

REFERENCES

- Acharya, G., Shin, C.S., Vedantham, K., McDermott, M., Rish, T., Hansen, K., Fu, Y., and Park, K. (2010) A study of drug release from homogeneous PLGA microstructures. Journal of Controlled Release, 146(2), 201-206.
- Ali, H., Kalashnikova, I., White, M.A., Sherman, M., and Rytting, E. (2013) Preparation, characterization, and transport of dexamethasone-loaded polymeric nanoparticles across a human placental in vitro model. International Journal of Pharmaceutics, 454(1), 149-157.
- Anderson, J.M. and Shive, M.S. (2012) Biodegradation and biocompatibility of PLA and PLGA microspheres. Advanced Drug Delivery Reviews, 64, 72-82.
- Astete, C.E. and Sabliov, C.M. (2006) Synthesis and characterization of PLGA nanoparticles. Journal of Biomaterials Science, Polymer Edition, 17(3), 247-289.
- Astete, C.E. and Sabliov, C.M. (2006) Synthesis of poly (DL-lactide-Co-glycolide) nanoparticles with entrapped magnetite by emulsion evaporation method Particulate Science and Technology, 24(3), 321-328.
- Bae, S.E., Son, J.S., Park, K., and Han, D.K. (2009) Fabrication of covered porous PLGA microspheres using hydrogen peroxide for controlled drug delivery and regenerative medicine. Journal of Controlled Release, 133(1), 37-43.
- Berkland, C., King, M., Cox, A., Kim, K.K., and Pack, D.W. (2002) Precise control of PLG microsphere size provides enhanced control of drug release rate. Journal of Controlled Release, 82(1), 137-147.
- Blanco-Prieto, Elias, F., Annette, G., Jean, C.D., Bernard, P.R., and Patrick, C. (1997) Characterization and morphological analysis of a cholecystokinin derivative peptide-loaded poly (lactide-co-glycolide) microspheres prepared by a water-in-oil-in-water emulsion solvent evaporation method. Journal of Controlled Release, 43(1), 81-87.
- Bootdee, K., Nithitanakul, M., and Grady, B.P. (2012) Synthesis and encapsulation of magnetite nanoparticles in PLGA: effect of amount of PLGA on characteristics of encapsulated nanoparticles. Polymer Bulletin, 69(7), 795-806.

- Cheng, J., Yim, C.H., Teply, B.A., Ho, D., Farokhzad, O.C., and Langer, R.S. (2005) Magnetite-PLGA Microparticles for Oral Delivery of Insulin. MRS Proceeding, 873
- Cohen, S., Toshio, Y., Melissa, L., Lena H. K., and Robert, L. (1991) Controlled delivery systems for proteins based on poly (lactic/glycolic acid) microspheres. Pharmaceutical Research, 8(6), 713-720.
- Coombes, A., Yeh, M., Lavelle, E.C., and Davis, S.S. (1998) The control of protein release from poly (DL-lactide co-glycolide) microparticles by variation of the external aqueous phase surfactant in the water-in oil-in water method. Journal of Controlled Release, 52(3), 311-320.
- Dalmoro, A., Lamberti, G., Titomanlio, G., Barba, A.A., and d'Amore, M. (2010) Enteric micro-particles for targeted oral drug delivery. AAPS PharmSciTech, 11(4), 1500-1507.
- Das, M.K. and Rao, K.R. (2006) Evaluation of zidovudine encapsulated ethylcellulose microspheres prepared by water-in-oil-in-oil (w/o/o) double emulsion solvent diffusion technique. Acta Poloniae Pharmaceutica, 63(2), 141-148.
- Dong, F., Guo, W., Bae, J.H., Kim, S.H., and Ha, C.S. (2011) Highly Porous, Water-Soluble, Superparamagnetic, and Biocompatible Magnetite Nanocrystal Clusters for Targeted Drug Delivery. Chemistry-A European Journal, 17(45), 12802-12808.
- Fillafer, C. (2010) Bioadhesion of coated particles - the impact of flow probed with acoustically-driven microfluidics. Doctorate Thesis, Faculty of Life Science, University of Vienna, Austria.
- Fredenberg, S., Wahlgren, M., Wahlgren, M., and Axelsson, A. (2011) The mechanisms of drug release in poly (lactic-co-glycolic acid)-based drug delivery systems—a review. International Journal of Pharmaceutics, 415(1), 34-52.
- Giri, T., Choudhary, C., Alexander, A., Badwaik, H., and Tripathi, D.K. (2013) Prospects of pharmaceuticals and biopharmaceuticals loaded microparticles prepared by double emulsion technique for controlled delivery. Saudi Pharmaceutical Journal, 21(2), 125-141.

