B, Hampsch-Woodill M.,Prior R.L. 2001. Development and validation of an improved oxygen radical absorbance capacity assay using fluorescein as the fluorescent probe. *J Agr Food Chem.* 49: 4619-4626.

- Ogawa A, Yamada H. 1999. Antiaging cosmetic containing sericin or hydrolysates and saccharomyces extracts. Jpn Kokai Tokkyo Koho Jap 11193210 A2; p.9.
- O/W formula moisturizing cream PC49031/5 [Online]. Available www.eac.com, [2008, January.22]
- Pattanasattanun W. 1990. Wild silk tarsar (*Antheraea mylitta Drury*). The Kasetsart J. Agric Scie. 23(5-6): 189-199.
- Pauwels M., Rogiers V. 2004. Safety evaluation of cosmetics in the EU reality and challenges for the toxicologist. Toxicol Lett. 151: 7-17.
- Padamwar MN, Pawar AP. 2004. Silk sericin and its applications: a review. J.of Sci and Ind Res. 63:323–329.
- Padamwar MN, Pawar AP, Daithankar AV, Mahadik KR. 2005. Silk sericin as a moisturizer: an in vivo study. J. of Cosm and Dermato. 4: 250– 257.
- Padamwar MN, Daithankar AV, Pisal SS, Pawar AP. 2002. Evaluation of moisturizing efficiency of silk protein. II. silk sericin. sixty second world congress of FIP Nice.
- Padamwar, M.N.and Pawar, A.P. 2004. Silk sericin and its application: a review. J. of sci. Indus. Res. 63(4):323-329 pp. (Abstract).
- Pérez G.R.M., Luna H.H., Garrido S.H. 2006. Antioxidant activity of *Tagetes erecta* essential oil. J. of the Chil Chemi Soci. 51:883-886.
- Peter J. Wan , Michael K. Dowd. 2000. Comparative study of the extraction and measurement of cottonseed free fatty acids. JAOCs, Vol. 77, no. 1.23-27.
- Pimporn L. 2001, Natural cosmetics: skin care products, Faculty of Pharmacy, Chiang Mai University.

- Pereira N.R., Ferrarese F.O., Matsushita, M., de Souza, N.E. 2003. Proximate composition and fatty acid profile of *Bombyx mori L.* chrysalis toast. J. food Comp Anal. 16(4), 451-457.
- Proksch E, Brandner JM, Jensen JM. 2008. The skin: an indispensable barrier. Exp Dermatol. 17(12):1063-72.
- Pises L., Benjawan Y., Krabuan W., Mukda K., Hunsa P. 2006. Properties of oil extracted from *Jatropha curcas Linn.* Seeds. ²⁸ congress on science and technology of Thailand, Bangkok (Thailand), 24-26 Oct 2002 Department of Botany, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand. 3-37.
- Piao L.Z., Park H.R., Park Y.K., Lee S.K., Park J.H., Park M.K. 2002. Mushroom tyrosinase inhibition activity of some chromones. Chem & Pharmac Bull 50(3) 309-311.
- Pongsathorn S , Parparrt, P. 1990. Nutrition value of unconventional protein source. Insect J Nutr 17: 1-5.
- Pongsatharg S., Parpasrt P. 1990. Nutrition value of unconventional protein source. Insect J. of Nutrition.17:1-5.
- Prakash A. 2001. Microbial limit test. In : Clontz L.,ed. Microbial limit and bioburden tests: Validation approaches and global requirements, CRC press. 19(2): 1-6.
- Prateep M., Siriporn S., Wasan Nui-pirom., Budsara R., Danai N., Boonya S. 2002. Study on insoluble silk powder production, documents to the Conference of Sericulture Centers 2002: "Sericulture" on 27th February – 1st March 2002, at Nakhon Phrae Townwork Hotel, Phrae Province, Department of Agriculture, Ministry of Agriculture and Cooperatives.

