

REFERENCES

- Adeyeye, C. M., and Li, P. 1990. Diclofenac sodium. In Florey, K., Al-Badr, A. A., and Wozniak, T. J.(eds), **Analytical profiles of drug substances**. (Vol.19). pp.123-144. New York: Academic Press.
- Adeyeye, C. M., and Price, J. C. 1994. Development and evaluation of sustained release ibuprofen wax microspheres II in vitro dissolution studies. **Pharm.Res.** 11(4): 575-579.
- Aiache, J., and Beyssac, E. 1995. Powders as dosage forms. In Swarbrick, J., and Boylan, J.C. **Encyclopedia of Pharmaceutical Technology**. (Vol.12). pp. 389-420. New York: Academic Press.
- Akiyama, Y., Yoshioka, M., Horibe, H., Hirai, S., Kitamori, N., and Toguchi, H. 1993. Novel oral controlled release microspheres using polyglycerol esters of fatty acids. **J.Controlled Release.** 26: 1-10.
- Al-Shora, H., Said, S., and Hammad, A. L. 1980. Sustained release from inert matrixes II effect of polyethylene glycols on theophylline release. **Int.J.Pharm.** 7: 77-82.
- Baert, L., Fanara, D., DeBaets, P., and Ramon, J. P. 1991. Instrumentation of a gravity feed extruder and the influence of the composition of binary and ternary mixtures on the extrusion forces. **J.Pharm.Pharmacol.** 43: 745-749.
- Baert, L., and Ramon, J. P. 1993. Influence of amount of granulation liquid on the drug release rate from pellets made by extrusion-spheronization. **Int.J.Pharm.** 95: 135-141.
- Baert, L., Ramon, J. P., Elbers, J. A. C., and Van Bommel, E .M. G. 1993a. Comparison between a gravity feed extruder and a twin screw extruder. **Int.J.Pharm.** 99: 7-12.
- Bataille, B., Ligarski, K., Jacob, M., Thomas, C., and Duru, C. 1993. Study of the influence of spheronization and drying conditions on the physico-chemical properties of neutral spheroids containing Avicel[®] PH 101 and lactose. **Drug Dev.Ind.Pharm.** 19(6): 653-671.
- Bechard, S. R., and Leroux, J. C. 1992. Coated pelletized dosage form: effect of compaction on drug release. **Drug Dev.Ind.Pharm.** 18: 1927-1944.

- Blandque, D., Sternagel, H., Podczeck, F., and Newton, J. M. 1995. Some factor influencing the formation and in vitro drug release from matrix pellets prepared by extrusion/spheronization. **Int.J.Pharm.** 119: 203-211.
- Bodmeier, R., Paeratakul, O., Chen, H., and Zhang, W. 1990. Formation of sustained release wax matrices within hard gelatin capsules in a fluidized bed. **Drug Dev.Ind.Pharm.** 16(9): 1505-1519.
- Brabander, C. D., Vervacet, C., Fiermans, L., and Remon, J. P. 2000. Matrix mini-tablets based on starch/microcrystalline wax mixtures. **Int.J.Pharm.** 199: 195-203.
- Brossard, C., Ratsimbazafy, V., and Ylouses, D. L. D. 1991. Modelling of theophylline compound release from hard gelatin capsules containing gelucire matrix granules. **Drug Dev.Ind.Pharm.** 17(10): 1267-1277.
- Chariot, M., Frances, J., Lewis, G. A., Mathieu, D., Pharn, T. L. R., and Stevens, H. N. E. 1987. A factorial approach to process variables of extrusion-spheronization of wet powder masses. **Drug Dev.Ind.Pharm.** 13: 1639-1649.
- Chen, W. G., and Hwang, G. C. C. 1992. Adhesive and in vitro release characteristics of propranolol bioadhesive disc syste. **Int.J.Pharm.** 82:61-66.
- Chiba, Y., Kohri, N., Iseki, K., and Miyazaki, K. 1991. Improvement of dissolution and bioavailability of mebendazole an agent for human echinoccosis by preparing solid dispersion with polyethylene glycol. **Chem.Pharm.Bull.** 39: 2158-2160.
- Chiou, W. L., and Niazi, S. 1971. Phase diagram and dissolution rate studies on sulfathiazole-urea solid dispersions. **J.Pharm.Sci.** 60: 1333-1337.
- Chopra, R., Newton, J. M., Alderborn, G., and Podczeck, F. 2001. Preparation of pellets of different shape and their characterization. **Pharm.Dev.Tech.** 6(4): 495-503.
- Dakkuri, A., Schroeder, H. G., and Deluca, P. P. 1978. Sustained release from inert wax matrixes II effect of surfactants on tripelnnamine hydrochloride release. **J.Pharm.Sci.** 67(3): 354-357.
- Dakkuri, A., Butler, L. D., and Deluca, P. P. 1978. Sustained release from inert wax matrixes III effect of povidone on tripelnnamine hydrochloride release. **J.Pharm.Sci.** 67(3): 357-360.

- Emori, H., Ishizaka, T., and Koishi, M. 1984. Effect of acrylic acid polymer and its arrangement on drug release from wax matrix. **J.Pharm.Sci.** 73: 910-914.
- Faham, A., Prinderre, P., Farah, N., Eichler, K. D., Kalantzis, G., and Joachim, J. 2000. Hot-melt coating technology. I. influence of Compritol[®]ATO 888 and granule size on theophylline release. **Drug Dev.Ind.Pharm.** 26(2): 167-176.
- Fessi, H., Marty, J. P., Puisienx, F., and Cartensen, J. T. 1982. Square root of time dependence of matrix formulations with low drug content. **J.Pharm.Sci.** 71: 749-752.
- Fielden, K. E., Newton, J. M., and Rowe, R. C. 1989. The effect of lactose particle size on the extrusion properties of microcrystalline cellulose-lactose mixtures. **J.Pharm.Pharmacol.** 41: 217-221.
- Fielden, K. E., Newton, J. M., and Rowe, R. C. 1992. A comparison of the extrusion and spheronization behavior of wet powder masses processed by a ram extruder and a cylinder extruder. **Int.J.Pharm.** 81: 225-233.
- Flanders, P., Dyer, G. A., and Jordn, D. 1987. The controls of drug release from conventional melt granulation matrices. **Drug Dev.Ind.Pharm.** 13(6): 1001-1022.
- Ford, J. L., and Elliott, P. N. C. 1985. The effect of particle size on some in-vitro and in-vivo properties of indomethacin-polyethylene glycol 6000 solid dispersions. **Drug Dev.Ind.Pharm.** 11: 537-549.
- Foster, T. P., and Parrott, E. L. 1990a. Release of highly water-soluble medicinal compounds from inert, heterogenous matrixs I physical mixture. **J.Pharm.Sci.** 79(9): 806-810.
- Foster, T. P., and Parrott, E. L. 1990b. Release of highly water-soluble medicinal compounds from inert, heterogeneous matrixs II melt method. **J.Pharm.Sci.** 79(10): 938-943.
- Ghali, E. S., Klinger, G. H., and Schwartz, J. B. 1989. Thermal treatment of beads with wax for controlled release. **Drug Dev.Ind.Pharm.** 15(9): 1311-1328..
- Ghibre-Sellassie, I. 1989. Pellets: A general overview. In **Pharmaceutical Pelletization Technology**, pp. 1-13. New York: Marcel Dekker, Inc.
- Giannola, L. I., and Caro, V. D. 1997. Entrapment of phenytoin into microspheres of oleaginous materials: process development and in-vitro evaluation of drug release. **Drug Dev.Ind.Pharm.** 23(12): 1145-1152.

- Gupta, M. K., Goldman, D., Bogner, R. H., and Tseng, Y. C. 2001. Enhanced drug dissolution and bulk properties of solid dispersions granulated with a surface adsorbent. **Pharm.Dev.Tech.** 6(4): 563-572.
- Harris, M. R., and Ghebre, S. I. 1989. Formulations variables. In Ghebre-Sellassie (ed.), **Pharmaceutical Pelletization Technology**, pp. 227. New York: Marcel Dekker, Inc.
- Harrison, P. J., Newton, J. M., and Rowe, R. C. 1985. Flow defects in wet powder mass extrusion. **J.Pharm.Pharmacol.** 37: 81-83.
- Hasznos, L., Langer, I., and Gyarmathy, M. 1992. Some factors influencing pellet characteristics made by an extrusion-spheronization process part I: effects on size characteristics and moisture content decrease of pellets. **Drug Dev.Ind.Pharm.** 18: 409-437.
- Hellen, L., and Yliruusi, J. 1993. Process variables of instant granulator and spheroniser: III shape and shape distributions of pellets. **Int.J.Pharm.** 96: 217-223.
- Heng, P. W. S., and Staniforth, J. N. 1988. The effect of moisture on the cohesive properties of microcrystalline cellulose. **J.Pharm.Pharmacol.** 40: 360-362.
- Herman, J., Ramon, J. P., Lefebvre, R., Bogaert, M., Klinger, G. H., and Schwartz, J. B. 1988. The dissolution rate and bioavailability of hydrochlorothiazide in pellets formulations. **J.Pharm.Pharmacol.** 40: 157-160.
- Herzfeldt, C. D., and Kummel, R. 1983. Dissociation constant solubilities and dissolution rates of some selected nonsteroidal anti inflammatories. **Drug Dev.Ind.Pharm.** 9(5): 767-793.
- Hicks, D. C., and Freese, H. L. 1989. Extrusion and spheronizing equipment. In **Pharmaceutical Pelletization Technology**, pp. 71-100. New York: Marcel Dekker, Inc.
- Higuchi, T. 1963. Mechanism of sustained-action medication theoretical analysis of rate of release of solid drugs dispersed in solid matrices. **J.Pharm.Sci.** 52: 1145-1149.
- Ishino, R., Yoshino, H., Hirakawa, Y., and Noda, K. 1990. Influence of internal structure on kinetics of drug release from wax matrix tablets. **Chem.Pharm.Bull.** 38(12): 3440-3445.
- Jain, S. K., Pande, S., and Vyas, S. P. 1990. Preparation and evaluation of slow release propranolol microsphere. **Indian J.Pharm.Sci.** July-August: 169-173.

- Jovanovic, M., Jovicic, G., Duric, Z., Agbaba, D., Karljickovic, R. K., Radovanovic, J., and Nikolic, L. 1997. Effect of fillers and lubricants on acetylsalicylic acid release kinetics from eudragit matrix tablets. **Drug Dev.Ind.Pharm.** 23(6): 595-602.
- Kenneth, R. M., Gregory, T. K., and Abu, T. M. S. 1992. Structural properties of polyethylene glycol-polysorbate 80 mixture, a solid dispersion vehicle. **J.Pharm.Sci.** 81(12): 1185-1188.
- Krogars, K., Heinamaki, J., Vesalahti, J., Marvola, M., Antikainen, O., and Yliruusi, J. 2000. Extrusion-spheronization of pH-sensitive polymeric matrix pellets for possible colonic drug delivery. **Int.J.Pharm.** 199: 187-194.
- Ku, C. C., Joshi, Y. M., Bergum, J. S., and Jain, N. B. 1993. Bead manufacture by extrusion-spheronization: a statistical design for process optimization. **Drug Dev.Ind.Pharm.** 19: 1505-1519.
- Law, S. L., Lo, W. Y., Lin, F. M., and Chaing, C. H. 1992. Dissolution and absorption of nifedipine in polyethylene glycol solid dispersion containing phosphatidylcholine. **Int.J.Pharm.** 84: 161-166.
- Li, S. P., Feld, K. M., and Kowarski, C. R. 1989. Preparation of a controlled release drug delivery system of indomethacin: effect of process equipment, particle size of indomethacin, and size of non-pareil seeds. **Drug Dev.Ind.Pharm.** 15: 1137-1159.
- Liu, C. H., Kao, Y. H., Chen, S. C., Sokoloski, T. D., and Sheu, M. T. 1995. In-vitro and in-vivo studies of the diclofenac sodium controlled release matrix tablets. **J.Pharm.Pharmacol.** 47: 360-364.
- Lund, W., ed. 1994. **The Pharmaceutical Codex** (21st. Ed.). pp.1025-1029. London: The Pharmaceutical Press. **Int.J.Pharm.** 74: 103-114.
- Maitani, Y., Nakagaki, M., and Nagai, T. 1991. Determination of the acid dissociation constants in ethanol-water mixtures and partition coefficients for diclofenac. **Int.J.Pharm.** 74: 103-114.
- Maejima, T., Ohsawa, T., Kobayashi, M., and Noda, K. 1992. Factors effecting spherical granulation of drugs by tumbling granulation method. **Chem.Pharm.Bull.** 40:488-492.
- Maejima, T., Ohsawa, T., Nakajima, K., and Kobayashi, M. 1997. Application of tumbling melt granulation (TMG) method for preparing controlled release beads coated with hydrogenated castor oil. **Chem.Pharm.Bull.** 45(5): 904-910.

- Maitani, Y., Nakagaki, M., and Nagai, T. 1991. Determination of the acid dissolution constants in ethanol-water mixtures and partition coefficients for diclofenac sodium. **Int.J.Pharm.** 74: 105-114.
- McTaggart, C. M., Ganley, J.A., Sickmueller, A. and Walker, S. E. 1984. The evaluation of formulation and processing conditions of a melt granulation process. **Int.J.Pharm.** 19: 139-148.
- Mehta, K. A., Kislalioglu, M.S., Phuapradit, W., Malick, A. W., and Shah, N. H. 2000. Effect of formulation and process variables on porosity parameters and release rates from a multi unit erosion matrix of a poorly soluble drug. **J.Controlled Release.** 63: 201-211.
- Millili, G. P., and Schwartz, J. B. 1990. The strength of microcrystalline cellulose pellets: the effect of granulating with water/ethanol mixtures. **Drug Dev.Ind.Pharm.** 16: 1411-1426.
- Mirghani, A., Idkaidek, N. M., Salom, M. S., and Najib, N. M. 2000. Formulation and release behavior of diclofenac sodium in Compritol® ATO 888 matrix beads encapsulated in alginate. **Drug Dev.Ind.Pharm.** 26(7): 791-795.
- Moffat, A. C., Jackson, J. V., Moss, M. S., and Widdop, B.(eds). 1986. **Clarke's isolation and identification of drugs** (2nded.). London: The pharmaceutical press.
- Montousse, C., Pruvost, M., Rodriguez, F., and Brossard, C. 1999. Extrusion-spheronization manufacture of Gelucire® matrix beads. **Drug Dev.Ind.Pharm.** 25(1): 75-80.
- O'Connor, R. E., and Schwartz, J. B. 1985. Spheronization II: drug release from drug-diluent mixtures. **Drug Dev.Ind.Pharm.** 11(9&10): 1837-1857.
- O'Connor, R. E., and Schwartz, J. B. 1993. Drug release mechanism from a microcrystalline cellulose pellet system. **Pharm.Res.** 10(3): 356-361.
- Olsen, K. W. 1989. Fluid bed equipment. In **Pharmaceutical Pelletization Technology**, pp. 39-70. New York: Marcel Dekker, Inc.
- Otsuka, M., and Matsuda, Y. 1995. Programmable drug release of highly water-soluble pentoxifylline from dry-coated wax matrix tablets. **J.Pharm.Sci.** 84 (4): 443-447.
- Parab, P. V., Oh, C. K., and Ritschel, W. A. 1986. Sustained release from precirol (glycerol palmito-stearate) matrix: effect of mannitol and hydroxypropyl

- methylcellulose on the release of theophylline. **Drug Dev.Ind.Pharm.** 12: 1309-1319.
- Paraira, F. M., Llovet, X., and Sune, N. J. M. 1994. Granulometric characterization and study of ibuprofen lysinate by means of an image processor. **Drug Dev.Ind.Pharm.** 20(3): 259-278.
- Peh, K. K., and Yuen, K. H. 1995. Development and in vitro evaluation of a novel multiparticulate matrix controlled release formulation of theophylline. **Drug Dev.Ind.Pharm.** 21(13): 1545-1555.
- Peppas, N. A. 1985. Analysis of Fickian and non-Fickian drug release from polymers. **Pharm.Acta Helv.** 11: 110-111.
- Pillai, J. C., Babar, A., and Plakogiannis, F. M. 1988. Polymers in cosmetic and pharmaceutical industries. **Pharm.Acta.Helv.** 63: 46-53.
- Pinto, J. F., Buckton, G., and Newton, J. M. 1993. The influence of four selected processing and formulation factors on the production of spheres by extrusion and spheronisation. **Int.J.Pharm.** 83: 187-196.
- Porter, S. C. 1989. Controlled release film coating based on ethylcellulose. **Drug Dev.Ind.Pharm.** 15(10): 1495-1521.
- Rekhi, G. S., Mendes, R. W., Porter, S. C., and Jambhekar, S. S. 1989. Aqueous polymeric dispersions for controlled drug delivery wuster process. **Pharm.Tech.** 3: 112, 114, 116, 118, 120, 122, 124, 126.
- Reynolds, J. E. F., Parfitt, K., Parsons, A. V., and Sweetman, S. C., eds. 1993. **Martindale: the extra pharmacopoeia**(30thed). London: The pharmaceutical press.
- Ritger, P. L., and Peppas, N. A. 1987a. A simple equation for description of solute release I Fickian and non-Fickian release from non-swelling devices in the form of slabs, spheres, cylinders or discs. **J.Controlled Release.** 5: 23-36.
- Ritger, P. L., and Peppas, N. A. 1987b. A simple equation for description of solute release II Fickian and anomalous release from swelling devices. **J.Controlled Release.** 5: 37-42.
- Rowe, R. C. 1985. Spheronization: a novel pill making process?. **Pharm.Int.** 6: 119-123.
- Sato, H., Miyagawa, Y., Okabe, T., Miyajima, M., and Sunada, H. 1997. Dissolution mechanism of diclofenac sodium from wax matrix granules. **J.Pharm.Sci.** 86 (8): 929-934.