- Gómez-Gaete, C., Tsapis, N., Besnard, M., Bochot, A., and Fattal, E. (2007) Encapsulation of dexamethasone into biodegradable polymeric nanoparticles. International Journal of Pharmaceutics, 331(2), 153-159.
- Graves, R., Pamujula, S., Moiseyev, R., Freeman, T., Bostanian, L.A., and Mandal, T. K. (2004) Effect of different ratios of high and low molecular weight PLGA blend on the characteristics of pentamidine microcapsules. International Journal of Pharmaceutics, 270(1), 251-262.
- Hempfen, C., Weiss, E., and Hess, C.F. (2002) Dexamethasone treatment in patients with brain metastases and primary brain tumors: do the benefits outweigh the side-effects? Supportive Care in Cancer, 10(4), 322-328.
- Hickey, T., Kreutzer, D., Burgess, D.J., and Moussy, F. (2002) Dexamethasone/PLGA microspheres for continuous delivery of an anti-inflammatory drug for implantable medical devices. Biomaterials, 23(7), 1649-1656.
- Ito, F., Fujimori, H., Kawakami, H., Kanamura, K., and Makino, K. (2012) Optimized preparation of biodegradable polymer particles encapsulating low-molecular-weight hydrophilic drugs. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 402, 29-36.
- Joshi, A., Stagni, G., Cleary, A., Patel, K., Weiss, D.S., and Hagins, M. (2014) Iontophoresis Successfully Delivers Dexamethasone Sodium Phosphate to Dermis as Measured by Microdialysis. Journal of Pharmaceutical Sciences, 103(1), 191-196.
- Ju, Y.M., Yu, B., West, L., Moussy, Y., and Moussy, F. (2010) A dexamethasone-loaded PLGA microspheres/collagen scaffold composite for implantable glucose sensors. Journal of Biomedical Materials Research Part A, 93(1), 200-210.
- Khan, W. and Kumar, N. (2011) Drug targeting to macrophages using paromomycin-loaded albumin microspheres for treatment of visceral leishmaniasis: an in vitro evaluation. Journal of Drug Targeting, 19(4), 239-250.
- Kim, D. and Martin, D.C. (2006) Sustained release of dexamethasone from hydrophilic matrices using PLGA nanoparticles for neural drug delivery. Biomaterials, 27(15), 3031-3037.

- Lin, S.-Y., Chen, K.-S., Teng, H.-H., and Li, M.-J. (2000) In vitro degradation and dissolution behaviours of microspheres prepared by three low molecular weight polyesters. Journal of Microencapsulation, 17(5), 577-586.
- Liu, R., Ma, G., Meng, F.T., and Su, Z.G. (2005) Preparation of uniform-sized PLA microcapsules by combining Shirasu Porous Glass membrane emulsification technique and multiple emulsion-solvent evaporation method Journal of Controlled Release, 103(1), 31-43.
- Liu, X., Kaminski, M.D., Chen, H., Torno, M., Taylor, L., and Rosengart, Axel J. (2007) Synthesis and characterization of highly-magnetic biodegradable poly (D, L-lactide-co-glycolide) nanospheres. Journal of Controlled Release, 119(1), 52-58.
- Makadia, H.K. and Siegel, S.J. (2011) Poly lactic-co-glycolic acid (PLGA) as biodegradable controlled drug delivery carrier. Polymers, 3(3), 1377-1397.
- Matsumoto, A., Matsukawa, Y., Suzuki, T., Yoshino, H., and Kobayashi, M. (1997) The polymer-alloys method as a new preparation method of biodegradable microspheres: principle and application to cisplatin-loaded microspheres. Journal of Controlled Release, 48(1), 19-27.
- Maulding, H.V. (1987) Prolonged delivery of peptides by microcapsules. Journal of Controlled Release, 6(1), 167-176.
- Mittal, G., Sahana, D.K., Bhardwaj, V., and Ravi Kumar, M.N.V. (2007) Estradiol loaded PLGA nanoparticles for oral administration: Effect of polymer molecular weight and copolymer composition on release behavior in vitro and in vivo. Journal of Controlled Release, 119(1), 77-85.
- Nagda, C., Chotai, N.P., Patel, U., Patel, S., Soni, T., Patel, P., and Hingorani, L. (2009) Preparation and characterization of spray-dried mucoadhesive microspheres of aceclofenac. Drug Development and Industrial pharmacy, 35(10), 1155-1166.
- Oh, Y.J., Lee, J., Seo, J.Y., Rhim, T., Kim, S.H., Yoon, H.J., and Lee, K.Y. (2011) Preparation of budesonide-loaded porous PLGA microparticles and their therapeutic efficacy in a murine asthma model. Journal of Controlled Release, 150(1), 56-62.