- Prota G. 1980. Recent advances in the chemistry of melanogenesis in mammals. *J Invest Dermatol.* 75: 122-127.
- Rainer J., Brouwer, M. 1993. Hemocyanin synthesis in the blue crab *callinectes sapidus*. comparative biochemistry and physiology Part B: comparative Biochemistry 104:69-73
- Rawinu B., Nilpan, S., Hongtongdang, P., Vilai, S., Panyawanich, M. 1999. Base on somecharacteristics of non-mulberry trees for feeding wild silkworms. Annual Research Report of Sericultural Research Institute. Department of Agriculture.1-10.
- Rayner H. 1921. Silk throwing and waste silk spinning. 2nd ed., Scott Greenwood & Son.London.199.
- Rainer V., Jurg M., Rolf, B. 1993. Sericin silk protein: unique structure and properties. *Cos & Toil*, (Dec). (108):101-108.
- Reinert,G.,Fuso,F.,Hilifiker,R., Schmidt,E. 1997. UV-protecting properties of textile fabrics and their improvement. *Textile Chemist and Colorist.* 29(12):36-43 (Abstract)
- Rowe A.,Bertoni, S.A.,Pereira, P.L.,Matsushita, M., de Souza, N.E. 1997. Colesterol emcarnes bovinas,sunas,frangos e derivados de carnes comercializados em Maringa,Parana, Brasil.*Archivos Latino Americanos de Nutricion.*47,282-284.
- Roy, S. Mishra., Chaudhuri, T.K. 2005. Cloning, sequence analysis, and characterization of a novel beta-glucosidase-like activity from *Pichia etchellsii*, *Biochem. Biophys. Res. Commun.* 336 (1) (2005), pp. 299–308.
- Sawai B. 2001. Insect taxonomy, Department of Psychology, Faculty of Agriculture, Chiang Mai University, Chiang Mai; p.441

- Sarovart S, Sudatis B, Meesilpa P, Grady BP, Magaraphan R. 2003. The use of sericin as an antioxidant and ntimicrobial for polluted air treatment. Review of Adva Mate Scien. 5: 193 –198.
- .Sappayatosok. S. 1988. Nutrition and bio-chemistry, Chulalongkorn University Press. Bangkok.
- Sawattat A, 1976. Silk chrysalis. Agricultural Sciences. 609-615.
- Salter D. 1996. Non-invasive cosmetic efficacy testing in human volunteers: some general principles. Skin Res Technol. 2: 59-63.
- Sarwar, G. 1999. Influence of feeding alkaline/ heat processed proteins on growth and Mineral status of rats. Adv Exp. Med. Biol. 459: 161- 77.
- Sakamoto K., Yamakishi, K. 2000. Sericin containing cleaning composition.Jpn Kokai Tokkyo Koho Jap 2000073090 A2; 2000.
- Sepswade P .,Satyawiwut, T. 1977. Some data of wild silk. Farmer. 5(3):148-157.
- Sericulture Research Institute. 2003. Silkworm in Thailand.
- Sehnal F. 2008. Prospects of the practical use of silk sericins. Entomological Research 38:S1-S8
- Sericin. 2007. [Online]. Available.
<http://www.dongchangchemical.com/template/cpd-en.htm> [2007, October 28].
- Structure of silk. 2010. [Online]. Available. <http://www.biochem.usyd.edu.au> [2010, May 9].
- Sericin and Fibroin. 2006. [Online]. Available. <http://www.newsilkroad.com>.[2006, May.15]

- Structure of β -sheet and α -helix of silk. 2010 [Online]. Available <http://www.chembio.ca> [2010, January 18].
- Sprague K. 1975. The *Bombyx mori* silk proteins: characterization of large polypeptides. *Biochemistry* 14: 925–931
- Sheena I.P., Singh U.V., Kamath R., Uma Devi P., Udupa N. 1998. Niosomal withaferin A, with better tumor efficiency. *Indian J. Pharm. Sci.* 60 (1):45-48.
- Shen Y., Johnson M.A., Martin D.C. 1998. Microstructural characterization of *Bombyx mori* silk fibers. *Macromolecules* 31:8857-8864.
- Shankar S.S., Ahmad A., Sastry M. 2003. Geranium leaf assisted biosynthesis of silver nanoparticles. *Biotechnology Progress* 19:1627-1631.
- Shin S.C., Cho C.W., Oh I.J., 2001. Effects of non-ionic surfactants as permeation enhancers towards piroxicam from the poloxamer gel through rat skins. *Inter J. of Phar.* 222:199-203
- Shah K.A., Date A.A., Joshi M.D., Patravale V.B. 2007. Solid lipid nanoparticles (SLN) of tretinoïn: potential in topical delivery. *Int J Pharm.* 345: 163-171.
- Shapiro S.S., Saliou C. 2001. Role of vitamins in skin care. *Nutrition* 17:839-844.
- Sikorski, Zdzisław E. 2001. Chemical and functional properties of food proteins. Boca Raton: CRC Press. 242.
- Stamatas G.N., de Sterke J., Hauser M., von Stetten O., van der Pol A. 2008. Lipid uptake and skin occlusion following topical application of oils on adult and infant skin. *J Dermatol Science*. 50(2): 135-142.
- Sompote T. 1992. Powdered silk chrysalis for young- fatten pig feeds, Sukorn Sarn, 19(1); 5-10.