- Schaefer, T. 1996a. Melt pelletization in a high shear mixer VI agglomeration of a cohesive powder. **Int.J.Pharm.** 132: 221-230.
- Schaefer, T. 1996b. Melt pelletization in a high shear mixer X agglomeration of binary mixtures. **Int.J.Pharm.** 139: 149-159.
- Schaefer, T., Holm, P., and Kristensen, G. 1992. Melt pelletization in a high shear mixer III effect of lactose quality. **Acta.Pharm.Nord.** 4(4): 245-252.
- Schaefer, T, and Mathiesen, C. 1996a. Melt pelletization in a high shear mixer VII effect of product temperature. **Int.J.Pharm.** 134: 105-117.
- Schaefer, T, and Mathiesen, C. 1996b. Melt pelletization in a high shear mixer VIII effect of binder viscosity. **Int.J.Pharm.** 139: 125-138.
- Schaefer, T., Taagegaard, B., Thomsen, L.J., and Kristensen, H. G. 1993a. Melt pelletization in a high shear mixer IV effects of process variables in a laboratory scale mixer. **Eur.J.Pharm.Sci.** 1: 125-131.
- Schaefer, T., Taagegaard, B., Thomsen, L.J., and Kristensen, H. G. 1993b. Melt pelletization in a high shear mixer. V. effects of apparatus variables. **Eur.J.Pharm.Sci.** 1: 133-141.
- Schwartz, J. B., Simonelli, A. P., and Higuchi, W. I. 1968. Drug release from wax matrices I analysis of data with first-order kinetics and with the diffusion-controlled model. **J.Pharm.Sci.** 57: 274-277.
- Serajuddin, A. T. M., Sheen, P. C., and Augustine, M. A. 1999. Improved dissolution of a poorly water-soluble drug from solid dispersions in polyethylene glycol: Polysorbate 80 mixtures. **J.Pharm.Sci.** 75(5): 463-464
- Shaikh, N. H., De-Yanes, S. E., Shukla, A. J., Bolck, L. H., Collins, C. C., and Price, J. C. 1991. Effect of different binders on release characteristics of theophylline from compress microspheres. **Drug Dev.Ind.Pharm.** 17(6): 793-804.
- Shanawany, S.L. 1993. Sustained release of nitrofurantoin from inert wax matrix. **J.Controlled Release.** 26: 11-19.
- Sheu, M. T., Chou, H. L., Kao, C. C., Liu, C. H., Sokoloski, T. D. 1992. Dissolution of diclofenac sodium from matrix tablets. **Int.J.Pharm.** 85: 57-63.
- Sjokvist, E., and Nystrom, C. 1988. Physicochemical aspects of drug release VI drug dissolution rate from solid particulate dispersions and importance of carrier and drug particle properties. **Int.J.Pharm.** 47: 51-66.

- Sousa, J. J., Sousa, A., Podczec, F., and Newton, J. M. 1996. Influence of process conditions on drug release from pellets. **Int.J.Pharm.** 144: 159-169.
- Sprockel, O. L., Sen, M., Shivanand, P., and Prapaitrakul, W. 1997. A melt-extrusion process for manufacturing matrix drug delivery systems. **Int.J.Pharm.** 155: 191-199.
- Sugimoto, I., Kuchiki, A., Nakagawa, H., Tohgo, K., Kondo, S., Iwane, I., and Takahashi, K. 1980. Dissolution and absorption of nifedipine from nifedipine-polyvinylpyrrolidone co-precipitate. **Drug Dev.Ind.Pharm.** 6: 137-160.
- Sutananta, W., Craig, D. Q. M., and Newton, J. M. 1994. The effects of aging on the thermal behavior and mechanical properties of pharmaceutical glycerides. **Int.J.Pharm.** 111: 51-62.
- Tapia, C., Buckton, G., and Newton, J. M. 1993. Factors influencing the mechanism of release from sustained release matrix pellets, produced by extrusion/spheronization. **Int.J.Pharm.** 92: 211-218.
- The United States Pharmacopeial Convention. 2000. **The United States Pharmacopeia (USP)** (24th rev.ed.). Massachusetts: n.p.
- Thomsen, L. J., Schaefer, T., and Kristensen, H. G. 1994. Prolonged release matrix pellets prepared by melt pelletization II. Hydrophobic substances as meltable binder. **Drug Dev.Ind.Pharm.** 20(7): 1179-1197.
- Vervacet, C. Baert, L., and Ramon, J. P. 1994a. Enhancement of in-vitro drug release by using polyethylene glycol 400 and PEG-40 hydrogenated castor oil in pellets made by extrusion spheronization. **Int.J.Pharm.** 108: 207-212.
- Vervacet, C. Baert, L., Risha, P. A., and Remon, J. P. 1994b. The influence of the extrusion screen or pellet quality using an instrumental basket extruder. **Int.J.Pharm.** 107: 29-39.
- Vervacet, C. Baert, L. and Ramon, J. P. 1995. Extrusion-spheronization a literature review. **Int.J.Pharm.** 116: 131-146.
- Wade, A., and Weller, P. J. 1994. **Handbook of pharmaceutical excipient**, 2nd ed. London: The pharmaceutical press.
- Wan, L. S. C., Heng, P. W. S., and Liew, C. V. 1993. Spheronization conditions on spheroid shape and size. **Int.J.Pharm.** 96: 59-65.
- Wang, D. P., Yang, M. C., and Wang, C. Y. 1997. Formulation development of oral controlled-release pellets of diclofenac sodium. **Drug Dev.Ind.Pharm.** 23 (10): 1013-1017.

- Wesseling, M., Kuppler, F., and Bodmeier, R. 1999. Tackiness of acrylic and cellulosic polymer films used in the coating of solid dosage forms. **Eur.J.Pharm.Biopharm.** 47: 73-78.
- Wilder, Ph. V., Detaevernier, M. R., and Michotte, Y. 1991. In vitro dissolution of two oral controlled release preparations of diclofenac sodium. **Drug Dev.Ind.Pharm.** 17(1): 141-148.
- Woodruff, C. W., and Nuessle, N. O. 1972. Effect of processing variables on particles obtained by extrusion-spheronization processing. **J.Pharm.Sci.** 61: 787-790.
- Yoshino, H., Hagiwara, Y., Kabayashi, M., and Samejima, M. 1984. Estimation of polymorphic transition degree of pharmaceutical raw materials. **Chem.Pharm.Bull.** 32(4): 1523-1536.
- Yuen, K. W., Deshmukh, A. A., and Newton, J. M. 1993. Development and in vitro evaluation of a multiparticulate sustained release theophylline formulation. **Drug Dev.Ind.Pharm.** 19: 855-874.
- Zhang, G., Schwartz, J. B., and Schnaare, R. L. 1990. Effect of spheronization technique on drug release from uncoated beads. **Drug Dev.Ind.Pharm.** 16:1171-1184.
- Zhang, G., Schwartz, J. B., Schnaare, R. L., Wigent, R. J., and Sugita, E. T. 1991. Bead coating: II effect of spheronization technique on drug release from coated spheres. **Drug Dev.Ind.Pharm.** 17: 817-830.
- Zhou, F., Vervacet, C., and Ramon, J. P. 1996. Matrix pellets based on the combination of waxes, starches and maltodextrins. **Int.J.Pharm.** 133: 155-160.
- Zhou, F., Vervacet, C., and Ramon, J. P. 1997. Influence of processing on the characteristics of matrix pellets based on microcrystalline waxes and starch derivatives. **Int.J.Pharm.** 147: 23-30.
- Zhou, F., Vervacet, C., Schelkens, M., Lefebvre, R., and Ramon, J. P. 1998. Bioavailability of ibuprofen from matrix pellets based on the combination of waxes and starch derivatives. **Int.J.Pharm.** 168: 79-84.



APPENDICES

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Appendix A

Calibration Curve

The concentration versus absorbance Tables of propranolol hydrochloride in methanol at 290 nm, 0.1 N HCl, and phosphate buffer pH 6.8 at 289 nm are presented in Tables 1A-3A, and the standard curve of propranolol hydrochloride in each mediums are illustrated in Figures 1A-3A, respectively.

Table 1A Absorbance of propranolol hydrochloride in methanol at 290 nm

Concentration ($\mu\text{g/ml}$)	Absorbance
0	0
12	0.264
18	0.403
24	0.544
30	0.678
36	0.810
42	0.938

Figure 1A Calibration curve of propranolol hydrochloride in methanol at 290 nm.

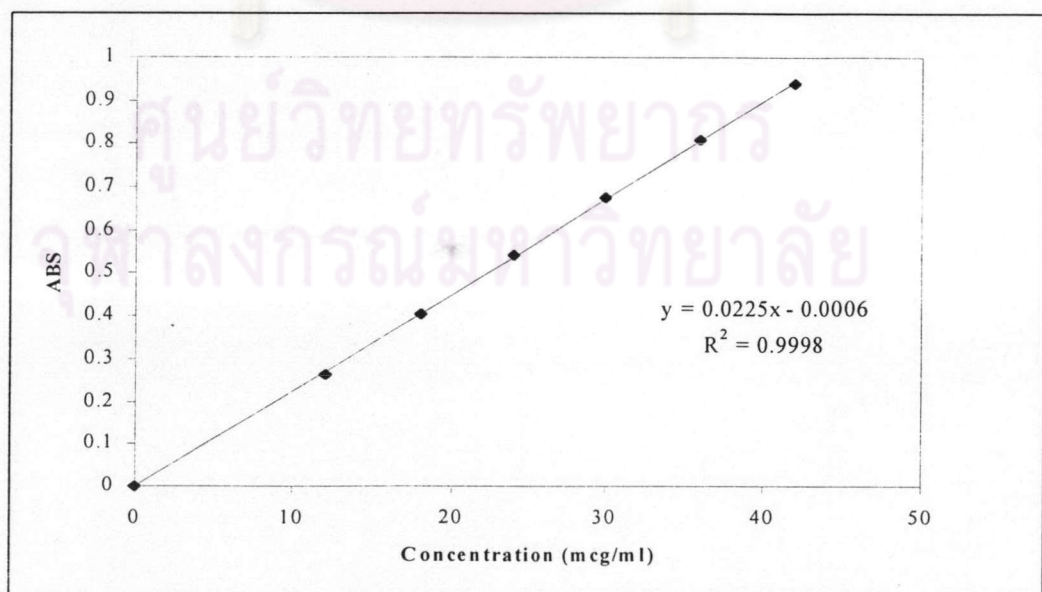
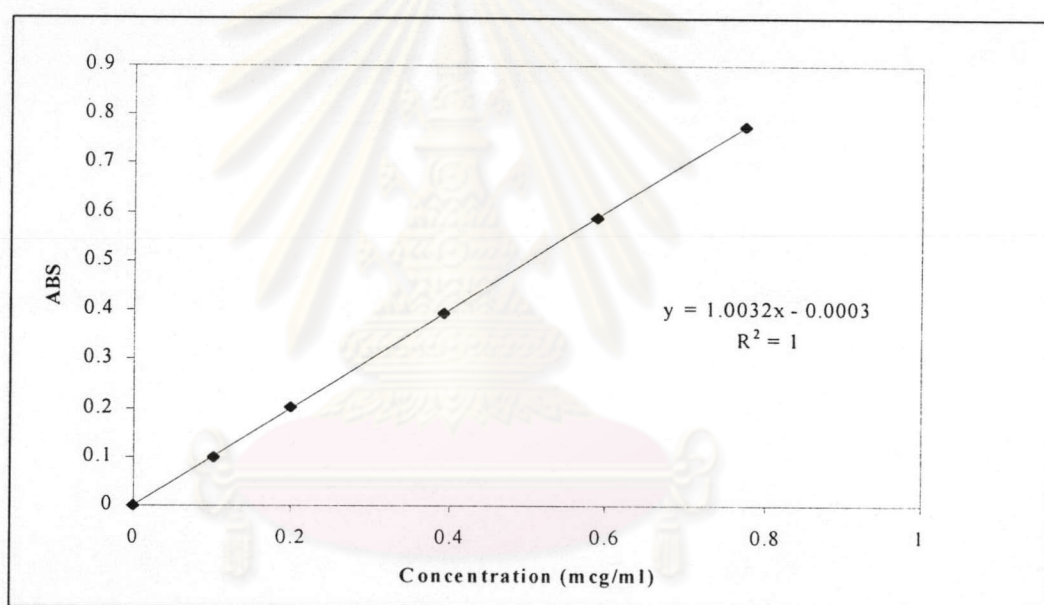


Table 2A Absorbance of propranolol hydrochloride in 0.1 N HCl at 289 nm

Concentration ($\mu\text{g/ml}$)	Absorbance
0	0
5	0.101
10	0.201
20	0.393
30	0.589
40	0.777

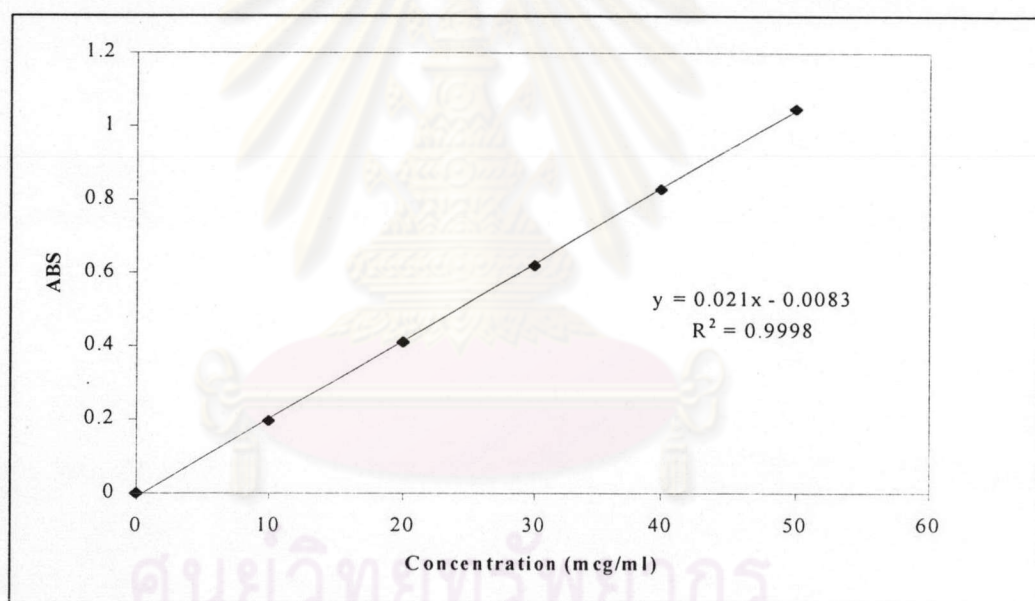
Figure 2A Calibration curve of propranolol hydrochloride in 0.1 N HCl at 289 nm.

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Table 3A Absorbance of propranolol hydrochloride in phosphate buffer pH 6.8 at 289 nm

Concentration ($\mu\text{g/ml}$)	Absorbance
0	0
10	0.196
20	0.409
30	0.621
40	0.830
50	1.050

Figure 3A Calibration curve of propranolol hydrochloride in phosphate buffer pH 6.8 at 289 nm.



The concentration versus absorbance Tables of diclofenac sodium in deionized water at 275 nm, 0.1 N HCl at 273 nm, phosphate buffer pH 6.8 at 275 nm, and in methanol at 283 nm are presented in Tables 4A-6A, and the standard curve of diclofenac sodium in each mediums are illustrated in Figures 4A-6A, respectively.

Table 4A Absorbance of diclofenac sodium in methanol at 283 nm

Concentration ($\mu\text{g/ml}$)	Absorbance
0	0
5	0.214
10	0.425
15	0.634
20	0.830
25	1.044

Figure 4A Calibration curve of diclofenac sodium in methanol at 283 nm.

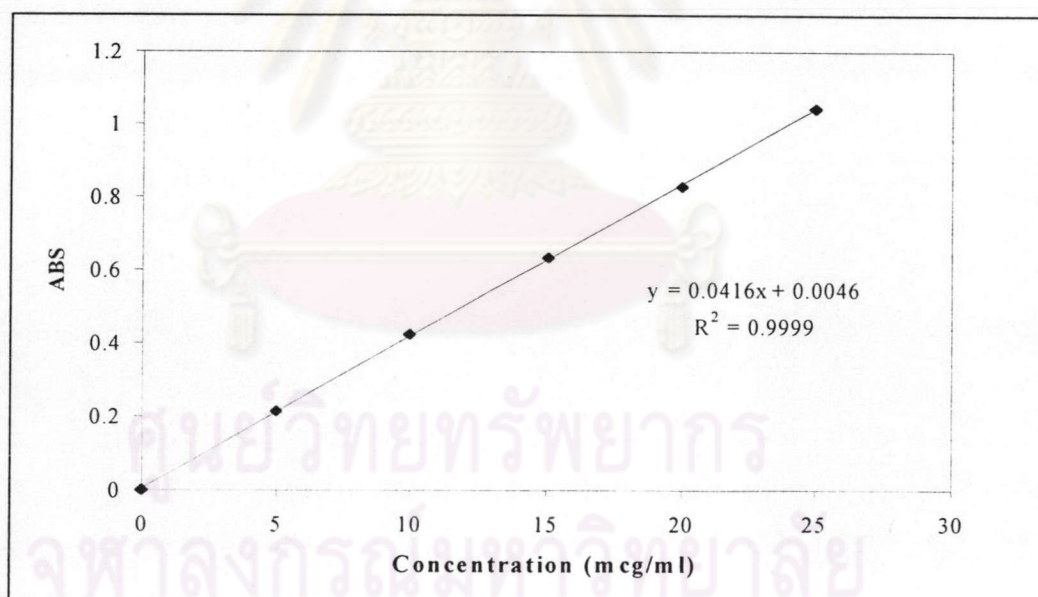


Table 5A Absorbance of diclofenac sodium in 0.1 N HCl at 273 nm

Concentration ($\mu\text{g/ml}$)	Absorbance
0	0
5	0.151
10	0.289
15	0.450
20	0.605
25	0.769

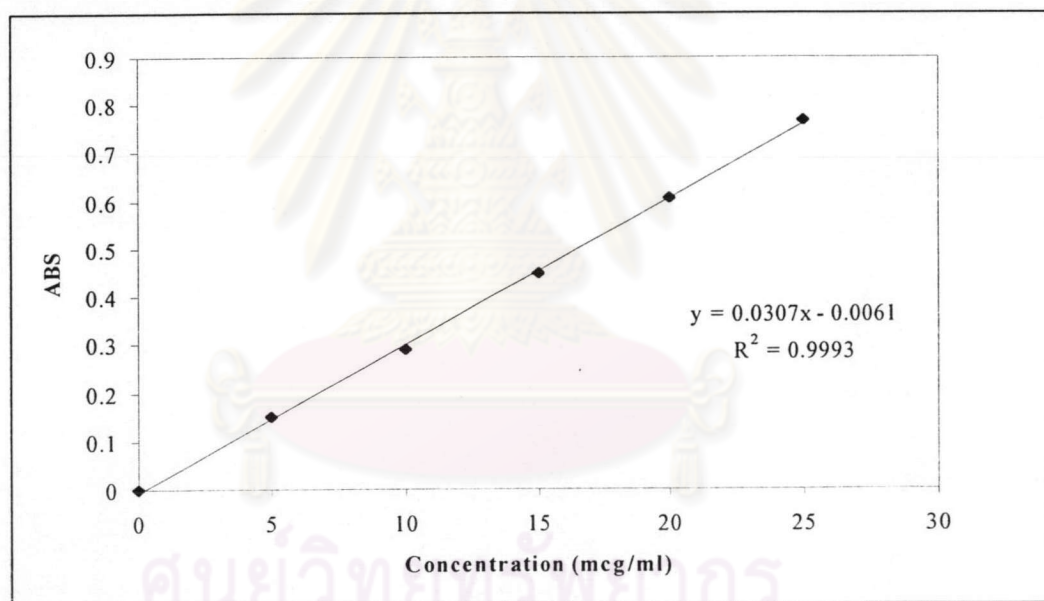
Figure 5A Calibration curve of diclofenac sodium in 0.1 N HCl at 273 nm.