- Okassa, L.N., Marchais, H., Douziech-Eyrolles, L., Cohen-Jonathan, S., Souce, M., Dubois, P., and Hourpa, I. (2005) Development and characterization of sub-micron poly (D, L-lactide-co-glycolide) particles loaded with magnetite/maghemite nanoparticles. International Journal of Pharmaceutics, 302(1), 187-196.
- Park, T.G., Lu, W., and Crotts, G. (1995) Importance of in vitro experimental conditions on protein release kinetics, stability and polymer degradation in protein encapsulated poly (D, L-lactic acid-co-glycolic acid) microspheres. Journal of Controlled Release, 33(2), 211-222.
- Pérez-Rodríguez, C., Montano, N., Gonzalez, K., and Griebenow, K. (2003) Stabilization of α -chymotrypsin at the CH₂Cl₂/water interface and upon water-in-oil-in-water encapsulation in PLGA microspheres. Journal of Controlled Release, 89(1), 71-85.
- Rafati, H., Coombes, A., Adler, J., Holland, J., and Davis, S.S. (1997) Protein-loaded poly (DL-lactide-co-glycolide) microparticles for oral administration: formulation, structural and release characteristics. Journal of Controlled Release, 43(1), 89-102.
- Ravivarapu, H.B., Lee, H., and DeLuca, P.P. (2000) Enhancing initial release of peptide from poly (d, l-lactide-co-glycolide)(PLGA) microspheres by addition of a porosigen and increasing drug load. Pharmaceutical Development and Technology, 5(2), 287-296.
- Sheshala, R., Peh, K.K., and Darwis, Y. (2009) Preparation, characterization, and in vivo evaluation of insulin-loaded PLA-PEG microspheres for controlled parenteral drug delivery. Drug Development and Industrial Pharmacy, 35(11), 1364-1374.
- Wang, Y., Gao, X., Kuriyavar, S., Bourne, D., Grady, B., Chen, K., Dormer, K., and Kopke, R.D. (2011) Incorporation, release, and effectiveness of dexamethasone in poly (lactic-co-glycolic acid) nanoparticles for inner ear drug delivery. Journal of Nanotechnology in Engineering and Medicine, 2(1), 011013.

- Xu, Q. and Czernuszka, J.T. (2008) Controlled release of amoxicillin from hydroxyapatite-coated poly (lactic-co-glycolic acid) microspheres. Journal of Controlled Release, 127(2), 146-153.
- Yang, Y.-Y., Chung, T.S., and Ng, N.P. (2001) Morphology, drug distribution, and in vitro release profiles of biodegradable polymeric microspheres containing protein fabricated by double-emulsion solvent extraction/evaporation method. Biomaterials, 22(3), 231-241.
- Zhang, J., Zhu, K.J., and Chen, D. (2005) Preparation of bovine serum albumin loaded poly (D, L-lactic-co-glycolic acid) microspheres by a modified phase separation technique. Journal of Microencapsulation, 22(2), 117-126.
- Zhu, K., Jiang, H.L., Du, X.Y., Wang, J., Xu, W.X., and Liu, S.F. (2001) Preparation and characterization of hCG-loaded polylactide or poly (lactide-co-glycolide) microspheres using a modified water-in-oil-in-water (w/o/w) emulsion solvent evaporation technique. Journal of Microencapsulation, 18(2), 247-260.
- Zolnik, B.S. and Burgess, D.J. (2008) Evaluation of in vivo–in vitro release of dexamethasone from PLGA microspheres. Journal of Controlled Release, 127(2), 137-145.