Sonwalker T.N. 1993. Handbook of silk technology. Wiley Eastern Limited: New Delhi.167-170.

Sorbitan monooctadecanoate, poly (oxy-1, 2-ethanediyl). [Online]. Available <http://www.lookchem.com/cas-900/9005-67-8.html>. [2010, January 8].

Sophie B, Katarina E, Goran K, Michel O, and Sylviane L. 1998. New sterically stabilized vesicles based on nonionic surfactant, cholesterol, and poly (ethylene glycol)-cholesterol conjugates. *Biophysical J.* V. 74 June: 3198–3210.

Soler C. 2005. Moisturizing factor. Available form: URL

[http://www.centerchem.com/Moisturizing factor.pdf](http://www.centerchem.com/Moisturizing%20factor.pdf) (2005 Sepember,24)

Soderhall, C, Marenholz I, Kerscher T., Rüschendorf F., Rüschendorf F., Esparza-

Gordillo, J. C., Mayr, G. 2007. Variants in a novel epidermal collagen gene (COL29A1) are associated with atopic dermatitis. *PLoS Biology* 5 (9): 242.

Suja K.P., Jayalekshmy A., Arumughan C. 2005. Antioxidant activity of sesame cake extract. *Food Chem.* 91: 213-219.

Szoka F.Jr ., Papahadyopoulos D. 1980. Comparative properties and methods of preparation of lipid vesicles (liposomes). *Ann. Rev. Biophys-Bioeng.* 9:467-508.

Taylor S., Westerhof W., Im S., Lim J. 2006. Noninvasive techniques for the evaluation of skin color. *J Am Acad Dermatol.* 54(5): 282-290.

Tanaka K., Mori K., Mizuno S. 1993. Immunological identification of the major Disulfide-linked light component of silk fibroin. *J. of Bio.* 114:1-4

Tashiro Y., Otsuki E., Shimadzu T. 1972. Sedimentation analyses of native silk fibroin in urea and guanidine-HCl. *BBA - protein structure* 257:198-209.

- Tashiro Y., Otsuki E. 1970. Studies on the posterior silk gland of the silkworm *Bombyx mori*. IV. ultracentrifugal analyses of native silk proteins, especially fibroin extracted from the middle silk gland of the mature silkworm. J.of Cell Biology 46:1-16.
- Tashiro Y., Otsuki E. 1970. Dissociation of native fibroin by sulphydryl compounds. BBA - Protein Structure 214:265-271.
- Terada S., Takada N., Itoh K., Saitoh T., Sasaki M., Yamada H. 2007. Silk protein sericin improves mammalian cell culture, in: R. Smith (Ed.), Cell technology for cell products, Springer Netherlands. 397-401.
- Theresa M.A. 1998. Drugs published by adis international Ltd. 56(5):747-756.
- The Customs Department and Department of Export Promotion, 2003, Silk and products export status, documents to silk and silk production.
- Thiele JJ, Weber SU, Packer L. 1999. Sebaceous gland secretion is a major physiologic route of vitamin E delivery to skin. J Invest Dermatol; 113:1006
- Thai Industrial Standards 176, 2519.
- Tsubouchi Kozo, Yamada Hiroo and Takasu Yoko. 1997. Method for obtaining high molecular weight sericin by extraction. patent abstracts of Japan. Publication No.11-092564.
- Tyrosinase activity inhibitor. 2006 [Online]. Available form: URL:
<http://www.freepatentsonline.com/5399785.html>. (2006 Sepember,24)
- Uchegbu I.F., Double J.A., Kelland L.R., Turton J.A., Florence A.T. 1996. The activity of doxorubicin niosomes against an ovarian-cancer cell- line and 3 *in-vivo* mouse-tumor models. J Drug Target. 3: 399-409.