Table 6A Absorbance of diclofenac sodium in phosphate buffer pH 6.8 at 275 nm

Concentration ($\mu\text{g/ml}$)	Absorbance
0	0
2.5	0.084
5	0.168
7.5	0.245
10	0.321
12.5	0.403
15	0.486

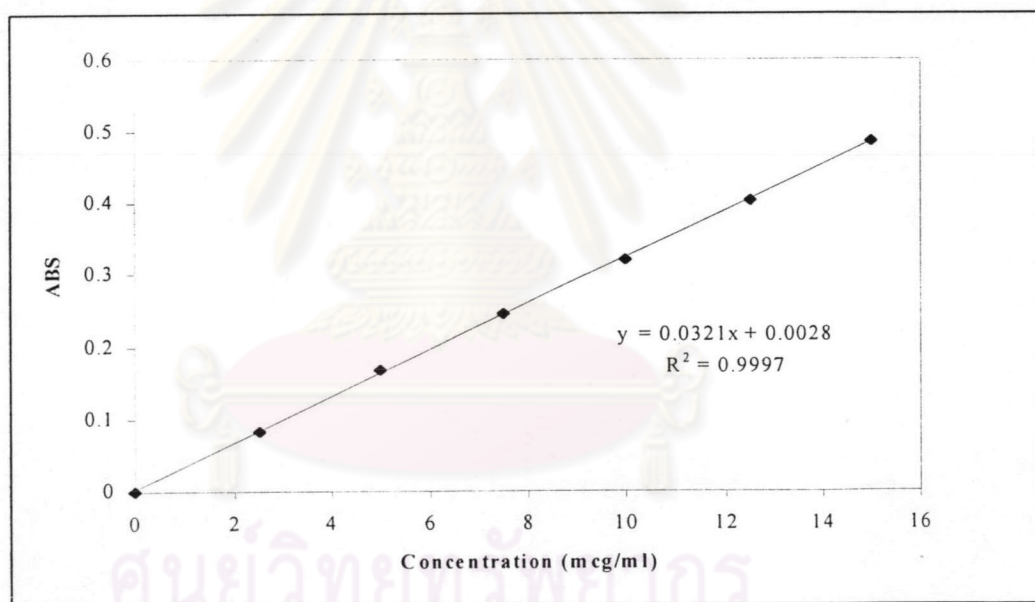
Figure 6A Calibration curve of diclofenac sodium in phosphate buffer pH 6.8 at 275 nm.

Table 7A The value of limit of quantitative

Actual Conc. (mcg/mL)	ABS1	Measurement Conc. (mcg/mL)	ABS2	Measurement Conc. (mcg/mL)	ABS3	Measurement Conc. (mcg/mL)	Mean	SD	% CV
1.0	0.032	1.0062	0.032	1.0062	0.032	1.0062	1.0062	0	0
0.5	0.016	0.2093	0.016	0.5093	0.015	0.4783	0.4989	0.02	3.59
0.4	0.013	0.4161	0.012	0.3851	0.012	0.3851	0.3954	0.02	4.53
0.3	0.009	0.2919	0.010	0.3229	0.010	0.3222	0.3126	0.02	5.73
0.2	0.006	0.1987	0.008	0.2609	0.006	0.1988	0.2195	0.04	16.34
0.1	0.003	0.1056	0.004	0.1366	0.005	0.1677	0.1366	0.03	22.72



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Appendix B

Percentage of Drug Release

Table 1B Percentage amounts of propranolol hydrochloride and diclofenac sodium release from blank capsules.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Blank propranolol hydrochloride 40% matrix pellets # 14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	100.91	0.57	0.00	99.43	0.94	-0.25
	0.50	0.71	103.58	1.04	0.00	103.13	0.53	0.00
	0.75	0.87	103.99	0.89	0.00	103.02	0.16	0.00
	1.00	1.00	104.12	1.92	0.00	102.44	0.81	0.00
	1.50	1.22	103.88	1.49	0.00	103.36	0.83	0.00
	2.00	1.41	104.62	1.02	0.00	104.55	0.96	0.00
	3.00	1.73	104.99	1.41	0.00	105.20	0.55	0.00
	4.00	2.00	105.35	2.39	0.00	106.30	0.56	0.00
	5.00	2.24	105.80	0.81	0.00	-	-	0.00
6.00	2.45	106.69	0.65	0.00	-	-	0.00	
Blank propranolol hydrochloride 40% matrix pellets # 18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	101.10	0.16	0.00	100.78	1.82	0.00
	0.50	0.71	101.67	0.42	0.00	103.95	0.94	0.00
	0.75	0.87	102.97	0.01	0.00	104.02	0.56	0.00
	1.00	1.00	102.27	0.32	0.00	104.44	0.97	0.00
	1.50	1.22	102.00	0.17	0.00	104.49	0.12	0.00
	2.00	1.41	102.54	0.64	0.00	104.80	0.86	0.00
	3.00	1.73	103.35	0.41	0.00	106.88	0.51	0.00
	4.00	2.00	103.33	0.77	0.00	106.03	1.40	0.00
	5.00	2.24	103.94	0.15	0.00	-	-	0.00
6.00	2.45	105.09	0.01	0.00	-	-	0.00	
blank diclofenac sodium 40% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	2.14	0.03	1.99	42.09	0.80	1.76
	0.50	0.71	2.05	0.03	1.99	63.41	0.77	1.56
	0.75	0.87	2.14	0.10	1.99	75.79	0.46	1.38
	1.00	1.00	2.24	0.10	1.99	83.11	0.39	1.23
	1.50	1.22	2.31	0.09	1.99	91.66	0.29	0.92
	2.00	1.41	2.37	0.03	1.99	95.80	0.56	0.62
	3.00	1.73	2.10	0.10	1.99	99.10	0.65	-0.05
	4.00	2.00	2.18	0.07	1.99	101.43	0.17	0.00
	5.00	2.24	2.34	0.05	1.99	104.71	0.44	0.00
6.00	2.45	2.25	0.02	1.99	105.56	0.84	0.00	
Blank diclofenac sodium 40% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	2.06	0.04	1.99	45.25	2.58	1.74
	0.50	0.71	2.04	0.07	1.99	69.76	3.25	1.48
	0.75	0.87	2.11	0.06	1.99	81.56	3.25	1.27
	1.00	1.00	2.14	0.11	1.99	87.83	2.28	1.09
	1.50	1.22	2.26	0.10	1.99	94.33	1.03	0.75
	2.00	1.41	2.31	0.05	1.99	96.75	0.72	0.51
	3.00	1.73	2.06	0.13	1.99	100.40	0.40	0.00
	4.00	2.00	2.17	0.10	1.99	101.70	1.64	0.00
	5.00	2.24	2.28	0.06	1.99	103.87	1.15	0.00
6.00	2.45	2.25	0.05	1.99	105.12	1.13	0.00	

Table 2B Percentage amounts of propranolol hydrochloride matrix pellets release from series of glyceryl monostearate (GMS).

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Propranolol hydrochloride 40% GMS 40% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	61.41	2.17	1.59	53.84	1.33	1.66
	0.50	0.71	86.30	2.21	1.14	71.04	0.99	1.46
	0.75	0.87	97.81	2.40	0.34	83.04	0.92	1.23
	1.00	1.00	101.16	2.65	0.00	88.57	0.56	1.06
	1.50	1.22	103.25	2.55	0.00	94.07	1.47	0.77
	2.00	1.41	102.26	2.07	0.00	98.16	1.37	0.26
	3.00	1.73	102.98	2.89	0.00	97.41	0.28	0.41
	4.00	2.00	104.06	2.11	0.00	98.77	0.97	0.19
	5.00	2.24	105.05	3.74	0.00	98.26	0.66	0.24
6.00	2.45	104.76	2.15	0.00	98.16	0.57	0.27	
8.00	2.83	104.45	2.32	0.00	98.72	2.63	0.11	
Propranolol hydrochloride 40%GMS40% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	67.42	2.18	1.51	65.31	0.30	1.54
	0.50	0.71	93.11	0.44	0.84	82.04	0.52	1.25
	0.75	0.87	101.96	0.56	0.00	90.40	0.25	0.98
	1.00	1.00	103.71	0.99	0.00	93.35	0.64	0.82
	1.50	1.22	104.19	1.03	0.00	96.07	0.79	0.59
	2.00	1.41	104.31	1.28	0.00	99.93	0.64	-1.12
	3.00	1.73	105.86	1.26	0.00	97.56	0.77	0.39
	4.00	2.00	105.88	1.33	0.00	97.89	0.82	0.32
	5.00	2.24	106.70	0.56	0.00	96.77	0.68	0.51
6.00	2.45	105.97	0.62	0.00	99.30	1.29	-0.15	
8.00	2.83	105.68	0.34	0.00	100.39	2.42	0.00	
Propranolol hydrochloride 40%GMS50% matrix pellets #14/18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
	0.25	0.50	51.73	1.05	1.68	42.71	0.97	1.76
	0.50	0.71	75.88	1.11	1.38	60.82	1.03	1.59
	0.75	0.87	90.45	1.04	0.98	71.51	1.95	1.45
	1.00	1.00	96.94	0.70	0.49	78.02	1.00	1.34
	1.50	1.22	99.73	0.71	-0.57	85.03	1.75	1.18
	2.00	1.41	100.13	0.77	0.00	89.97	1.12	1.00
	3.00	1.73	100.32	0.89	0.00	92.73	2.01	0.86
	4.00	2.00	101.76	1.83	0.00	93.19	0.73	0.83
	5.00	2.24	102.91	0.37	0.00	93.99	2.06	0.78
	6.00	2.45	103.78	0.21	0.00	95.31	2.12	0.67
	8.00	2.83	104.83	0.21	0.00	96.63	1.48	0.53
10.00	3.16	-	-	0.00	93.15	0.80	0.84	
12.00	3.46	-	-	0.00	94.77	0.67	0.72	
Propranolol hydrochloride 40%GMS50% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	61.30	1.90	1.59	51.35	1.27	1.69
	0.50	0.71	87.40	1.72	1.10	70.67	1.16	1.48
	0.75	0.87	97.73	0.62	0.36	80.10	1.19	1.30
	1.00	1.00	99.57	0.37	-0.37	85.08	0.43	1.17
	1.50	1.22	100.55	0.70	0.00	89.17	0.16	1.03
	2.00	1.41	100.18	0.12	0.00	90.99	0.27	0.95
	3.00	1.73	100.47	0.13	0.00	92.29	0.51	0.89
	4.00	2.00	100.74	0.84	0.00	92.66	0.88	0.87
	5.00	2.24	100.72	0.70	0.00	92.08	0.31	0.90
	6.00	2.45	100.49	0.33	0.00	93.46	1.08	0.82
	8.00	2.83	101.22	0.04	0.00	93.04	0.53	0.84
10.00	3.16	-	-	0.00	92.09	0.84	0.90	
12.00	3.46	-	-	0.00	92.58	1.34	0.87	

Table 3B Percentage amounts of propranolol hydrochloride matrix pellets release from series of Lubritab[®].

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Propranolol hydrochloride 40%Lubritab40% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	69.32	0.44	1.49	56.94	1.12	1.63
	0.50	0.71	92.99	0.67	0.85	77.75	1.07	1.35
	0.75	0.87	100.69	0.45	0.00	86.20	0.64	1.14
	1.00	1.00	101.69	0.68	0.00	90.98	1.50	0.96
	1.50	1.22	102.98	1.02	0.00	95.98	1.41	0.60
	2.00	1.41	103.50	0.03	0.00	98.61	0.56	0.14
	3.00	1.73	104.59	0.03	0.00	99.48	0.29	-0.28
	4.00	2.00	105.59	0.14	0.00	99.99	0.83	-1.96
5.00	2.24	106.59	0.31	0.00	99.96	1.27	-1.36	
6.00	2.45	107.77	0.15	0.00	100.54	0.89	0.00	
8.00	2.83	108.87	0.15	0.00	101.29	0.90	0.00	
Propranolol hydrochloride 40%Lubritab40% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	76.08	0.87	1.38	63.10	0.31	1.57
	0.50	0.71	97.51	0.78	0.40	83.79	0.41	1.21
	0.75	0.87	100.91	0.51	0.00	90.97	0.56	0.96
	1.00	1.00	101.81	0.18	0.00	94.20	0.01	0.76
	1.50	1.22	102.53	0.49	0.00	98.25	0.95	0.24
	2.00	1.41	103.52	0.32	0.00	99.84	0.17	-0.79
	3.00	1.73	104.61	0.17	0.00	98.04	0.33	0.29
	4.00	2.00	105.71	0.32	0.00	98.08	0.49	0.28
5.00	2.24	106.80	0.17	0.00	99.10	0.49	-0.04	
6.00	2.45	108.09	0.34	0.00	100.11	0.50	0.00	
8.00	2.83	108.99	0.17	0.00	101.13	0.50	0.00	
Propranolol hydrochloride 40%Lubritab50% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	71.64	1.10	1.45	63.63	1.78	1.56
	0.50	0.71	90.31	5.80	0.99	84.43	0.41	1.19
	0.75	0.87	99.52	3.80	-0.32	92.77	0.64	0.86
	1.00	1.00	101.19	3.72	0.00	98.34	0.79	0.22
	1.50	1.22	103.34	2.92	0.00	102.17	1.05	0.00
	2.00	1.41	104.83	2.70	0.00	102.91	0.41	0.00
	3.00	1.73	107.78	0.53	0.00	103.46	0.29	0.00
	4.00	2.00	108.81	0.59	0.00	104.36	0.31	0.00
5.00	2.24	109.84	0.54	0.00	105.54	0.46	0.00	
6.00	2.45	110.20	1.64	0.00	106.62	0.47	0.00	
8.00	2.83	111.41	1.71	0.00	107.70	0.47	0.00	
Propranolol hydrochloride 40%Lubritab50% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	90.87	3.90	0.96	72.47	0.86	1.44
	0.50	0.71	102.51	3.69	0.00	89.17	0.80	1.03
	0.75	0.87	105.77	2.74	0.00	95.96	1.55	0.61
	1.00	1.00	107.01	2.33	0.00	98.79	0.96	0.08
	1.50	1.22	107.88	2.83	0.00	101.19	1.38	0.00
	2.00	1.41	109.02	2.52	0.00	103.26	0.74	0.00
	3.00	1.73	110.17	2.55	0.00	102.83	0.82	0.00
	4.00	2.00	111.23	2.52	0.00	103.64	0.83	0.00
5.00	2.24	112.38	2.77	0.00	104.35	1.03	0.00	
6.00	2.45	113.43	2.73	0.00	105.42	1.04	0.00	
8.00	2.83	114.67	2.60	0.00	106.49	0.05	0.00	

Table 4B Percentage amounts of propranolol hydrochloride matrix pellets release from series of Compritol® ATO 888.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Propranolol hydrochloride 40%Compritol 40% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	9.27	0.19	1.96	8.48	2.36	1.96
	0.50	0.71	20.76	0.50	1.89	21.92	3.85	1.89
	0.75	0.87	30.02	1.45	1.84	37.54	1.89	1.79
	1.00	1.00	39.72	2.43	1.78	49.83	0.62	1.70
	1.50	1.22	57.07	3.55	1.63	67.52	0.91	1.51
	2.00	1.41	72.39	2.99	1.44	86.47	0.31	1.31
	3.00	1.73	87.38	1.59	1.10	92.32	1.01	0.89
	4.00	2.00	95.67	1.45	0.64	94.29	1.78	0.76
	5.00	2.24	99.88	1.31	-0.93	96.73	2.17	0.52
	6.00	2.45	101.72	1.76	0.00	97.39	1.28	0.42
	8.00	2.83	102.59	2.47	0.00	98.14	1.29	0.27
	10.00	3.16	103.76	0.73	0.00	-	-	-
12.00	3.46	104.44	1.23	0.00	-	-	-	
Propranolol hydrochloride 40%Compritol 40% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	14.81	1.02	1.93	12.85	0.43	1.94
	0.50	0.71	28.76	1.20	1.85	30.16	5.11	1.84
	0.75	0.87	37.03	4.99	1.80	47.06	5.87	1.72
	1.00	1.00	48.17	2.14	1.71	59.18	5.17	1.61
	1.50	1.22	62.52	1.83	1.57	74.74	3.93	1.40
	2.00	1.41	75.08	0.67	1.39	89.48	1.20	1.02
	3.00	1.73	91.65	0.73	0.92	94.46	0.80	0.74
	4.00	2.00	99.01	0.07	-0.01	95.83	0.44	0.62
	5.00	2.24	102.78	0.94	0.00	97.29	1.06	0.43
	6.00	2.45	103.96	0.37	0.00	97.33	0.22	0.43
	8.00	2.83	105.72	0.48	0.00	97.27	1.79	0.44
	10.00	3.16	106.34	0.89	0.00	-	-	-
12.00	3.46	105.78	0.66	0.00	-	-	-	
Propranolol hydrochloride 40%Compritol 50% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	9.54	2.24	1.96	6.10	0.07	1.97
	0.50	0.71	18.06	4.65	1.91	14.59	0.38	1.93
	0.75	0.87	24.82	5.81	1.88	23.82	0.48	1.88
	1.00	1.00	31.00	7.29	1.84	35.46	1.55	1.81
	1.50	1.22	42.49	8.76	1.76	53.35	2.82	1.67
	2.00	1.41	53.39	9.13	1.67	68.40	3.09	1.49
	3.00	1.73	69.63	8.53	1.48	82.36	2.49	1.25
	4.00	2.00	82.37	6.27	1.25	90.30	1.57	0.99
	5.00	2.24	89.92	5.73	1.00	93.68	1.36	0.80
	6.00	2.45	96.49	4.13	0.55	96.73	1.17	0.51
	8.00	2.83	102.15	1.72	0.00	99.18	0.34	-0.09
	10.00	3.16	103.90	2.20	0.00	99.05	0.48	-0.02
12.00	3.46	105.17	2.30	0.00	-	-	-	
Propranolol hydrochloride 40%Compritol 50% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	14.03	1.39	1.93	7.26	0.58	1.97
	0.50	0.71	23.78	1.87	1.88	16.19	1.74	1.92
	0.75	0.87	31.27	2.65	1.84	26.99	4.06	1.86
	1.00	1.00	38.18	2.53	1.79	38.83	4.12	1.79
	1.50	1.22	50.10	3.00	1.70	56.76	5.53	1.64
	2.00	1.41	60.02	2.53	1.60	68.99	4.81	1.49
	3.00	1.73	75.75	3.33	1.38	82.59	2.74	1.24
	4.00	2.00	87.29	3.53	1.10	90.72	2.27	0.97
	5.00	2.24	93.06	2.54	0.84	94.28	1.07	0.76
	6.00	2.45	98.30	2.27	0.23	98.40	1.30	0.20
	8.00	2.83	104.16	0.69	0.00	100.42	0.98	0.00
	10.00	3.16	106.99	2.07	0.00	100.57	1.38	0.00
12.00	3.46	108.49	0.79	0.00	-	-	-	

Table 5B Percentage amounts of diclofenac sodium matrix pellets release from series of glyceryl monostearate (GMS).