APPENDICES

APPENDIX A Size Distribution of Dexamethasone Loaded Low Molecular Weight Superparamagnetic Iron Oxide PLGA Nanoparticles Using Malvern Zetasizer Nano Series.

Results

	Diam. (nm)	% Number	Width (nm)
Z-Average (d.nm): 348.4	Peak 1: 140.6	100.0	68.22
Pdl: 0.351	Peak 2: 0.000	0.0	0.000
Intercept: 0.958	Peak 3: 0.000	0.0	0.000

Result quality Good

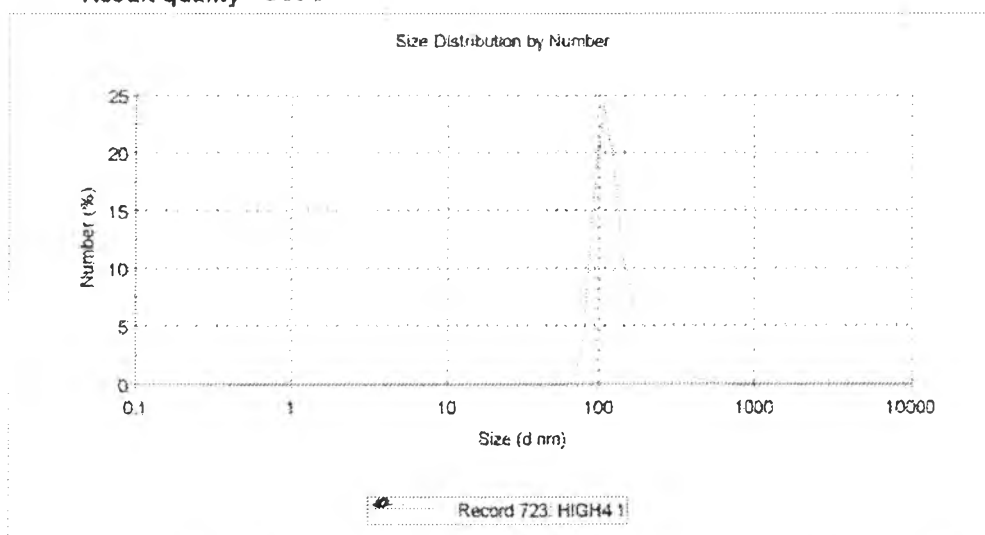


Figure A1 Size Distribution of Dexamethasone Loaded Low Molecular Weight Superparamagnetic Iron Oxide PLGA Nanoparticles Using Malvern Zetasizer Nano Series.

APPENDIX B Size Distribution of Dexamethasone Loaded High Molecular Weight Superparamagnetic Iron Oxide PLGA Nanoparticles Using Malvern Zetasizer Nano Series.

Results

	Diam. (nm)	% Number	Width (nm)
Z-Average (d.nm): 414.3	Peak 1: 184.0	100.0	72.15
Pdl: 0.548	Peak 2: 0.000	0.0	0.000
Intercept: 0.044	Peak 3: 0.000	0.0	0.000