- Uchegbu IF., Vyas. 1998. Non-ionic surfactant vesicles (noisome) in drug delivery. *Int.J.Pharm.* 172:33-70.
- Uchegbu, IF., Alexander T. F. 1995. Non-ionic surfactant vesicles (Niosomes) physical and pharmaceutical chemistry. *Adv. in Colloid and Interface Sci.* 58: 1-55.
- Udayasekhara, P. 1994. Chemical composition and nutritional evaluation of spent silk worm pupae. *J. Agric. Food Chem.* 42: 2201-2203.
- Voegeli R, Meier J, Blust R. 1993. Sericin silk protein: unique structure and properties. *Cosmet Toilet.*; 108:101-8.
- Vilai S., Hongtongdang, S. 2000. Collection and preservation of Eri wild silkworm. Annual Research Report of Sericultural Research Institute. Department of Agriculture. 167-170.
- Waninge R., Nylander T.P., Bergenståhl B. 2003. Milk membrane lipid vesicle structures studied by Cryo-TEM. *colloid surfaces B.* 31: 257-264.
- Wade, L.G., Jr. 2000. Organic chemistry. fourth edition, Prentice Hall.USA.
- Werasak Udomkijdecha, 1999, Fiber Science, 1st Edition, Chulalongkorn University Printing House.
- Wissing S.A., Muller R.H. 2003. The influence of solid lipid nanoparticles on skin hydration and viscoelasticity - *in vivo* study. *Eur J Pharm Biopharm.* 56: 67-72.
- Wongtong S., Areekul, P., Onlamoon, A., Tragoonrung, S. 1980. Research on wild silkworm cultivation in the highland of northern Thailand. final report, highlands agricultural project, June 1976- June 1980. Kasetsart University, Bangkok, Thailand.199.

- Wu J-, Wang Z, Xu S-Y. 2007. Preparation and characterization of sericin powder extracted from silk industry waste water. *Food Chem* 103: 1255–1262.
- Wu J-H, Wang Z, Xu S-Y. 2008. Enzymatic production of bioactive peptides from sericin recovered from silk industry waste water. *Process Biochem* 43:480–487.
- Yamada H, Fuha Y, Yuri O, Obayashi M, Arashima T. 1998. Collagen formation promoters containing sericin or its hydrolyzates and antiaging cosmetics. *Jpn Kokai Tokkyo Koho*, JP 10226653 A2; 1998.
- Yasuda N, Yamada H, Nomura M. 1998. Sericin from silk as dermatitis inhibitor. *Jpn Kokai Tokkyo Koho Jap* 10245345 A2; 1998.
- Yang M L.,Chen Y L.,Qian H.,Zhang G Yi. 1993. Optimization of the extraction of the silkworm chrysalis oil (SCO) from silk worm chrysalis by the orthogonal experimental design. *J. Food Research and Development*; 2006-10.
- Yamada H, Yamasaki K, Zozaki K. 2001. Nail cosmetics containing sericin. *PCT Int ApplWO* 2001015660 A1.
- Yamada H, Yuri O. 1998. Sericin coated powders for cosmetics. *Jpn Kokai Tokkyo Koho Jap* 10226626 A2.
- Yamada H, Yamazuki K, Nozaki K. 2001. Skin moisturizing and conditioning cosmetics containing sericin and saccharides. *Jpn Kokai Tokkyo Koho Jap* 2001064148 A2.
- Yoshioka M, Segawa A, Veda A, Omi S. 2001. UV absorbing compositions containing fine capsules. *Jpn Kokai Tokkyo Koho Jap*.
- Zasadzinski J.A.,Kisak E.,Evans C. 2001. Complex vesicle-based structures. *Curr Opin In Colloid In.* 6: 85-90.

- Yoshioka T., Sternberg B. Florence A.T. 1994. Preparation and properties of vesicles (niosomes) of sorbitan monoesters (Span 20, 40, 60, and 80) and a sorbitan triester (Span 85). *Int J Pharm.* 105:1-6.
- Zulueta A., Esteve M.J., Frgola A. 2009. ORAC and TEAC assays comparison to measure the antioxidant capacity of food products. *Food Chem.* 114(1):310-316.
- Zhang Y.Q., Tao M.L., Shen W.D., Zhou Y.Z., Ding Y., Ma Y., Zhou W.L. 2004. Immobilization of L-asparaginase on the microparticles of the natural silk sericin protein and its characters. *Biomaterials* 25:3751-3759.
- Zhang YQ. 2002. Applications of natural silk protein sericin in biomaterials. *Biotechnol Adv.*; 20:91–100.
- Zhaorigetu S, Yanaka N, Sasaki M, Watanabe H, Kato N. 2003a. Inhibitory effects of silk protein, sericin on UVB-induced acute damage and tumor promotion by reducing oxidative stress in the skin of hairless mouse. *J. of Photochem and Photobiology. B* 71: 11–7.
- Zhang Y.Q., Tao M.L., Shen W.D., Zhou Y.Z., Ding Y., Ma Y., Zhou W.L. 2004. Immobilization of L-asparaginase on the microparticles of the natural silk sericin protein and its characters. *Biomaterials* 25:3751-3759.