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Diclofenac sodium 40% GMS 40% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	0.89	0.01	1.99	14.24	0.49	1.93
	0.50	0.71	0.81	0.01	1.99	23.91	0.46	1.88
	0.75	0.87	0.88	0.05	1.99	32.71	0.19	1.83
	1.00	1.00	0.95	0.04	1.99	40.01	1.43	1.78
	1.50	1.22	1.04	0.05	1.99	49.93	0.35	1.69
	2.00	1.41	1.14	0.05	1.99	55.38	1.09	1.65
	3.00	1.73	1.35	0.04	1.99	63.70	1.47	1.56
	4.00	2.00	1.43	0.04	1.99	68.08	1.21	1.50
	5.00	2.24	1.51	0.05	1.99	70.62	0.73	1.47
	6.00	2.45	1.63	0.10	1.99	73.73	0.45	1.42
	8.00	2.83	1.65	0.10	1.99	76.98	2.72	1.36
	10.00	3.16	1.70	0.13	1.99	79.43	1.67	1.31
12.00	3.46	1.75	0.18	1.99	82.12	1.04	1.25	
Diclofenac sodium 40%GMS40% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.11	0.05	1.99	20.25	1.17	1.90
	0.50	0.71	1.06	0.06	1.99	33.99	2.17	1.82
	0.75	0.87	1.13	0.07	1.99	43.53	0.62	1.75
	1.00	1.00	1.23	0.05	1.99	52.55	1.55	1.67
	1.50	1.22	1.39	0.03	1.99	62.06	0.56	1.58
	2.00	1.41	1.60	0.01	1.99	66.59	0.37	1.52
	3.00	1.73	1.72	0.01	1.99	73.15	0.92	1.43
	4.00	2.00	1.81	0.01	1.99	76.74	1.19	1.37
	5.00	2.24	1.91	0.05	1.99	78.87	0.87	1.32
	6.00	2.45	1.99	0.06	1.99	80.80	0.54	1.28
	8.00	2.83	1.96	0.02	1.99	84.45	0.74	1.19
	10.00	3.16	2.00	0.04	1.99	86.20	0.65	1.14
12.00	3.46	2.08	0.02	1.99	88.02	0.86	1.08	
Diclofenac sodium 40%GMS50% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	0.96	0.03	1.99	12.08	0.38	1.94
	0.50	0.71	0.93	0.06	1.99	19.09	0.24	1.91
	0.75	0.87	0.97	0.04	1.99	25.14	0.65	1.87
	1.00	1.00	1.03	0.04	1.99	29.26	0.85	1.85
	1.50	1.22	1.11	0.04	1.99	36.64	0.58	1.80
	2.00	1.41	1.20	0.05	1.99	42.72	0.11	1.76
	3.00	1.73	1.27	0.03	1.99	50.95	0.44	1.69
	4.00	2.00	1.35	0.02	1.99	58.23	0.58	1.62
	5.00	2.24	1.39	0.03	1.99	64.53	0.07	1.55
	6.00	2.45	1.48	0.03	1.99	69.74	0.71	1.48
	8.00	2.83	1.53	0.03	1.99	78.19	0.66	1.34
	10.00	3.16	1.59	0.03	1.99	83.75	0.61	1.21
12.00	3.46	1.65	0.01	1.99	88.43	1.32	1.06	
Diclofenac sodium 40%GMS50% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.10	0.01	1.99	14.66	1.15	1.93
	0.50	0.71	1.03	0.07	1.99	24.19	0.93	1.88
	0.75	0.87	1.11	0.10	1.99	31.96	0.74	1.83
	1.00	1.00	1.17	0.09	1.99	37.31	0.47	1.79
	1.50	1.22	1.29	0.09	1.99	45.22	0.48	1.74
	2.00	1.41	1.40	0.10	1.99	51.44	0.61	1.69
	3.00	1.73	1.43	0.09	1.99	59.33	0.83	1.60
	4.00	2.00	1.52	0.09	1.99	66.52	1.22	1.52
	5.00	2.24	1.29	0.12	1.99	73.35	1.46	1.42
	6.00	2.45	1.65	0.10	1.99	77.77	0.62	1.35
	8.00	2.83	1.70	0.10	1.99	87.13	0.91	1.11
	10.00	3.16	1.75	0.11	1.99	92.23	0.14	0.89
12.00	3.46	1.80	0.11	1.99	96.11	1.34	0.59	

Table 6B Percentage amounts of diclofenac sodium matrix pellets release from series of Lubritab[®].

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Diclofenac sodium 40% Lubritab40% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	0.99	0.06	1.99	13.37	0.53	1.94
	0.50	0.71	0.96	0.02	1.99	24.30	0.80	1.88
	0.75	0.87	1.04	0.01	1.99	32.99	0.58	1.83
	1.00	1.00	1.11	0.04	1.99	39.95	1.18	1.78
	1.50	1.22	1.26	0.02	1.99	50.84	1.18	1.69
	2.00	1.41	1.36	0.02	1.99	58.87	2.26	1.61
	3.00	1.73	1.44	0.02	1.99	72.65	3.76	1.44
	4.00	2.00	1.57	0.01	1.99	80.90	3.24	1.28
	5.00	2.24	1.35	0.02	1.99	86.79	3.29	1.12
	6.00	2.45	1.72	0.02	1.99	91.45	3.12	0.93
	8.00	2.83	1.78	0.03	1.99	94.75	1.53	0.72
	10.00	3.16	1.88	0.02	1.99	96.78	1.35	0.51
12.00	3.46	2.02	0.02	1.99	99.71	1.20	-0.54	
Diclofenac sodium 40%Lubritab40% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.18	0.14	1.99	17.27	1.41	1.92
	0.50	0.71	1.22	0.16	1.99	29.20	1.44	1.85
	0.75	0.87	1.29	0.14	1.99	38.75	0.96	1.79
	1.00	1.00	1.36	0.13	1.99	45.60	1.81	1.74
	1.50	1.22	1.48	0.11	1.99	55.97	1.67	1.64
	2.00	1.41	1.61	0.10	1.99	63.53	1.85	1.56
	3.00	1.73	1.64	0.09	1.99	75.08	1.89	1.40
	4.00	2.00	1.73	0.05	1.99	83.00	2.44	1.23
	5.00	2.24	1.84	0.05	1.99	88.97	2.39	1.04
	6.00	2.45	1.88	0.05	1.99	93.00	1.89	0.84
	8.00	2.83	1.91	0.02	1.99	97.01	1.52	0.48
	10.00	3.16	2.02	0.03	1.99	99.25	1.25	-0.12
12.00	3.46	2.16	0.03	1.99	101.79	2.36	0.00	
Diclofenac sodium 40%Lubritab50% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	0.93	0.06	1.99	10.21	0.80	1.95
	0.50	0.71	0.84	0.04	1.99	17.91	0.97	1.91
	0.75	0.87	0.91	0.03	1.99	25.99	0.90	1.87
	1.00	1.00	0.96	0.04	1.99	31.41	0.64	1.84
	1.50	1.22	1.08	0.01	1.99	40.34	0.93	1.78
	2.00	1.41	1.18	0.02	1.99	47.38	0.57	1.72
	3.00	1.73	1.36	0.03	1.99	58.93	1.35	1.61
	4.00	2.00	1.49	0.03	1.99	66.05	1.64	1.53
	5.00	2.24	1.55	0.04	1.99	71.37	0.97	1.46
	6.00	2.45	1.59	0.04	1.99	76.16	1.11	1.38
	8.00	2.83	1.72	0.03	1.99	83.74	0.17	1.21
	10.00	3.16	1.76	0.03	1.99	88.53	0.70	1.06
12.00	3.46	1.85	0.02	1.99	92.31	1.15	0.89	
Diclofenac sodium 40%Lubritab50% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.11	0.10	1.99	13.89	0.40	1.94
	0.50	0.71	1.05	0.11	1.99	23.15	0.77	1.89
	0.75	0.87	1.10	0.11	1.99	31.29	0.92	1.84
	1.00	1.00	1.18	0.13	1.99	36.54	0.65	1.80
	1.50	1.22	1.30	0.15	1.99	45.29	0.64	1.74
	2.00	1.41	1.36	0.13	1.99	51.62	0.79	1.68
	3.00	1.73	1.58	0.06	1.99	62.51	1.09	1.57
	4.00	2.00	1.66	0.07	1.99	68.67	0.76	1.49
	5.00	2.24	1.72	0.05	1.99	73.90	0.84	1.41
	6.00	2.45	1.80	0.04	1.99	80.06	2.78	1.30
	8.00	2.83	1.87	0.02	1.99	85.57	0.85	1.16
	10.00	3.16	1.91	0.02	1.99	90.73	1.25	0.97
12.00	3.46	2.02	0.02	1.99	94.76	0.97	0.72	

Table 7B Percentage amounts of diclofenac sodium matrix pellets release from series of Compritol® ATO 888.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Diclofenac sodium 40% Compritol40% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	0.68	0.09	1.99	2.63	0.09	1.99
	0.50	0.71	0.60	0.03	1.99	5.14	0.41	1.98
	0.75	0.87	0.57	0.01	1.99	7.79	0.85	1.96
	1.00	1.00	0.57	0.00	1.99	10.35	0.73	1.93
	1.50	1.22	0.59	0.03	1.99	15.57	0.93	1.93
	2.00	1.41	0.63	0.03	1.99	20.93	1.39	1.89
	3.00	1.73	0.74	0.04	1.99	31.09	0.83	1.84
	4.00	2.00	0.82	0.09	1.99	40.31	0.21	1.78
	5.00	2.24	0.94	0.13	1.99	49.16	2.16	1.71
	6.00	2.45	1.06	0.17	1.99	55.35	1.85	1.65
	8.00	2.83	1.36	0.19	1.99	63.65	1.68	1.56
	10.00	3.16	1.59	0.15	1.99	70.12	1.00	1.48
12.00	3.46	1.76	0.07	1.99	76.06	0.47	1.39	
Diclofenac sodium 40%Compritol40% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	0.73	0.03	1.99	2.77	0.11	1.99
	0.50	0.71	0.63	0.03	1.99	5.51	0.03	1.98
	0.75	0.87	0.60	0.03	1.99	8.45	0.20	1.96
	1.00	1.00	0.60	0.04	1.99	11.31	0.24	1.95
	1.50	1.22	0.63	0.03	1.99	16.80	0.60	1.92
	2.00	1.41	0.68	0.04	1.99	22.08	0.53	1.89
	3.00	1.73	0.80	0.05	1.99	32.25	0.83	1.83
	4.00	2.00	0.89	0.06	1.99	42.76	1.48	1.76
	5.00	2.24	1.02	0.12	1.99	50.64	0.34	1.69
	6.00	2.45	1.17	0.07	1.99	56.92	0.68	1.63
	8.00	2.83	1.49	0.05	1.99	66.99	1.02	1.52
	10.00	3.16	1.72	0.06	1.99	73.37	0.79	1.43
12.00	3.46	1.82	0.03	1.99	80.04	0.74	1.30	
Diclofenac sodium 40%Compritol50% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	0.72	0.06	1.99	3.15	0.34	1.99
	0.50	0.71	0.68	0.06	1.99	6.34	0.53	1.97
	0.75	0.87	0.69	0.08	1.99	9.17	0.54	1.96
	1.00	1.00	0.71	0.09	1.99	11.40	0.53	1.95
	1.50	1.22	0.79	0.10	1.99	15.71	0.56	1.93
	2.00	1.41	0.88	0.13	1.99	19.75	0.53	1.90
	3.00	1.73	0.99	0.12	1.99	26.74	0.76	1.86
	4.00	2.00	1.14	0.12	1.99	34.33	0.56	1.82
	5.00	2.24	1.28	0.11	1.99	39.32	0.57	1.78
	6.00	2.45	1.39	0.08	1.99	44.71	0.29	1.74
	8.00	2.83	1.46	0.03	1.99	52.66	0.08	1.68
	10.00	3.16	1.61	0.05	1.99	58.59	0.64	1.62
12.00	3.46	1.76	0.04	1.99	63.65	1.32	1.56	
Diclofenac sodium 40%Compritol50% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	0.80	0.18	1.99	6.66	2.79	1.97
	0.50	0.71	0.79	0.20	1.99	11.42	2.49	1.95
	0.75	0.87	0.82	0.19	1.99	15.08	2.15	1.93
	1.00	1.00	0.86	0.19	1.99	18.51	2.47	1.91
	1.50	1.22	0.59	0.38	1.99	24.14	2.34	1.88
	2.00	1.41	1.03	0.21	1.99	29.78	2.78	1.85
	3.00	1.73	1.16	0.19	1.99	38.98	2.30	1.79
	4.00	2.00	1.33	0.15	1.99	46.64	2.76	1.73
	5.00	2.24	1.47	0.13	1.99	51.69	2.06	1.68
	6.00	2.45	1.56	0.07	1.99	58.09	2.69	1.62
	8.00	2.83	1.61	0.09	1.99	64.89	2.40	1.55
	10.00	3.16	1.76	0.05	1.99	70.72	2.49	1.47
12.00	3.46	1.86	0.02	1.99	74.91	2.09	1.40	

Table 8B Percentage amounts of propranolol hydrochloride matrix pellets release from various concentration of propranolol hydrochloride and glyceryl monostearate (GMS) 60%.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Propranolol hydrochloride 20% GMS 60% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	45.97	0.30	1.73	37.99	0.65	1.79
	0.50	0.71	65.11	0.00	1.54	51.08	0.21	1.69
	0.75	0.87	79.17	0.58	1.32	63.43	0.32	1.56
	1.00	1.00	88.54	0.34	1.06	70.38	0.31	1.47
	1.50	1.22	99.74	0.88	-0.59	79.35	0.31	1.31
	2.00	1.41	102.75	0.67	0.00	85.03	0.30	1.17
	3.00	1.73	105.59	0.68	0.00	91.12	0.81	0.95
	4.00	2.00	106.31	1.02	0.00	94.94	1.35	0.70
	5.00	2.24	106.27	0.03	0.00	97.72	0.56	0.36
6.00	2.45	107.17	1.35	0.00	97.67	0.52	0.37	
8.00	2.83	108.07	1.23	0.00	-	-	-	
Propranolol hydrochloride 20%GMS60% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	55.90	1.00	1.64	47.26	1.34	1.72
	0.50	0.71	78.75	0.89	1.33	64.40	1.73	1.55
	0.75	0.87	91.03	1.76	0.95	73.68	1.38	1.42
	1.00	1.00	97.24	1.20	0.44	80.38	1.39	1.30
	1.50	1.22	101.38	0.93	0.00	87.14	1.15	1.11
	2.00	1.41	102.67	0.72	0.00	90.22	0.68	0.99
	3.00	1.73	103.56	0.40	0.00	94.75	0.57	0.72
	4.00	2.00	104.07	0.90	0.00	96.47	0.24	0.55
	5.00	2.24	104.76	1.28	0.00	97.65	0.68	0.37
6.00	2.45	104.49	0.34	0.00	98.30	1.15	0.23	
8.00	2.83	105.55	0.35	0.00	-	-	-	
Propranolol hydrochloride 30%GMS60% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	56.08	2.13	1.49	49.49	0.82	1.70
	0.50	0.71	78.36	1.76	0.89	64.92	0.74	1.55
	0.75	0.87	92.36	1.65	0.00	75.52	0.37	1.39
	1.00	1.00	101.36	1.87	0.00	81.94	0.19	1.26
	1.50	1.22	106.84	1.85	0.00	88.89	1.15	1.05
	2.00	1.41	109.66	3.16	0.00	95.56	1.98	0.65
	3.00	1.73	110.06	2.26	0.00	100.99	0.37	0.00
	4.00	2.00	111.09	1.74	0.00	103.84	0.33	0.00
	5.00	2.24	112.76	1.49	0.00	107.31	1.07	0.00
6.00	2.45	112.76	0.78	0.00	107.35	0.22	0.00	
8.00	2.83	114.55	0.49	0.00	108.09	0.79	0.00	
Propranolol hydrochloride 30%GMS60% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	68.97	2.05	1.64	58.30	0.21	1.62
	0.50	0.71	92.16	1.95	1.34	76.33	1.43	1.37
	0.75	0.87	103.61	1.05	0.88	86.81	0.02	1.12
	1.00	1.00	109.25	0.63	0.00	90.97	1.09	0.96
	1.50	1.22	110.69	0.50	0.00	96.60	1.32	0.53
	2.00	1.41	110.98	0.06	0.00	101.09	0.94	0.00
	3.00	1.73	112.02	0.28	0.00	104.66	0.95	0.00
	4.00	2.00	112.94	0.06	0.00	107.79	0.26	0.00
	5.00	2.24	113.59	0.18	0.00	109.03	0.81	0.00
6.00	2.45	113.21	1.66	0.00	109.56	0.07	0.00	
8.00	2.83	114.10	0.83	0.00	110.68	0.07	0.00	