Result quality Good

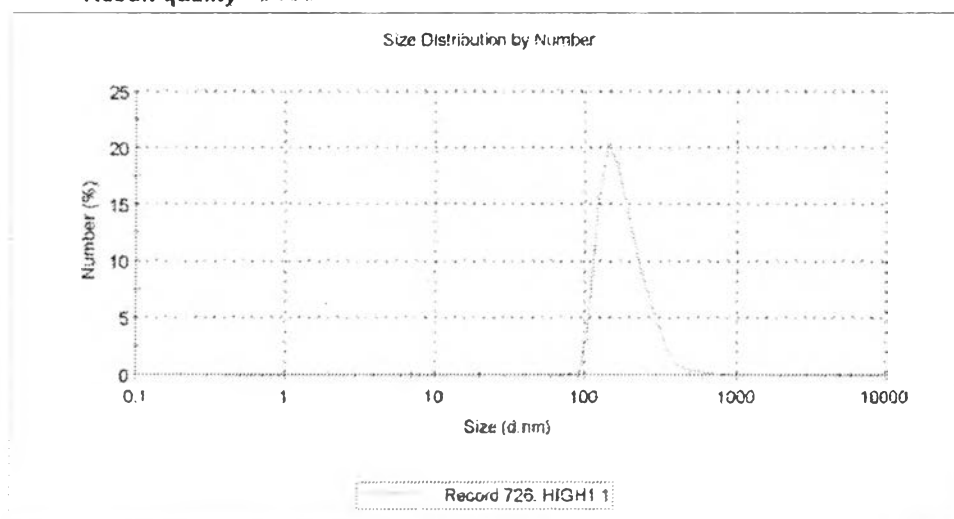


Figure B1 Size Distribution of Dexamethasone Loaded High Molecular Weight Superparamagnetic Iron Oxide PLGA Nanoparticles Using Malvern Zetasizer Nano Series.

APPENDIX C Zeta Potential of Dexamethasone Loaded Low Molecular Weight Superparamagnetic Iron Oxide PLGA Nanoparticles Using Malvern Zetasizer Nano Series.

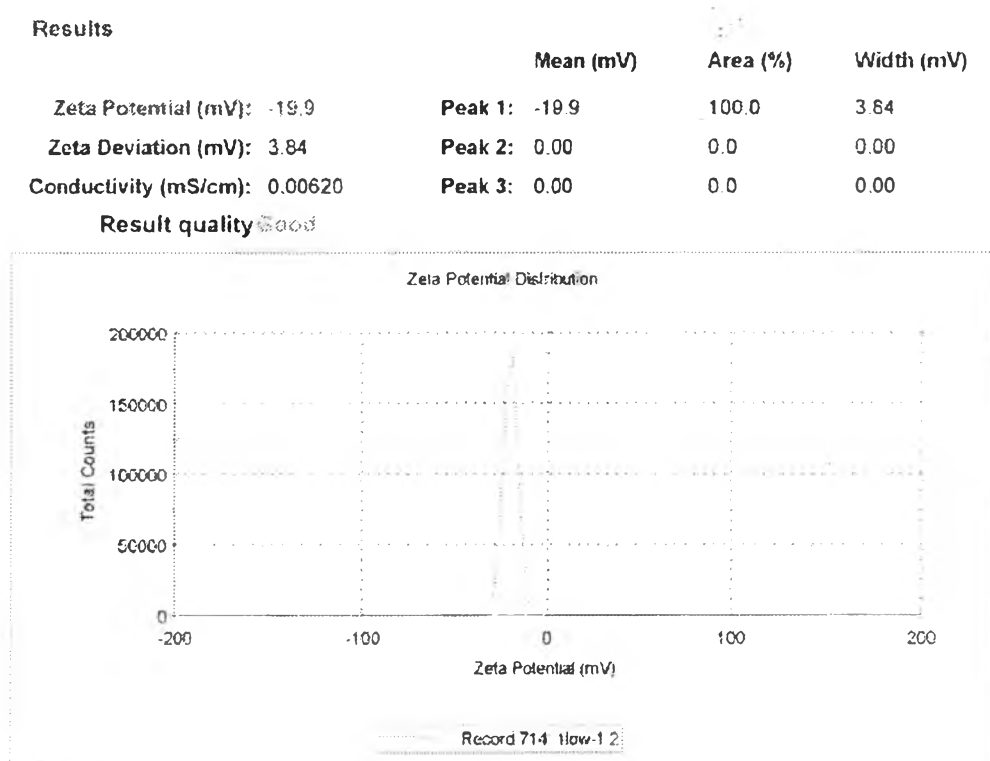


Figure C1 Zeta Potential of Dexamethasone Loaded Low Molecular Weight Superparamagnetic Iron Oxide PLGA Nanoparticles Using Malvern Zetasizer Nano Series.

APPENDIX D Zeta Potential of Dexamethasone Loaded High Molecular Weight Superparamagnetic Iron Oxide PLGA Nanoparticles Using Malvern Zetasizer Nano Series.

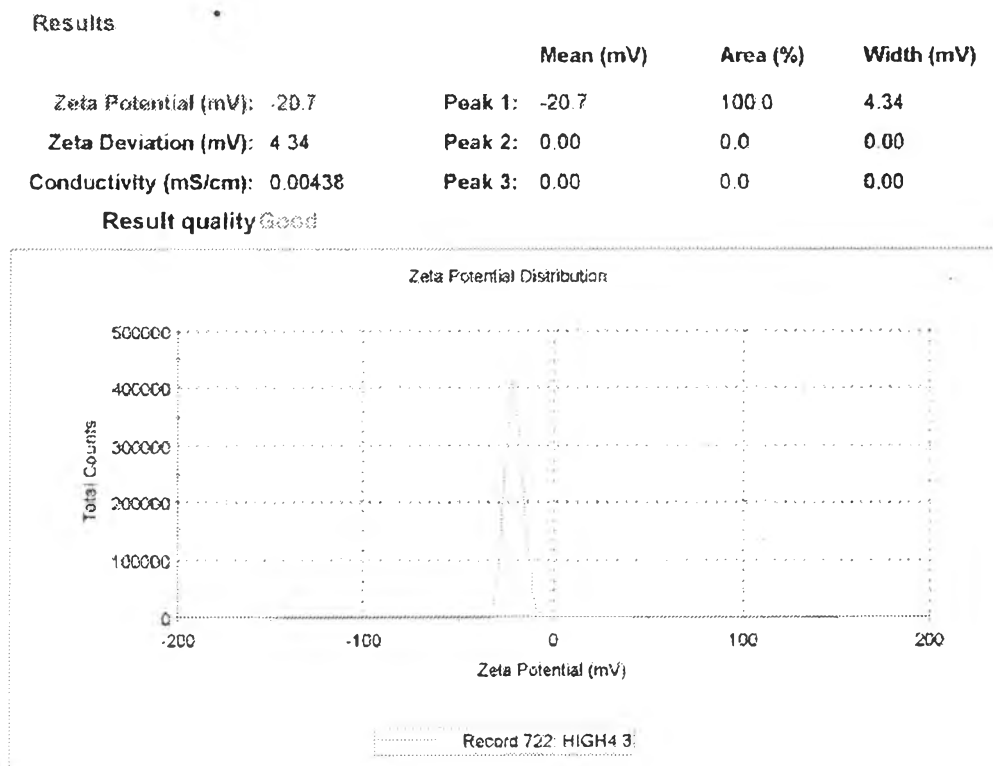


Figure D1 Zeta Potential of Dexamethasone Loaded High Molecular Weight Superparamagnetic Iron Oxide PLGA Nanoparticles Using Malvern Zetasizer Nano Series.

CURRICULUM VITAE

Name: Mr. Surachet Duanghathaipornsuk
Date of Birth: October 31, 1991
Nationality: Thai
University Education:
2007–2010 Bachelor Degree of Industrial Chemistry, Chemistry,
Chiangmai University, Chiangmai, Thailand

Presentation:

1. Duanghathaipornsuk, S.; Nithitanakul, M. (2015, April 21) Synthesis and encapsulation of magnetite nanoparticles of PLGA by using double emulsion technique; DEX loading and release profile. Poster presented at The 6th Research Symposium on Petrochemical and Materials Technology and The 21st PPC Symposium on Petroleum, Petrochemicals, and Polymers. Bangkok, Thailand.
1. Duanghathaipornsuk, S.; Nithitanakul, M. (2015, June 21-26) Synthesis and encapsulation of magnetite nanoparticles of porous and non-porous PLGA by using double emulsion technique: DEX loading and release profile. Poster presented at EPF 2015 : European Polymer Congress 2015. Dresden, Germany.