Table 9B Percentage amounts of propranolol hydrochloride matrix pellets release from various concentrations of propranolol hydrochloride and Lubritab® 60%.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Propranolol hydrochloride 20% Lubritab 60% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	74.07	0.33	1.41	61.91	0.82	1.58
	0.50	0.71	94.23	0.33	0.76	79.21	0.30	1.32
	0.75	0.87	103.57	0.58	0.00	87.04	0.31	1.11
	1.00	1.00	106.06	0.89	0.00	91.21	0.82	0.94
	1.50	1.22	106.82	0.33	0.00	96.48	0.31	0.55
	2.00	1.41	107.38	0.33	0.00	98.40	0.63	0.20
	3.00	1.73	108.90	0.34	0.00	100.52	0.30	0.00
	4.00	2.00	109.84	0.59	0.00	101.22	0.29	0.00
	5.00	2.24	111.17	0.35	0.00	102.80	0.30	0.00
6.00	2.45	112.31	0.35	0.00	103.50	0.53	0.00	
8.00	2.83	113.45	0.35	0.00	104.56	0.53	0.00	
Propranolol hydrochloride 20% Lubritab 60% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	79.68	1.16	1.31	64.05	0.31	1.56
	0.50	0.71	97.77	1.47	0.35	82.44	0.31	1.24
	0.75	0.87	103.68	0.59	0.00	89.78	0.31	1.01
	1.00	1.00	105.19	0.36	0.00	92.55	0.01	0.87
	1.50	1.22	106.33	0.37	0.00	97.12	0.31	0.46
	2.00	1.41	107.27	0.37	0.00	98.69	0.32	0.12
	3.00	1.73	108.40	0.37	0.00	100.27	0.83	0.00
	4.00	2.00	109.53	0.38	0.00	100.25	0.33	0.00
	5.00	2.24	110.66	0.38	0.00	103.08	0.02	0.00
6.00	2.45	111.80	0.38	0.00	102.17	0.32	0.00	
8.00	2.83	112.93	0.39	0.00	103.21	0.33	0.00	
Propranolol hydrochloride 30% Lubritab 60% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	60.98	0.45	1.59	52.35	1.15	1.68
	0.50	0.71	86.14	1.25	1.14	69.36	0.73	1.49
	0.75	0.87	99.85	1.19	-0.82	78.22	0.20	1.34
	1.00	1.00	105.97	1.98	0.00	83.71	0.41	1.21
	1.50	1.22	107.11	1.50	0.00	91.05	0.42	0.95
	2.00	1.41	108.00	1.39	0.00	94.76	0.37	0.72
	3.00	1.73	109.02	1.53	0.00	98.86	1.04	0.06
	4.00	2.00	110.16	1.55	0.00	100.62	0.85	0.00
	5.00	2.24	111.30	1.56	0.00	101.55	0.77	0.00
6.00	2.45	112.45	1.58	0.00	102.72	0.86	0.00	
8.00	2.83	113.59	1.60	0.00	103.65	0.79	0.00	
Propranolol hydrochloride 30% Lubritab 60% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	67.29	0.22	1.51	54.96	0.62	1.65
	0.50	0.71	91.11	0.45	0.95	71.53	0.90	1.45
	0.75	0.87	102.16	1.18	0.00	80.65	0.63	1.29
	1.00	1.00	104.57	1.13	0.00	85.34	0.76	1.17
	1.50	1.22	105.83	1.04	0.00	92.57	0.90	0.87
	2.00	1.41	107.22	1.01	0.00	95.35	0.53	0.67
	3.00	1.73	108.35	1.02	0.00	98.98	0.44	0.01
	4.00	2.00	109.49	1.03	0.00	100.02	0.44	0.00
	5.00	2.24	110.62	1.04	0.00	101.07	0.45	0.00
6.00	2.45	111.75	1.05	0.00	102.11	0.45	0.00	
8.00	2.83	112.89	1.06	0.00	103.03	0.25	0.00	

Table 10B Percentage amounts of propranolol hydrochloride matrix pellets release from various concentrations of propranolol hydrochloride and Compritol® ATO 888 60%.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Propranolol hydrochloride 20% Compritol 60% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	10.11	0.41	1.95	8.91	1.96	1.96
	0.50	0.71	18.75	0.76	1.91	22.58	2.77	1.87
	0.75	0.87	26.11	1.31	1.87	38.13	3.70	1.79
	1.00	1.00	32.29	1.41	1.83	50.23	3.96	1.70
	1.50	1.22	46.27	3.66	1.73	68.76	2.96	1.49
	2.00	1.41	58.72	4.47	1.62	80.94	0.79	1.28
	3.00	1.73	84.48	2.87	1.19	90.39	0.97	0.98
	4.00	2.00	97.19	1.29	0.45	95.29	1.47	0.67
	5.00	2.24	102.10	1.47	0.00	95.59	2.30	0.64
	6.00	2.45	104.16	1.90	0.00	98.03	0.47	0.29
8.00	2.83	105.06	2.23	0.00	95.12	0.64	0.69	
10.00	3.16	105.58	2.83	0.00	-	-	-	
Propranolol hydrochloride 20% Compritol 60% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	15.82	0.32	1.93	17.05	1.07	1.92
	0.50	0.71	27.80	1.28	1.86	31.56	1.97	1.84
	0.75	0.87	37.54	1.90	1.79	45.69	2.42	1.73
	1.00	1.00	45.40	2.06	1.74	62.06	0.06	1.58
	1.50	1.22	58.73	2.37	1.62	75.24	3.15	1.39
	2.00	1.41	71.65	3.94	1.45	84.45	2.75	1.19
	3.00	1.73	89.44	3.74	1.02	93.57	1.35	0.81
	4.00	2.00	100.45	3.42	0.00	99.21	0.42	-0.10
	5.00	2.24	104.42	2.30	0.00	98.84	0.43	0.07
	6.00	2.45	105.92	1.71	0.00	100.95	0.72	0.00
8.00	2.83	107.41	1.09	0.00	98.60	1.85	0.00	
10.00	3.16	108.53	1.10	0.00	-	-	-	
Propranolol hydrochloride 30% Compritol 60% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	8.77	0.50	1.96	6.63	0.23	1.97
	0.50	0.71	16.13	0.35	1.92	16.80	1.25	1.92
	0.75	0.87	22.38	0.45	1.89	28.23	2.52	1.86
	1.00	1.00	27.71	0.78	1.86	39.23	3.28	1.78
	1.50	1.22	37.84	1.21	1.79	58.23	4.57	1.62
	2.00	1.41	44.56	1.76	1.74	69.10	3.34	1.49
	3.00	1.73	60.51	4.29	1.59	81.52	2.13	1.27
	4.00	2.00	72.37	4.36	1.44	88.59	2.53	1.06
	5.00	2.24	81.65	5.17	1.26	93.11	2.35	0.84
	6.00	2.45	90.51	2.38	0.98	95.05	1.00	0.69
8.00	2.83	99.98	0.32	-1.70	100.09	1.65	0.00	
10.00	3.16	103.23	1.03	0.00	99.35	1.36	0.00	
12.00	3.46	105.60	1.32	0.00	-	-	-	
Propranolol hydrochloride 30% Compritol 60% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	12.43	2.65	1.94	11.69	3.66	1.95
	0.50	0.71	21.42	4.76	1.89	24.23	5.06	1.88
	0.75	0.87	29.08	5.90	1.85	37.36	5.94	1.79
	1.00	1.00	34.99	5.63	1.81	47.20	3.92	1.72
	1.50	1.22	44.53	6.60	1.74	64.15	1.43	1.55
	2.00	1.41	54.42	5.82	1.66	75.32	1.62	1.39
	3.00	1.73	70.08	4.50	1.48	86.25	1.24	1.14
	4.00	2.00	82.82	3.86	1.23	92.78	0.66	0.86
	5.00	2.24	91.06	0.98	0.95	96.03	0.80	0.59
	6.00	2.45	95.76	2.10	0.63	99.30	2.47	-0.16
8.00	2.83	100.90	0.66	0.00	103.20	1.11	0.00	
10.00	3.16	104.92	0.54	0.00	99.75	0.68	0.00	
12.00	3.46	107.55	0.53	0.00	-	-	-	

Table 11B Percentage amounts of diclofenac sodium matrix pellets release from various concentration of diclofenac sodium and glyceryl monostearate (GMS) 60%.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Diclofenac sodium 20% GMS 60% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	2.22	0.13	1.99	20.42	0.38	1.90
	0.50	0.71	2.04	0.12	1.99	31.37	0.19	1.84
	0.75	0.87	2.10	0.14	1.99	39.79	0.51	1.78
	1.00	1.00	2.17	0.15	1.99	45.09	0.20	1.74
	1.50	1.22	2.25	0.08	1.99	52.44	0.32	1.68
	2.00	1.41	2.38	0.08	1.99	59.42	0.70	1.61
	3.00	1.73	2.61	0.08	1.99	68.24	0.35	1.50
	4.00	2.00	2.66	0.08	1.99	74.61	0.02	1.40
	5.00	2.24	2.78	0.06	1.99	80.83	0.85	1.28
	6.00	2.45	2.88	0.09	1.99	88.20	0.03	1.07
	8.00	2.83	3.02	0.10	1.99	91.01	1.04	0.95
	10.00	3.16	3.24	0.11	1.99	95.93	1.86	0.61
12.00	3.46	3.36	0.10	1.99	101.57	1.11	0.00	
Diclofenac sodium 20%GMS60% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	2.69	0.24	1.99	27.27	1.45	1.86
	0.50	0.71	2.49	0.12	1.99	41.84	0.97	1.76
	0.75	0.87	2.49	0.12	1.99	51.71	1.17	1.68
	1.00	1.00	2.79	0.25	1.99	57.03	0.86	1.63
	1.50	1.22	2.68	0.10	1.99	65.06	1.40	1.54
	2.00	1.41	2.77	0.09	1.99	72.07	0.79	1.45
	3.00	1.73	2.94	0.11	1.99	79.69	0.88	1.31
	4.00	2.00	3.02	0.08	1.99	87.40	1.04	1.10
	5.00	2.24	3.12	0.14	1.99	93.97	1.99	0.78
	6.00	2.45	3.19	0.15	1.99	99.93	0.07	-1.15
	8.00	2.83	3.35	0.17	1.99	103.85	0.82	0.00
	10.00	3.16	3.60	0.14	1.98	105.03	0.65	0.00
12.00	3.46	3.72	0.23	1.98	105.89	0.82	0.00	
Diclofenac sodium 30%GMS60% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.07	0.07	1.99	15.22	0.57	1.93
	0.50	0.71	0.97	0.05	1.99	24.13	0.95	1.88
	0.75	0.87	1.00	0.04	1.99	36.69	2.86	1.80
	1.00	1.00	1.05	0.05	1.99	47.07	3.40	1.72
	1.50	1.22	1.14	0.05	1.99	57.47	3.54	1.63
	2.00	1.41	1.19	0.05	1.99	64.95	4.31	1.54
	3.00	1.73	1.31	0.05	1.99	74.14	5.20	1.41
	4.00	2.00	1.41	0.06	1.99	81.94	4.20	1.26
	5.00	2.24	1.48	0.04	1.99	83.83	4.32	1.21
	6.00	2.45	1.56	0.02	1.99	88.68	3.80	1.05
	8.00	2.83	1.70	0.05	1.99	93.97	3.11	0.78
	10.00	3.16	1.87	0.01	1.99	96.27	2.20	0.57
12.00	3.46	1.92	0.03	1.99	98.74	2.69	0.10	
Diclofenac sodium 30%GMS60% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.41	0.11	1.99	21.62	0.36	1.89
	0.50	0.71	1.37	0.11	1.99	39.54	0.62	1.78
	0.75	0.87	1.43	0.11	1.99	52.75	0.96	1.67
	1.00	1.00	1.52	0.08	1.99	60.41	0.86	1.60
	1.50	1.22	1.59	0.10	1.99	68.24	0.85	1.50
	2.00	1.41	1.66	0.12	1.99	75.59	1.21	1.39
	3.00	1.73	1.80	0.15	1.99	83.41	0.75	1.22
	4.00	2.00	1.90	0.10	1.99	89.83	0.94	1.01
	5.00	2.24	2.02	0.08	1.99	94.44	0.78	0.74
	6.00	2.45	2.09	0.08	1.99	97.15	1.18	0.46
	8.00	2.83	2.20	0.10	1.99	99.40	0.70	-0.00
	10.00	3.16	2.38	0.09	1.99	100.89	0.69	0.00
12.00	3.46	2.49	0.01	0.00	102.23	0.98	0.00	

Table 12B Percentage amounts of diclofenac sodium matrix pellets release from various concentrations of diclofenac sodium and Lubritab® 60%.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Diclofenac sodium 20% Lubritab 60% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.50	0.14	1.99	8.86	1.51	1.96
	0.50	0.71	1.16	0.09	1.99	14.92	0.93	1.93
	0.75	0.87	1.22	0.09	1.99	20.37	0.82	1.90
	1.00	1.00	1.31	0.06	1.99	24.94	0.89	1.88
	1.50	1.22	1.50	0.06	1.99	32.27	0.90	1.83
	2.00	1.41	1.71	0.04	1.99	37.67	1.01	1.79
	3.00	1.73	2.06	0.06	1.99	48.03	1.08	1.72
	4.00	2.00	2.35	0.05	1.99	55.08	0.58	1.65
	5.00	2.24	2.49	0.04	1.99	60.09	0.82	1.60
	6.00	2.45	2.60	0.01	1.99	64.93	0.92	1.54
	8.00	2.83	2.84	0.03	1.99	74.58	1.55	1.40
	10.00	3.16	3.16	0.09	1.99	78.46	0.59	1.33
12.00	3.46	3.25	0.05	1.99	83.48	0.61	1.22	
Diclofenac sodium 20%Lubritab 60% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.48	0.07	1.99	16.38	0.34	1.92
	0.50	0.71	1.37	0.04	1.99	27.11	0.15	1.86
	0.75	0.87	1.49	0.05	1.99	34.39	0.39	1.82
	1.00	1.00	1.62	0.04	1.99	40.18	0.33	1.78
	1.50	1.22	1.88	0.04	1.99	49.03	0.39	1.71
	2.00	1.41	2.13	0.04	1.99	55.42	0.58	1.65
	3.00	1.73	2.60	0.04	1.99	65.53	0.19	1.54
	4.00	2.00	2.86	0.02	1.99	72.43	0.52	1.44
	5.00	2.24	2.97	0.04	1.99	76.30	0.20	1.37
	6.00	2.45	3.15	0.04	1.99	82.41	1.28	1.25
	8.00	2.83	3.37	0.09	1.99	87.59	0.42	1.09
	10.00	3.16	3.61	0.02	1.98	91.38	0.70	0.94
12.00	3.46	3.73	0.06	1.98	94.86	1.56	0.71	
Diclofenac sodium 30%Lubritab 60% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.00	0.11	1.99	7.87	0.04	1.97
	0.50	0.71	0.93	0.06	1.99	14.27	0.13	1.93
	0.75	0.87	1.01	0.09	1.99	22.10	0.22	1.89
	1.00	1.00	1.12	0.08	1.99	28.26	0.49	1.86
	1.50	1.22	1.33	0.03	1.99	39.24	0.13	1.78
	2.00	1.41	1.42	0.04	1.99	47.69	0.49	1.72
	3.00	1.73	1.64	0.06	1.99	58.17	0.49	1.62
	4.00	2.00	1.86	0.03	1.99	65.73	0.63	1.53
	5.00	2.24	1.94	0.02	1.99	71.73	0.51	1.45
	6.00	2.45	2.04	0.02	1.99	75.22	0.92	1.39
	8.00	2.83	2.20	0.02	1.99	82.87	0.96	1.23
	10.00	3.16	2.33	0.02	1.99	88.25	0.61	1.07
12.00	3.46	2.41	0.02	1.99	92.44	0.23	0.88	
Diclofenac sodium 30%Lubritab 60% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	0.97	0.11	1.99	11.91	0.50	1.94
	0.50	0.71	0.92	0.01	1.99	20.95	0.35	1.89
	0.75	0.87	1.04	0.04	1.99	28.53	0.28	1.85
	1.00	1.00	1.15	0.01	1.99	35.15	0.50	1.81
	1.50	1.22	1.37	0.05	1.99	44.56	0.25	1.74
	2.00	1.41	1.46	0.05	1.99	51.59	0.83	1.68
	3.00	1.73	1.74	0.05	1.99	61.57	0.25	1.58
	4.00	2.00	1.93	0.02	1.99	68.77	0.34	1.49
	5.00	2.24	1.99	0.02	1.99	73.71	0.59	1.42
	6.00	2.45	2.12	0.04	1.99	78.39	0.02	1.33
	8.00	2.83	2.24	0.02	1.99	85.21	0.90	1.17
	10.00	3.16	2.38	0.00	1.99	90.22	0.58	0.99
12.00	3.46	2.51	0.02	1.99	93.11	0.36	0.84	

Table 13B Percentage amounts of diclofenac sodium matrix pellets release from various concentrations of diclofenac sodium and Compritol® ATO 888 60%.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Diclofenac sodium 20% Compritol 60% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.30	0.08	1.99	3.27	0.11	1.99
	0.50	0.71	1.22	0.03	1.99	5.11	0.09	1.98
	0.75	0.87	1.16	0.04	1.99	7.51	0.35	1.97
	1.00	1.00	1.23	0.02	1.99	9.39	0.36	1.96
	1.50	1.22	1.40	0.10	1.99	13.18	0.52	1.94
	2.00	1.41	1.51	0.15	1.99	17.93	0.34	1.91
	3.00	1.73	1.97	0.29	1.99	26.28	0.43	1.87
	4.00	2.00	2.55	0.26	1.99	34.40	0.44	1.82
	5.00	2.24	2.87	0.11	1.99	43.05	1.07	1.76
	6.00	2.45	3.1	0.11	1.99	49.24	1.69	1.71
	8.00	2.83	3.47	0.10	1.98	60.75	4.08	1.59
	10.00	3.16	3.57	0.11	1.98	66.07	3.48	1.53
12.00	3.46	3.74	0.05	1.98	69.57	1.48	1.48	
Diclofenac sodium 20% Compritol 60% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.34	0.04	1.99	4.00	0.09	1.98
	0.50	0.71	1.26	0.07	1.99	6.78	0.70	1.97
	0.75	0.87	1.27	0.07	1.99	9.90	0.99	1.95
	1.00	1.00	1.30	0.07	1.99	12.30	1.17	1.94
	1.50	1.22	1.48	0.09	1.99	16.99	0.60	1.92
	2.00	1.41	1.64	0.08	1.99	22.06	1.81	1.89
	3.00	1.73	2.21	0.11	1.99	31.49	2.07	1.84
	4.00	2.00	2.72	0.09	1.99	39.40	2.28	1.78
	5.00	2.24	2.96	0.06	1.99	46.13	2.74	1.73
	6.00	2.45	3.22	0.05	1.99	51.77	3.39	1.68
	8.00	2.83	3.53	0.06	1.98	60.73	3.92	1.59
	10.00	3.16	3.64	0.09	1.98	66.52	4.07	1.52
12.00	3.46	3.80	0.05	1.98	74.93	1.06	1.40	
Diclofenac sodium 30% Compritol 60% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	0.89	0.08	1.99	3.14	0.91	1.99
	0.50	0.71	0.82	0.05	1.99	5.04	0.68	1.98
	0.75	0.87	0.82	0.06	1.99	6.79	0.65	1.97
	1.00	1.00	0.81	0.06	1.99	8.29	0.68	1.96
	1.50	1.22	0.88	0.05	1.99	11.51	0.94	1.95
	2.00	1.41	0.96	0.07	1.99	14.65	1.07	1.93
	3.00	1.73	1.09	0.08	1.99	21.41	1.00	1.89
	4.00	2.00	1.26	0.12	1.99	23.25	1.22	1.88
	5.00	2.24	1.46	0.11	1.99	28.56	1.01	1.85
	6.00	2.45	1.58	0.10	1.99	33.38	0.89	1.82
	8.00	2.83	1.83	0.10	1.99	41.92	0.71	1.76
	10.00	3.16	2.05	0.09	1.99	55.45	0.69	1.65
12.00	3.46	2.18	0.08	1.99	60.48	0.61	1.59	
Diclofenac sodium 30% Compritol 60% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	0.82	0.06	1.99	3.70	0.21	1.98
	0.50	0.71	0.75	0.07	1.99	5.52	0.06	1.98
	0.75	0.87	0.76	0.08	1.99	7.35	0.34	1.97
	1.00	1.00	0.77	0.07	1.99	9.07	0.56	1.96
	1.50	1.22	0.82	0.08	1.99	12.52	0.93	1.94
	2.00	1.41	0.92	0.10	1.99	16.19	1.30	1.92
	3.00	1.73	1.05	0.10	1.99	23.07	0.28	1.89
	4.00	2.00	1.28	0.10	1.99	26.75	1.14	1.86
	5.00	2.24	1.47	0.09	1.99	33.34	1.15	1.82
	6.00	2.45	1.58	0.06	1.99	38.45	0.87	1.79
	8.00	2.83	1.89	0.06	1.99	47.51	0.67	1.72
	10.00	3.16	2.12	0.07	1.99	60.32	0.23	1.59
12.00	3.46	2.22	0.06	1.99	66.57	1.00	1.52	

Table 14B Percentage amounts of diclofenac sodium matrix pellets release from series of 1% PEG 1450 and 1% PEG 1450+1% Tween 80.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Diclofenac sodium 40% GMS40% PEG1% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.26	0.03	1.99	72.00	7.19	1.45
	0.50	0.71	1.21	0.04	1.99	87.23	2.96	1.11
	0.75	0.87	1.31	0.04	1.99	90.17	1.85	0.99
	1.00	1.00	1.33	0.03	1.99	91.74	1.18	0.92
	1.50	1.22	1.42	0.04	1.99	91.85	0.99	0.91
	2.00	1.41	1.47	0.02	1.99	92.07	0.65	0.90
	3.00	1.73	1.53	0.04	1.99	93.57	0.56	0.81
	4.00	2.00	1.63	0.05	1.99	94.95	0.75	0.70
	5.00	2.24	1.71	0.04	1.99	96.05	0.40	0.60
	6.00	2.45	1.74	0.05	1.99	95.86	0.80	0.62
	8.00	2.83	1.78	0.05	1.99	96.83	2.08	0.52
	10.00	3.16	1.86	0.07	1.99	97.45	0.94	0.41
12.00	3.46	2.04	0.25	1.99	99.00	1.13	0.00	
Diclofenac sodium 40% GMS40% PEG1% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.38	0.02	1.99	85.02	3.34	1.18
	0.50	0.71	1.38	0.11	1.99	92.10	0.80	0.90
	0.75	0.87	1.45	0.09	1.99	93.99	0.84	0.78
	1.00	1.00	1.50	0.10	1.99	94.14	0.76	0.77
	1.50	1.22	1.56	0.08	1.99	94.86	0.24	0.71
	2.00	1.41	1.66	0.06	1.99	94.93	0.27	0.70
	3.00	1.73	1.68	0.08	1.99	95.46	1.20	0.66
	4.00	2.00	1.73	0.07	1.99	96.11	0.56	0.69
	5.00	2.24	1.80	0.06	1.99	98.91	0.29	0.04
	6.00	2.45	1.85	0.08	1.99	97.82	1.13	0.34
	8.00	2.83	1.88	0.09	1.99	98.39	0.53	0.21
	10.00	3.16	1.94	0.08	1.99	99.26	0.33	-0.13
12.00	3.46	2.00	0.09	1.99	100.18	1.11	0.00	
Diclofenac sodium 40% GMS40% PEG1%Tween 1% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.26	0.07	1.99	68.84	4.84	1.49
	0.50	0.71	1.58	0.06	1.99	89.82	2.04	1.01
	0.75	0.87	1.79	0.02	1.99	94.78	1.41	0.72
	1.00	1.00	1.83	0.05	1.99	95.99	0.51	0.60
	1.50	1.22	1.75	0.05	1.99	96.50	0.80	0.54
	2.00	1.41	1.72	0.06	1.99	96.65	1.10	0.52
	3.00	1.73	1.73	0.05	1.99	97.96	1.60	0.31
	4.00	2.00	1.74	0.05	1.99	98.05	0.98	0.29
	5.00	2.24	1.50	0.07	1.99	98.89	1.00	0.06
	6.00	2.45	1.55	0.05	1.99	98.91	1.41	0.04
	8.00	2.83	1.66	0.05	1.99	103.00	0.60	0.00
	10.00	3.16	1.69	0.10	1.99	101.94	2.25	0.00
12.00	3.46	1.78	0.08	1.99	97.92	0.53	0.00	
Diclofenac sodium 40% GMS40% PEG1%Tween1% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.43	0.11	1.99	70.54	10.88	1.47
	0.50	0.71	1.60	0.04	1.99	85.81	7.23	1.15
	0.75	0.87	1.89	0.10	1.99	92.42	2.67	0.88
	1.00	1.00	1.99	0.10	1.99	94.48	2.18	0.74
	1.50	1.22	1.89	0.08	1.99	95.15	1.37	0.69
	2.00	1.41	1.81	0.05	1.99	95.87	1.35	0.62
	3.00	1.73	1.77	0.05	1.99	96.94	1.79	0.49
	4.00	2.00	1.78	0.07	1.99	97.25	0.92	0.44
	5.00	2.24	1.60	0.05	1.99	98.26	1.24	0.24
	6.00	2.45	1.60	0.04	1.99	97.98	1.16	0.31
	8.00	2.83	1.70	0.05	1.99	102.47	2.15	0.00
	10.00	3.16	1.69	0.03	1.99	101.28	1.22	0.00
12.00	3.46	1.79	0.03	1.99	94.87	2.40	0.00	

Table 15B Percentage amounts of diclofenac sodium matrix pellets release from series of 0.5% PEG 1450+0.5 % Tween 80 and 0.2% PEG 1450 + 0.2% Tween 80.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
Diclofenac sodium 40% GMS40% PEG 0.5% Tween 0.5%matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.13	0.07	1.99	86.83	4.02	1.12
	0.50	0.71	1.20	0.10	1.99	93.46	1.58	0.82
	0.75	0.87	1.35	0.12	1.99	94.20	0.13	0.76
	1.00	1.00	1.49	0.13	1.99	93.12	1.11	0.84
	1.50	1.22	1.64	0.09	1.99	96.23	1.95	0.58
	2.00	1.41	1.76	0.05	1.99	95.91	0.31	0.61
	3.00	1.73	1.86	0.02	1.99	93.47	1.58	0.81
	4.00	2.00	1.66	0.02	1.99	96.54	1.24	0.54
	5.00	2.24	1.68	0.03	1.99	97.07	1.20	0.47
	6.00	2.45	1.78	0.03	1.99	97.24	2.36	0.44
	8.00	2.83	1.59	0.05	1.99	99.74	1.23	-0.59
	10.00	3.16	1.62	0.05	1.99	103.72	1.83	0.00
12.00	3.46	1.74	0.04	1.99	94.76	1.49	0.00	
Diclofenac sodium 40% GMS40% PEG 0.5% Tween 0.5% matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	2.11	0.05	1.99	90.22	3.82	0.99
	0.50	0.71	2.23	0.05	1.99	92.98	1.36	0.85
	0.75	0.87	2.36	0.02	1.99	94.47	1.48	0.74
	1.00	1.00	2.40	0.04	1.99	94.56	2.13	0.74
	1.50	1.22	2.48	0.03	1.99	97.44	1.11	0.41
	2.00	1.41	2.51	0.07	1.99	96.09	0.93	0.59
	3.00	1.73	2.58	0.11	1.99	94.94	1.27	0.70
	4.00	2.00	2.29	0.09	1.99	97.21	1.07	0.45
	5.00	2.24	2.34	0.12	1.99	96.75	0.15	0.51
	6.00	2.45	2.47	0.13	1.99	97.15	0.55	0.45
	8.00	2.83	2.18	0.10	1.99	100.70	1.97	0.00
	10.00	3.16	2.29	0.12	1.99	100.36	2.29	0.00
12.00	3.46	2.42	0.11	1.99	96.21	0.45	0.00	
Diclofenac sodium 40% GMS40% PEG 0.2%Tween 0.2% matrix pellets #14/18	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.24	0.11	1.99	64.40	4.87	1.55
	0.50	0.71	1.18	0.09	1.99	89.54	0.92	1.02
	0.75	0.87	1.20	0.09	1.99	91.87	0.94	0.91
	1.00	1.00	1.25	0.09	1.99	92.40	1.77	0.88
	1.50	1.22	1.32	0.11	1.99	94.74	0.62	0.72
	2.00	1.41	1.40	0.10	1.99	94.06	0.96	0.77
	3.00	1.73	1.52	0.12	1.99	94.17	0.28	0.77
	4.00	2.00	1.64	0.12	1.99	94.57	0.64	0.73
	5.00	2.24	1.47	0.10	1.99	94.15	1.30	0.77
	6.00	2.45	1.53	0.06	1.99	95.87	0.37	0.62
	8.00	2.83	1.68	0.08	1.99	96.02	2.70	0.60
	10.00	3.16	1.88	0.20	1.99	98.44	1.13	0.19
12.00	3.46	1.94	0.12	1.99	99.83	3.31	-0.76	
Diclofenac sodium 40% GMS40% PEG 0.2%Tween 0.2 %matrix pellets #18/20	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	1.37	0.18	1.99	87.65	4.71	1.09
	0.50	0.71	1.31	0.13	1.99	93.01	1.03	0.84
	0.75	0.87	1.34	0.12	1.99	93.27	0.21	0.83
	1.00	1.00	1.38	0.12	1.99	94.23	0.92	0.76
	1.50	1.22	1.46	0.11	1.99	95.47	1.09	0.66
	2.00	1.41	1.53	0.10	1.99	95.73	0.47	0.63
	3.00	1.73	1.66	0.11	1.99	97.38	1.37	0.42
	4.00	2.00	1.77	0.08	1.99	97.81	1.11	0.34
	5.00	2.24	1.56	0.05	1.99	96.77	0.80	0.51
	6.00	2.45	1.61	0.05	1.99	96.71	1.29	0.52
	8.00	2.83	1.75	0.04	1.99	98.32	1.03	0.22
	10.00	3.16	1.87	0.02	1.99	100.59	1.58	0.00
12.00	3.46	2.00	0.01	1.99	98.32	0.97	0.00	

Table 16B Percentage amounts of propranolol hydrochloride matrix pellets release at various temperatures and curing time.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
PL40%Compritol40% 65° C 30 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	21.48	2.13	1.89	7.59	0.54	1.97
	0.50	0.71	36.69	2.88	1.80	20.12	0.06	1.90
	0.75	0.87	50.44	3.03	1.70	37.33	0.55	1.80
	1.00	1.00	60.46	2.75	1.60	48.37	0.27	1.71
	1.50	1.22	73.98	2.00	1.42	63.72	0.41	1.56
	2.00	1.41	83.67	1.21	1.21	72.99	0.95	1.43
	3.00	1.73	94.33	1.45	0.75	85.38	0.96	1.16
	4.00	2.00	99.98	1.17	-1.66	90.77	1.24	0.97
	5.00	2.24	103.16	0.73	0.00	95.48	1.93	0.65
	6.00	2.45	104.15	0.21	0.00	96.49	1.68	0.54
8.00	2.83	105.8	1.73	0.00	98.40	1.08	0.21	
10.00	3.16	-	-	-	99.50	1.70	-0.31	
PL40%Compritol40% 65° C 60 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	12.79	0.96	1.94	17.69	2.53	1.92
	0.50	0.71	27.22	2.55	1.86	35.44	2.60	1.81
	0.75	0.87	40.86	4.57	1.77	49.13	2.18	1.71
	1.00	1.00	51.85	3.76	1.68	57.71	1.67	1.63
	1.50	1.22	68.46	2.76	1.50	70.30	1.74	1.47
	2.00	1.41	79.93	2.07	1.30	77.94	1.17	1.34
	3.00	1.73	92.39	1.75	0.88	88.69	1.63	1.05
	4.00	2.00	98.79	1.02	0.08	93.74	0.59	0.80
	5.00	2.24	102.07	0.93	0.00	97.32	1.66	0.43
	6.00	2.45	103.44	1.44	0.00	99.33	1.10	-0.17
8.00	2.83	103.74	1.77	0.00	101.08	0.50	0.00	
10.00	3.16	-	-	-	102.83	0.69	0.00	
PL40%Compritol40% 65° C 90 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	17.80	0.93	1.91	12.52	1.30	1.94
	0.50	0.71	36.94	1.18	1.80	29.93	0.83	1.85
	0.75	0.87	52.43	0.18	1.68	44.01	0.70	1.75
	1.00	1.00	62.28	0.95	1.58	53.16	0.49	1.67
	1.50	1.22	75.04	0.89	1.40	65.97	0.74	1.53
	2.00	1.41	83.88	1.33	1.21	74.10	0.30	1.41
	3.00	1.73	94.16	1.06	0.77	83.91	0.26	1.21
	4.00	2.00	99.71	1.73	-0.53	90.71	0.24	0.97
	5.00	2.24	102.02	1.48	0.00	93.81	0.95	0.79
	6.00	2.45	103.38	0.34	0.00	97.57	0.81	0.39
8.00	2.83	103.97	0.77	0.00	98.85	0.56	0.06	
10.00	3.16	-	-	-	100.14	0.32	0.00	
12.00	3.46	-	-	-	100.90	0.76	0.00	
PL40%Compritol40% 70° C 30 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	18.29	5.31	1.91	22.65	5.29	1.89
	0.50	0.71	36.27	4.33	1.80	37.99	5.63	1.79
	0.75	0.87	51.36	3.21	1.69	50.91	4.24	1.69
	1.00	1.00	62.37	2.74	1.58	58.52	3.89	1.62
	1.50	1.22	75.90	2.25	1.38	70.14	2.79	1.48
	2.00	1.41	84.65	2.06	1.19	77.69	2.52	1.35
	3.00	1.73	94.93	1.65	0.70	86.56	0.81	1.13
	4.00	2.00	101.07	1.43	0.00	92.93	1.71	0.85
	5.00	2.24	102.43	1.47	0.00	97.12	0.27	0.46
	6.00	2.45	103.22	1.73	0.00	98.77	0.40	0.09
8.00	2.83	104.87	0.74	0.00	100.42	1.00	0.00	
10.00	3.16	-	-	-	102.08	0.99	0.00	
12.00	3.46	-	-	-	101.33	0.43	0.00	

Table 16B (continue) Percentage amounts of propranolol hydrochloride matrix pellets release at various temperatures and curing time.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
PL40%Compritrol40% 70° C 60 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	23.28	2.46	1.88	23.41	3.61	1.88
	0.50	0.71	42.03	2.81	1.76	42.02	3.30	1.76
	0.75	0.87	57.38	1.67	1.63	53.91	3.01	1.66
	1.00	1.00	67.96	2.11	1.51	62.90	3.20	1.57
	1.50	1.22	80.98	1.70	1.28	73.76	2.46	1.42
	2.00	1.41	89.49	2.15	1.02	81.52	3.00	1.27
	3.00	1.73	98.86	1.18	0.06	89.98	2.77	1.00
	4.00	2.00	104.46	0.72	0.00	93.89	0.99	0.79
	5.00	2.24	105.37	0.89	0.00	96.67	1.29	0.52
	6.00	2.45	104.93	0.60	0.00	97.50	0.55	0.40
8.00	2.83	-	-	-	100.47	1.71	0.00	
10.00	3.16	-	-	-	99.54	1.04	0.00	
PL40%Compritrol40% 70° C 90 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	17.00	1.23	1.92	14.30	1.84	1.93
	0.50	0.71	36.65	0.62	1.80	34.60	2.10	1.82
	0.75	0.87	53.29	0.33	1.67	47.12	1.21	1.72
	1.00	1.00	63.63	0.75	1.56	57.28	1.22	1.63
	1.50	1.22	77.28	0.87	1.37	69.60	1.67	1.48
	2.00	1.41	85.95	1.02	1.15	77.59	0.89	1.35
	3.00	1.73	96.73	0.95	0.51	85.03	0.23	1.18
	4.00	2.00	100.08	1.72	0.00	90.32	0.38	0.99
	5.00	2.24	102.69	2.07	0.00	93.68	0.48	0.80
	6.00	2.45	102.32	2.09	0.00	94.22	0.57	0.76
8.00	2.83	-	-	-	96.90	0.19	0.49	
10.00	3.16	-	-	-	95.93	0.49	0.61	
PL40%Compritrol40% 75° C 7 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	23.80	4.13	1.88	11.25	1.46	1.95
	0.50	0.71	44.36	4.54	1.75	34.65	2.30	1.82
	0.75	0.87	62.34	3.89	1.58	48.79	1.81	1.71
	1.00	1.00	73.66	2.83	1.42	61.55	2.77	1.58
	1.50	1.22	85.67	2.27	1.16	74.46	2.56	1.41
	2.00	1.41	94.52	1.39	0.74	84.20	1.59	1.20
	3.00	1.73	102.78	2.40	0.00	93.14	1.35	0.84
	4.00	2.00	102.91	1.06	0.00	97.17	0.45	0.45
	5.00	2.24	103.32	0.79	0.00	99.27	0.53	-0.14
	6.00	2.45	-	-	-	101.57	0.87	0.00
8.00	2.83	-	-	-	102.62	0.96	0.00	
10.00	3.16	-	-	-	104.75	0.57	0.00	
PL40%Compritrol40% 75° C + Cab-O-Sil 1% 7 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	8.37	2.67	1.96	6.37	1.89	1.97
	0.50	0.71	22.75	4.71	1.89	16.30	3.37	1.92
	0.75	0.87	37.57	5.16	1.80	29.61	5.14	1.85
	1.00	1.00	51.91	4.52	1.68	41.98	5.07	1.76
	1.50	1.22	70.55	2.97	1.47	58.78	4.19	1.62
	2.00	1.41	82.91	2.43	1.23	71.38	2.99	1.46
	3.00	1.73	95.02	1.20	0.70	85.19	3.39	1.17
	4.00	2.00	100.49	1.16	0.00	93.17	2.32	0.83
	5.00	2.24	103.01	2.21	0.00	97.56	1.52	0.39
	6.00	2.45	104.00	1.27	0.00	99.66	1.67	-0.47
8.00	2.83	104.42	0.76	0.00	102.23	2.46	0.00	
10.00	3.16	-	-	-	103.29	2.02	0.00	

Table 16B (continue) Percentage amounts of propranolol hydrochloride matrix pellets release at various temperatures and curing time.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
PL40%Compritrol40% 75° C + Talcum 1% 7 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	18.75	0.39	1.91	14.58	1.25	1.94
	0.50	0.71	42.66	0.77	1.76	35.67	1.36	1.82
	0.75	0.87	59.17	0.45	1.61	49.82	0.74	1.71
	1.00	1.00	70.16	0.29	1.47	60.27	0.99	1.60
	1.50	1.22	83.11	0.87	1.23	73.07	1.19	1.41
	2.00	1.41	90.97	0.29	0.96	82.17	1.61	1.27
	3.00	1.73	98.80	0.90	0.08	89.75	0.68	1.03
	4.00	2.00	101.50	0.85	0.00	95.89	1.49	0.43
	5.00	2.24	101.32	0.32	0.00	98.07	2.70	0.00
	6.00	2.45	102.28	0.33	0.00	98.92	1.10	0.00
8.00	2.83	103.05	0.33	0.00	101.55	1.86	0.00	
10.00	3.16	-	-	-	101.44	0.57	0.00	
PL40%Lubritab 40% 55° C 30 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	60.72	1.26	1.59	51.76	0.41	1.68
	0.50	0.71	82.65	2.87	1.24	68.32	0.46	1.50
	0.75	0.87	94.97	1.21	0.70	79.69	0.41	1.30
	1.00	1.00	100.64	0.64	0.00	86.46	1.73	1.31
	1.50	1.22	104.54	0.66	0.00	92.13	0.84	0.89
	2.00	1.41	105.85	1.39	0.00	95.53	0.85	0.65
	3.00	1.73	105.52	0.36	0.00	97.88	0.57	0.33
	4.00	2.00	106.15	0.51	0.00	98.82	0.97	0.07
	5.00	2.24	-	-	-	97.80	0.46	0.34
	6.00	2.45	-	-	-	98.80	1.12	0.08
8.00	2.83	-	-	-	99.36	0.93	-0.20	
PL40%Lubritab 40% 55° C 60 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	48.54	1.33	1.71	41.13	2.34	1.77
	0.50	0.71	73.43	0.88	1.42	58.64	2.10	1.62
	0.75	0.87	87.29	0.78	1.10	71.88	2.32	1.45
	1.00	1.00	95.30	0.76	0.67	78.20	1.69	1.34
	1.50	1.22	100.49	1.09	0.00	86.55	1.95	1.13
	2.00	1.41	102.05	1.01	0.00	89.71	2.18	1.01
	3.00	1.73	103.33	0.26	0.00	93.53	2.00	0.81
	4.00	2.00	103.74	0.35	0.00	95.32	1.78	0.67
	5.00	2.24	-	-	-	95.42	2.72	0.66
	6.00	2.45	-	-	-	96.14	2.59	0.59
8.00	2.83	-	-	-	95.43	3.77	0.66	
PL40%Lubritab 40% 55° C 90 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	37.62	1.60	1.80	44.79	4.82	1.74
	0.50	0.71	67.42	1.51	1.51	62.35	3.56	1.58
	0.75	0.87	84.11	1.18	1.20	74.46	2.78	1.41
	1.00	1.00	93.53	0.50	0.81	82.87	1.98	1.23
	1.50	1.22	100.54	0.99	0.00	88.41	2.54	1.06
	2.00	1.41	102.40	0.44	0.00	91.77	2.07	0.92
	3.00	1.73	104.55	0.98	0.00	93.37	1.11	0.82
	4.00	2.00	105.56	0.35	0.00	95.60	1.63	0.64
	5.00	2.24	106.56	0.36	0.00	97.94	2.10	0.31
	6.00	2.45	-	-	-	98.95	1.88	0.02
8.00	2.83	-	-	-	100.14	1.59	0.00	

Table 16B (continue) Percentage amounts of propranolol hydrochloride matrix pellets release at various temperatures and curing time.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
PL40%Lubritab 40% 60° C 30 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	46.51	1.81	1.73	42.65	4.86	1.76
	0.50	0.71	66.55	1.51	1.52	58.75	3.77	1.62
	0.75	0.87	78.59	1.05	1.33	69.76	2.64	1.48
	1.00	1.00	87.66	0.93	1.09	76.86	3.41	1.36
	1.50	1.22	96.83	1.21	0.50	82.96	1.88	1.23
	2.00	1.41	101.16	1.39	0.00	88.67	2.86	1.05
	3.00	1.73	104.56	1.15	0.00	92.74	1.84	0.86
	4.00	2.00	106.05	0.34	0.00	94.88	1.69	0.71
	5.00	2.24	105.51	0.75	0.00	97.04	0.91	0.47
	6.00	2.45	-	-	-	98.31	1.11	0.23
8.00	2.83	-	-	-	99.23	1.03	-0.11	
PL40%Lubritab 40% 60° C 60 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	22.35	0.64	1.89	16.16	1.22	1.92
	0.50	0.71	45.79	0.89	1.73	38.19	1.50	1.79
	0.75	0.87	63.89	0.62	1.55	55.57	1.40	1.65
	1.00	1.00	76.96	0.88	1.36	65.74	1.67	1.53
	1.50	1.22	91.42	0.78	0.93	77.79	0.88	1.35
	2.00	1.41	98.99	0.32	0.01	86.41	0.89	1.13
	3.00	1.73	103.72	0.30	0.00	92.87	1.95	0.85
	4.00	2.00	105.21	0.36	0.00	96.54	1.02	0.54
	5.00	2.24	106.13	0.03	0.00	99.26	1.18	-0.13
	6.00	2.45	107.24	0.27	0.00	100.30	1.19	0.00
PL40%Lubritab 40% 60° C 90 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	20.49	4.15	1.90	18.70	11.40	1.91
	0.50	0.71	40.36	2.37	1.78	36.79	11.62	1.80
	0.75	0.87	57.43	2.38	1.63	54.07	9.48	1.66
	1.00	1.00	71.78	1.50	1.45	65.02	7.45	1.54
	1.50	1.22	89.09	3.57	1.04	78.23	3.41	1.34
	2.00	1.41	97.89	1.87	0.33	86.85	2.34	1.12
	3.00	1.73	103.10	0.92	0.00	93.32	2.18	0.83
	4.00	2.00	104.87	1.47	0.00	98.78	0.47	0.09
	5.00	2.24	105.98	1.44	0.00	99.91	1.07	-1.05
	6.00	2.45	106.89	1.59	0.00	100.51	0.56	0.00
PL40%Lubritab 40% 65° C 60 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	33.75	6.29	1.82	15.43	0.78	1.93
	0.50	0.71	57.13	4.03	1.63	34.34	0.42	1.82
	0.75	0.87	72.74	3.63	1.44	47.76	2.29	1.72
	1.00	1.00	82.81	2.42	1.24	57.92	1.15	0.62
	1.50	1.22	92.70	1.39	0.86	72.31	1.52	1.44
	2.00	1.41	99.98	1.54	-1.82	82.02	1.22	1.25
	3.00	1.73	105.50	1.05	0.00	90.85	0.84	0.96
	4.00	2.00	107.59	1.12	0.00	96.73	1.50	0.51
	5.00	2.24	107.94	1.31	0.00	98.20	2.33	0.25
	6.00	2.45	-	-	-	100.22	1.90	0.00
8.00	2.83	-	-	-	103.49	1.88	0.00	
10.00	3.16	-	-	-	105.45	1.68	0.00	

Table 16B (continue) Percentage amounts of propranolol hydrochloride matrix pellets release at various temperatures and curing time.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
PL40%Lubritab 40% 65° C + Cab-O-Sil 1% 5 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	16.02	11.8	1.92	14.64	10.53	1.93
	0.50	0.71	43.79	7	1.75	31.30	13.25	1.84
	0.75	0.87	57.99	6.58	1.62	46.55	11.79	1.73
	1.00	1.00	66.94	5.73	1.52	54.48	8.22	1.66
	1.50	1.22	79.27	5.02	1.32	69.53	8.86	1.48
	2.00	1.41	87.09	3.64	1.11	76.63	3.92	1.37
	3.00	1.73	96.63	3.79	0.53	85.40	3.08	1.16
	4.00	2.00	101.23	2.65	0.00	90.15	3.27	0.99
	5.00	2.24	102.79	1.09	0.00	93.61	2.92	0.81
	6.00	2.45	104.15	2.30	0.00	94.86	2.70	0.71
8.00	2.83	105.23	1.40	0.00	96.56	2.89	0.54	
10.00	3.16	105.83	0.25	0.00	100.06	2.36	0.00	
			1.17					
PL40%Lubritab 40% 65° C + Talcum 1% 5 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	19.63	2.86	1.91	9.90	5.16	1.95
	0.50	0.71	29.04	3.56	1.85	19.32	6.67	1.91
	0.75	0.87	39.60	3.93	1.78	30.45	8.12	1.84
	1.00	1.00	49.70	2.30	1.70	41.97	6.65	1.76
	1.50	1.22	63.78	1.88	1.56	58.50	6.25	1.62
	2.00	1.41	74.91	1.31	1.40	70.92	3.77	1.46
	3.00	1.73	88.47	1.53	1.06	83.03	2.33	1.23
	4.00	2.00	97.25	1.17	0.44	90.36	1.93	0.98
	5.00	2.24	101.76	0.77	0.00	95.16	2.29	0.68
	6.00	2.45	104.87	0.89	0.00	97.69	3.32	0.36
8.00	2.83	108.29	2.50	0.00	99.78	1.55	-0.67	
10.00	3.16	108.83	2.24	0.00	104.57	1.64	0.00	
PL40%GMS 40% 50° C 30 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	60.23	2.06	1.60	53.01	1.88	1.67
	0.50	0.71	83.23	2.49	1.22	71.63	0.57	1.45
	0.75	0.87	97.48	1.75	0.40	83.05	0.56	1.23
	1.00	1.00	103.96	1.23	0.00	90.03	1.38	0.99
	1.50	1.22	107.21	0.68	0.00	95.64	0.75	0.64
	2.00	1.41	107.68	0.69	0.00	98.99	0.45	0.00
	3.00	1.73	107.47	0.41	0.00	101.65	0.80	0.00
	4.00	2.00	107.54	0.20	0.00	102.72	1.15	0.00
5.00	2.24	-	-	-	102.36	0.69	0.00	
6.00	2.45	-	-	-	1.1081	2.10	0.00	
PL40%GMS 40% 50° C 60 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	60.62	1.21	1.60	53.10	1.52	1.67
	0.50	0.71	85.84	1.38	1.15	71.55	1.69	1.45
	0.75	0.87	98.39	1.91	0.21	84.30	1.30	1.20
	1.00	1.00	103.52	1.90	0.00	90.49	0.44	0.98
	1.50	1.22	105.51	0.63	0.00	96.47	0.85	0.55
	2.00	1.41	106.16	0.65	0.00	99.47	1.13	-0.27
	3.00	1.73	106.12	1.07	0.00	101.51	1.11	0.00
4.00	2.00	106.65	0.79	0.00	101.41	1.37	0.00	

Table 16B (continue) Percentage amounts of propranolol hydrochloride matrix pellets release at various temperatures and curing time.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
PL40%GMS 40% 50° C 90 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	62.26	1.60	1.58	52.29	1.32	1.68
	0.50	0.71	85.09	1.03	1.17	71.45	1.80	1.46
	0.75	0.87	99.07	0.47	-0.03	82.59	0.97	1.24
	1.00	1.00	104.60	1.07	0.00	89.30	0.58	1.03
	1.50	1.22	107.09	0.35	0.00	95.26	0.86	0.68
	2.00	1.41	108.33	0.28	0.00	98.79	0.23	0.08
	3.00	1.73	107.06	1.45	0.00	100.91	0.23	0.00
	4.00	2.00	107.60	0.63	0.00	101.61	0.63	0.00
	5.00	2.24	-	-	-	102.14	0.53	0.00
	6.00	2.45	-	-	-	102.56	0.17	0.00
PL40%GMS 40% 55° C 30 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	55.79	1.81	1.65	50.78	1.21	1.69
	0.50	0.71	77.86	1.63	1.35	71.25	0.98	1.46
	0.75	0.87	94.38	0.79	0.75	81.32	0.78	1.27
	1.00	1.00	103.43	0.17	0.00	88.28	0.56	1.07
	1.50	1.22	107.36	0.88	0.00	96.38	0.94	0.56
	2.00	1.41	108.99	1.64	0.00	99.11	0.39	-0.05
	3.00	1.73	109.76	1.63	0.00	100.44	0.57	0.00
	4.00	2.00	108.40	0.54	0.00	101.31	0.29	0.00
	5.00	2.24	-	-	-	101.92	0.55	0.00
	6.00	2.45	-	-	-	99.49	0.69	0.00
PL40%GMS 40% 55° C 60 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	59.56	1.74	1.61	51.31	1.97	1.69
	0.50	0.71	81.96	2.28	1.26	69.20	1.57	1.49
	0.75	0.87	96.11	1.53	0.59	83.36	2.28	1.22
	1.00	1.00	103.83	2.37	0.00	90.34	1.48	0.98
	1.50	1.22	106.40	0.53	0.00	97.48	0.87	0.40
	2.00	1.41	107.74	1.54	0.00	100.49	1.06	0.00
	3.00	1.73	107.04	1.89	0.00	103.17	0.48	0.00
	4.00	2.00	107.00	1.64	0.00	103.10	1.12	0.00
	PL40%GMS 40% 55° C 90 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00
0.25		0.50	60.72	3.80	1.59	50.24	1.57	1.70
0.50		0.71	83.04	2.08	1.23	68.48	1.63	1.50
0.75		0.87	97.39	1.39	0.42	79.19	1.29	1.32
1.00		1.00	104.64	0.10	0.00	86.44	1.39	1.13
1.50		1.22	108.09	0.66	0.00	93.71	1.25	0.80
2.00		1.41	108.77	1.11	0.00	96.86	1.26	0.50
3.00		1.73	108.57	0.86	0.00	99.77	1.40	-0.63
4.00		2.00	109.03	1.02	0.00	101.18	1.87	0.00
5.00		2.24	-	-	-	101.34	1.30	0.00
6.00		2.45	-	-	-	99.70	1.88	0.00

จุฬาลงกรณ์มหาวิทยาลัย

Table 16B (continue) Percentage amounts of propranolol hydrochloride matrix pellets release at various temperatures and curing time.

Formulations	time	time ^{1/2}	Dissolution medium					
			0.1 N HCl			Phosphate buffer pH 6.8		
			%mean	SD	log % drug remained	%mean	SD	log % drug remained
PL40%GMS 40% 58° C 5 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	52.11	1.93	1.68	46.85	1.23	1.73
	0.50	0.71	74.15	2.49	1.41	65.67	0.56	1.54
	0.75	0.87	90.33	2.74	0.99	79.25	0.63	1.32
	1.00	1.00	99.44	2.77	-0.25	86.91	1.04	1.12
	1.50	1.22	104.77	2.20	0.00	93.47	0.85	0.81
	2.00	1.41	105.51	2.06	0.00	97.07	0.66	0.47
	3.00	1.73	105.95	2.35	0.00	99.62	1.11	-0.42
	4.00	2.00	-	-	-	101.74	1.01	0.00
	5.00	2.24	-	-	-	101.73	1.12	0.00
PL40%GMS 40% 58° C + Cab-O-Sil 1% 5 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	58.98	1.00	1.61	49.97	1.27	1.70
	0.50	0.71	83.41	3.06	1.22	69.72	2.06	1.48
	0.75	0.87	96.50	1.04	0.54	80.85	1.00	1.28
	1.00	1.00	102.39	0.35	0.00	89.32	1.61	1.03
	1.50	1.22	105.53	1.26	0.00	94.67	2.07	0.73
	2.00	1.41	105.79	0.14	0.00	98.63	1.39	0.14
	3.00	1.73	106.04	0.16	0.00	98.61	0.63	0.14
	4.00	2.00	-	-	-	99.11	0.35	-0.05
	5.00	2.24	-	-	-	99.69	0.10	-0.51
PL40%GMS 40% 58° C + Talcum 1% 20 minute	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
	0.25	0.50	53.37	1.89	1.67	47.21	0.15	1.72
	0.50	0.71	73.68	2.71	1.42	64.52	0.54	1.55
	0.75	0.87	91.79	2.26	0.91	78.71	1.11	1.33
	1.00	1.00	102.07	1.38	0.00	85.91	0.72	1.15
	1.50	1.22	110.24	1.18	0.00	92.38	1.73	0.88
	2.00	1.41	109.49	0.70	0.00	96.40	0.73	0.56
	3.00	1.73	109.98	0.64	0.00	99.75	1.86	-0.61
	4.00	2.00	110.36	1.76	0.00	101.34	1.94	0.00
	5.00	2.24	-	-	-	101.15	1.15	0.00

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Table 17B Percentage amounts of propranolol hydrochloride matrix tablet release from various glycerides.

Formulations	time	time ^{1/2}	pH-change system		
			%mean	SD	log % drug remained
Inderal® LA 80	0.00	0.00	0.00	0.00	2.00
	0.25	0.50	2.73	0.44	1.98
	0.50	0.71	6.12	0.74	1.97
	0.75	0.87	10.31	1.30	1.95
	1.00	1.00	13.46	1.48	1.94
	1.50	1.22	19.40	2.05	1.91
	2.00	1.41	24.87	2.61	1.88
	3.00	1.73	34.33	3.33	1.82
	4.00	2.00	41.32	3.67	1.77
	5.00	2.24	47.90	3.92	1.72
	6.00	2.45	53.47	4.25	1.67
	8.00	2.83	62.65	4.42	1.57
	10.00	3.16	68.89	4.36	1.49
12.00	3.46	73.91	4.24	1.42	
Propranolol hydrochloride 40% Lubritab 40% matrix tablet 80 mg 1000 pound	0.00	0.00	0.00	0.00	2.00
	0.25	0.50	14.10	0.73	1.93
	0.50	0.71	19.82	0.63	1.90
	0.75	0.87	24.23	0.68	1.88
	1.00	1.00	27.92	0.82	1.86
	1.50	1.22	33.81	0.88	1.82
	2.00	1.41	38.39	0.86	1.79
	3.00	1.73	45.26	0.91	1.74
	4.00	2.00	49.37	1.04	1.70
	5.00	2.24	53.28	1.02	1.67
	6.00	2.45	56.85	1.23	1.63
	8.00	2.83	61.57	1.02	1.58
	10.00	3.16	68.80	1.22	1.49
12.00	3.46	74.13	1.16	1.41	
Propranolol hydrochloride 40% Compritol 40% matrix tablet 80 mg 1000 pound	0.00	0.00	0.00	0.00	2.00
	0.25	0.50	10.46	0.63	1.95
	0.50	0.71	14.60	0.50	1.93
	0.75	0.87	17.50	0.39	1.92
	1.00	1.00	20.00	0.38	1.90
	1.50	1.22	24.06	0.40	1.88
	2.00	1.41	27.37	0.39	1.86
	3.00	1.73	33.41	0.72	1.82
	4.00	2.00	36.82	0.48	1.80
	5.00	2.24	39.93	0.31	1.78
	6.00	2.45	43.12	0.19	1.75
	8.00	2.83	46.94	0.25	1.72
	10.00	3.16	53.64	0.16	1.67
12.00	3.46	58.07	0.59	1.62	

Table 18B Percentage amounts of diclofenac sodium matrix tablet release from various glycerides.

Formulations	time	time ^{1/2}	pH-change system		
			%mean	SD	log % drug remained
Voltaren SR 100	0.00	0.00	0.00	0.00	2.00
	0.50	0.71	0.89	0.58	1.99
	1.00	1.00	0.75	0.33	1.99
	1.50	1.22	0.76	0.33	1.99
	2.00	1.41	0.72	0.29	1.99
	3.00	1.73	5.40	0.42	1.98
	4.00	2.00	9.89	1.13	1.95
	5.00	2.24	15.11	1.72	1.93
	6.00	2.45	20.88	2.23	1.90
	8.00	2.83	29.79	2.67	1.85
	10.00	3.16	36.42	3.19	1.80
	12.00	3.46	42.14	3.36	1.76
Diclofenac sodium 40%GMS 40% matrix tablet 100 mg 1000 pound	0.00	0.00	0.00	0.00	2.00
	0.50	0.71	0.22	0.02	1.99
	1.00	1.00	0.22	0.10	1.99
	1.50	1.22	0.22	0.08	1.99
	2.00	1.41	0.26	0.13	1.99
	3.00	1.73	3.58	0.07	1.98
	4.00	2.00	5.69	0.22	1.97
	5.00	2.24	8.36	0.30	1.96
	6.00	2.45	11.60	0.20	1.95
	8.00	2.83	20.12	2.61	1.90
	10.00	3.16	28.35	0.37	1.86
	12.00	3.46	43.04	7.25	1.76
Diclofenac sodium 40%Lubritab 40% matrix tablet 100 mg 1000 pound	0.00	0.00	0.00	0.00	2.00
	0.50	0.71	0.28	0.13	1.99
	1.00	1.00	0.18	0.08	1.99
	1.50	1.22	0.24	0.07	1.99
	2.00	1.41	0.24	0.10	1.99
	3.00	1.73	23.57	1.53	1.88
	4.00	2.00	40.07	1.94	1.78
	5.00	2.24	51.44	0.89	1.69
	6.00	2.45	59.34	1.02	1.61
	8.00	2.83	72.51	1.00	1.44
	10.00	3.16	80.96	1.53	1.27
	12.00	3.46	86.87	0.94	1.12
Diclofenac sodium 40%Compritol 40% matrix tablet 100 mg 1000 pound	0.00	0.00	0.00	0.00	2.00
	0.50	0.71	0.30	0.07	1.99
	1.00	1.00	0.22	0.11	1.99
	1.50	1.22	0.26	0.09	1.99
	2.00	1.41	0.22	0.14	1.99
	3.00	1.73	3.18	0.03	1.98
	4.00	2.00	4.93	0.03	1.97
	5.00	2.24	6.63	0.09	1.97
	6.00	2.45	8.40	0.12	1.96
	8.00	2.83	13.41	0.78	1.93
	10.00	3.16	26.89	0.72	1.86
	12.00	3.46	49.10	3.30	1.71

Appendix C

Release Rate

Table 1C Value for rate, amount released, and the corresponding reciprocal for the release blank propranolol hydrochloride and diclofenac sodium.

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Blank propranolol hydrochloride 40% matrix pellets # 14/18	0.125	403.65	100.91	0.00	397.75	99.43	0.00
	0.375	10.67	103.58	0.01	14.78	103.13	0.01
	0.625	1.64	103.99	0.01	-0.47	103.02	0.01
	0.875	0.52	104.12	0.01	-2.31	102.44	0.01
	1.250	-0.49	103.88	0.01	1.84	103.36	0.01
	1.750	1.48	104.62	0.01	2.38	104.55	0.01
	2.500	0.37	104.99	0.01	0.65	105.20	0.01
	3.500	0.36	105.35	0.01	1.09	106.30	0.01
	4.500	0.45	105.80	0.01	-	-	-
5.500	0.89	106.69	0.01	-	-	-	
Blank propranolol hydrochloride 40% matrix pellets # 18/20	0.125	404.38	101.10	0.00	403.11	100.78	0.00
	0.375	2.31	101.67	0.01	12.69	103.95	0.01
	0.625	5.20	102.97	0.01	0.28	104.02	0.01
	0.875	-2.80	102.27	0.01	1.67	104.44	0.01
	1.250	-0.53	102.00	0.01	0.10	104.49	0.01
	1.750	1.08	102.54	0.01	0.61	104.80	0.01
	2.500	0.80	103.35	0.01	2.08	106.88	0.01
	3.500	-0.02	103.33	0.01	-0.85	106.03	0.01
	4.500	0.61	103.94	0.01	-	-	-
5.500	1.15	105.09	0.01	-	-	-	
Blank diclofenac sodium 40% matrix pellets #14/18	0.125	8.55	2.14	0.00	168.37	42.09	0.024
	0.375	-0.37	2.05	0.47	126.82	63.41	0.016
	0.625	0.39	2.14	0.49	101.06	75.79	0.013
	0.875	0.37	2.24	0.47	83.11	83.11	0.012
	1.250	0.14	2.31	0.45	61.10	91.66	0.011
	1.750	0.12	2.37	0.43	47.90	95.80	0.01
	2.500	-0.27	2.10	0.42	33.03	99.10	0.01
	3.500	0.09	2.18	0.48	25.36	101.43	0.01
	4.500	0.16	2.34	0.46	20.94	104.71	0.01
5.500	-0.09	2.25	0.43	17.59	105.56	0.009	
Blank diclofenac sodium 40% matrix pellets #18/20	0.125	8.25	2.06	0.00	180.98	45.25	0.022
	0.375	-0.07	2.04	0.48	139.51	69.76	0.014
	0.625	0.28	2.11	0.49	108.75	81.56	0.012
	0.875	0.09	2.14	0.47	87.83	87.83	0.011
	1.250	0.24	2.26	0.47	62.88	94.33	0.011
	1.750	0.09	2.31	0.44	48.37	96.75	0.01
	2.500	-0.25	2.06	0.43	33.47	100.40	0.01
	3.500	0.11	2.17	0.49	25.42	101.70	0.01
	4.500	0.10	2.28	0.46	20.77	103.87	0.01
5.500	-0.02	2.25	0.44	17.52	105.12	0.01	

Table 2C Value for rate, amount released and the corresponding reciprocal for the release of propranolol hydrochloride matrix pellets from series of glyceryl monostearate (GMS).

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Propranolol hydrochloride 40% GMS 40% matrix pellets #14/18	0.125	245.64	61.41	0.00	215.34	53.84	0.00
	0.375	99.57	86.30	0.02	68.83	71.04	0.02
	0.625	46.04	97.81	0.01	47.99	83.04	0.01
	0.875	13.38	101.16	0.01	22.12	88.57	0.01
	1.250	4.19	103.25	0.01	10.99	94.07	0.01
	1.750	-1.98	102.26	0.01	8.18	98.16	0.01
	2.500	0.72	102.98	0.01	-0.75	97.41	0.01
	3.500	1.08	104.06	0.01	1.37	98.77	0.01
	4.500	0.99	105.05	0.01	-0.51	98.26	0.01
	5.500	-0.29	104.76	0.01	-0.10	98.16	0.01
7.000	-0.15	104.45	0.01	0.28	98.72	0.01	
Propranolol hydrochloride 40% GMS 40% matrix pellets #18/20	0.125	269.67	67.42	0.00	261.23	65.31	0.00
	0.375	102.75	93.11	0.01	66.94	82.04	0.02
	0.625	35.42	101.96	0.01	33.41	90.40	0.01
	0.875	7.00	103.71	0.01	11.82	93.35	0.01
	1.250	0.97	104.19	0.01	5.44	96.07	0.01
	1.750	0.22	104.31	0.01	7.71	99.93	0.01
	2.500	1.56	105.86	0.01	-2.37	97.56	0.01
	3.500	0.01	105.88	0.01	0.34	97.89	0.01
	4.500	0.82	106.70	0.01	-1.13	96.77	0.01
	5.500	-0.73	105.97	0.01	2.53	99.30	0.01
7.000	-0.15	105.68	0.01	0.55	100.39	0.01	
Propranolol hydrochloride 40% GMS50% matrix pellets #14/18	0.125	206.91	51.73	0.00	170.82	42.71	0.00
	0.375	96.63	75.88	0.02	72.45	60.82	0.02
	0.625	58.24	90.45	0.01	42.75	71.51	0.02
	0.875	25.99	96.94	0.01	26.07	78.02	0.01
	1.250	5.58	99.73	0.01	14.02	85.03	0.01
	1.750	0.79	100.13	0.01	9.88	89.97	0.01
	2.500	0.19	100.32	0.01	2.76	92.73	0.01
	3.500	1.44	101.76	0.01	0.46	93.19	0.01
	4.500	1.15	102.91	0.01	0.80	93.99	0.01
	5.500	0.86	103.78	0.01	1.31	95.31	0.01
	7.000	0.53	104.83	0.01	0.66	96.63	0.01
9.000	-	-	-	-1.74	93.15	0.01	
11.000	-	-	-	0.81	94.77	0.01	
Propranolol hydrochloride 40% GMS50% matrix pellets #18/20	0.125	245.18	61.30	0.00	205.41	51.35	0.00
	0.375	104.40	87.40	0.02	77.28	70.67	0.02
	0.625	41.35	97.73	0.01	37.70	80.10	0.01
	0.875	7.36	99.57	0.01	19.94	85.08	0.01
	1.250	1.96	100.55	0.01	8.18	89.17	0.01
	1.750	-0.75	100.18	0.01	3.62	90.99	0.01
	2.500	0.29	100.47	0.01	1.31	92.29	0.01
	3.500	0.28	100.74	0.01	0.37	92.66	0.01
	4.500	-0.02	100.72	0.01	-0.58	92.08	0.01
	5.500	-0.23	100.49	0.01	1.37	93.46	0.01
	7.000	0.36	101.22	0.01	-0.21	93.04	0.01
9.000	-	-	-	-0.47	92.09	0.01	
11.000	-	-	-	0.24	92.58	0.01	

Table 3C Value for rate, amount released and the corresponding reciprocal for the release of propranolol hydrochloride matrix pellets from series of Lubritab®.

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Propranolol hydrochloride 40% Lubritab 40% matrix pellets #14/18	0.125	277.27	69.32	0.00	227.75	56.94	0.00
	0.375	94.70	92.99	0.01	83.24	77.75	0.02
	0.625	30.77	100.69	0.01	33.78	86.20	0.01
	0.875	4.01	101.69	0.01	19.12	90.98	0.01
	1.250	2.58	102.98	0.01	10.00	95.98	0.01
	1.750	1.04	103.50	0.01	5.27	98.61	0.01
	2.500	1.09	104.59	0.01	0.87	99.48	0.01
	3.500	1.00	105.59	0.01	0.51	99.99	0.01
	4.500	1.00	106.59	0.01	-0.03	99.96	0.01
	5.500	1.19	107.77	0.01	0.58	100.54	0.01
7.000	0.55	108.87	0.01	0.38	101.29	0.01	
Propranolol hydrochloride 40% Lubritab 40% matrix pellets #18/20	0.125	304.33	76.08	0.00	252.39	63.10	0.00
	0.375	85.73	97.51	0.01	82.80	83.79	0.02
	0.625	13.57	100.91	0.01	28.69	90.97	0.01
	0.875	3.63	101.81	0.01	12.90	94.20	0.01
	1.250	1.42	102.53	0.01	8.11	98.25	0.01
	1.750	1.99	103.52	0.01	3.17	99.84	0.01
	2.500	1.09	104.61	0.01	-1.80	98.04	0.01
	3.500	1.09	105.71	0.01	0.04	98.08	0.01
	4.500	1.09	106.80	0.01	1.01	99.10	0.01
	5.500	1.29	108.09	0.01	1.01	100.11	0.01
7.000	0.45	108.99	0.01	0.51	101.13	0.01	
Propranolol hydrochloride 40% Lubritab 50% matrix pellets #14/18	0.125	286.55	71.64	0.00	254.54	63.63	0.00
	0.375	74.70	90.31	0.01	83.19	84.43	0.02
	0.625	36.84	99.52	0.01	33.36	92.77	0.01
	0.875	6.66	101.19	0.01	22.26	98.34	0.01
	1.250	4.31	103.34	0.01	7.66	102.17	0.01
	1.750	2.98	104.83	0.01	1.47	102.91	0.01
	2.500	2.94	107.78	0.01	0.55	103.46	0.01
	3.500	1.03	108.81	0.01	0.91	104.36	0.01
	4.500	1.03	109.84	0.01	1.17	105.54	0.01
	5.500	0.35	110.20	0.01	1.08	106.62	0.01
7.000	0.61	111.41	0.01	0.54	107.70	0.01	
Propranolol hydrochloride 40% Lubritab 50% matrix pellets #18/20	0.125	363.48	90.87	0.00	289.89	72.47	0.00
	0.375	46.56	102.51	0.01	66.79	89.17	0.01
	0.625	13.02	105.77	0.01	27.14	95.96	0.01
	0.875	4.99	107.01	0.01	11.33	98.79	0.01
	1.250	1.73	107.88	0.01	4.81	101.19	0.01
	1.750	2.30	109.02	0.01	4.13	103.26	0.01
	2.500	1.15	110.17	0.01	-0.43	102.83	0.01
	3.500	1.05	111.23	0.01	0.81	103.64	0.01
	4.500	1.15	112.38	0.01	0.71	104.35	0.01
	5.500	1.05	113.43	0.01	1.07	105.42	0.01
7.000	0.62	114.67	0.01	0.53	106.49	0.01	

Table 4C Value for rate, amount released and the corresponding reciprocal for the release of propranolol hydrochloride matrix pellets from series of Compritol® ATO 888.

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Propranolol hydrochloride 40% Compritol 40% matrix pellets #14/18	0.125	37.08	9.27	0.00	33.92	8.48	0.00
	0.375	45.95	20.76	0.11	53.73	21.91	0.12
	0.625	37.06	30.02	0.05	62.52	37.54	0.05
	0.875	38.82	39.73	0.03	49.15	49.83	0.03
	1.250	34.70	57.08	0.03	35.38	67.52	0.02
	1.750	30.62	72.39	0.02	37.90	86.47	0.01
	2.500	14.99	87.38	0.01	5.85	92.32	0.01
	3.500	8.29	95.67	0.01	1.97	94.29	0.01
	4.500	4.21	99.88	0.01	2.43	96.72	0.01
	5.500	1.83	101.72	0.01	0.66	97.39	0.01
	7.000	0.44	102.59	0.01	0.37	98.13	0.01
9.000	0.58	103.76	0.01	-	-	-	
11.000	0.34	104.44	0.01	-	-	-	
Propranolol hydrochloride 40% Compritol 40% matrix pellets #18/20	0.125	59.23	14.81	0.00	51.42	12.85	0.00
	0.375	55.81	28.76	0.07	69.22	30.16	0.08
	0.625	33.09	37.04	0.03	67.59	47.06	0.03
	0.875	44.54	48.17	0.03	48.50	59.18	0.02
	1.250	28.69	62.52	0.02	31.11	74.74	0.02
	1.750	25.13	75.08	0.02	29.48	89.48	0.01
	2.500	16.56	91.65	0.01	4.98	94.46	0.01
	3.500	7.36	99.01	0.01	1.37	95.83	0.01
	4.500	3.76	102.78	0.01	1.46	97.30	0.01
	5.500	1.18	103.96	0.01	0.04	97.33	0.01
	7.000	0.88	105.72	0.01	-0.03	97.27	0.01
9.000	0.30	106.34	0.01	-	-	-	
11.000	-0.27	105.78	0.01	-	-	-	
Propranolol hydrochloride 40% Compritol 50% matrix pellets #14/18	0.125	38.16	9.54	0.00	24.42	6.10	0.00
	0.375	34.06	18.06	0.10	33.95	14.59	0.16
	0.625	27.07	24.82	0.06	36.90	23.82	0.07
	0.875	24.71	31.00	0.04	46.59	35.46	0.04
	1.250	22.98	42.49	0.03	35.78	53.35	0.03
	1.750	21.80	53.39	0.02	30.09	68.40	0.02
	2.500	16.23	69.63	0.02	13.96	82.36	0.01
	3.500	12.73	82.37	0.01	7.94	90.30	0.01
	4.500	7.55	89.92	0.01	3.38	93.68	0.01
	5.500	6.56	96.49	0.01	3.05	96.73	0.01
	7.000	2.83	102.15	0.01	1.22	99.18	0.01
9.000	0.87	103.90	0.01	-0.06	99.05	0.01	
11.000	0.64	105.17	0.01	-	-	-	
Propranolol hydrochloride 40% Compritol 50% matrix pellets #18/20	0.125	56.10	14.03	0.00	29.03	7.26	0.00
	0.375	39.01	23.78	0.07	35.75	16.19	0.14
	0.625	29.96	31.27	0.04	43.18	26.99	0.06
	0.875	27.66	38.18	0.03	47.37	38.83	0.04
	1.250	23.83	50.10	0.03	35.85	56.76	0.03
	1.750	19.84	60.02	0.02	24.45	68.99	0.02
	2.500	15.73	75.74	0.02	13.61	82.59	0.01
	3.500	11.54	87.29	0.01	8.12	90.72	0.01
	4.500	5.77	93.05	0.01	3.56	94.28	0.01
	5.500	5.24	98.30	0.01	4.13	98.40	0.01
	7.000	2.93	104.16	0.01	1.01	100.42	0.01
9.000	1.41	106.99	0.01	0.08	100.57	0.01	
11.000	0.75	108.49	0.01	-	-	-	

Table 5C Value for rate, amount released and the corresponding reciprocal for the release of diclofenac sodium matrix pellets from series of glyceryl monostearate (GMS).

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Diclofenac sodium 40% GMS 40% matrix pellets #14/18	0.125	3.57	0.89	0.00	56.96	14.24	0.00
	0.375	-0.33	0.81	1.12	38.68	23.91	0.07
	0.625	0.27	0.88	1.24	35.18	32.71	0.04
	0.875	0.29	0.95	1.14	29.23	40.01	0.03
	1.250	0.18	1.04	1.05	19.84	49.93	0.02
	1.750	0.20	1.14	0.96	10.90	55.38	0.02
	2.500	0.21	1.35	0.88	8.32	63.70	0.02
	3.500	0.08	1.43	0.74	4.38	68.08	0.02
	4.500	0.08	1.51	0.70	2.54	70.62	0.01
	5.500	0.12	1.63	0.66	3.11	73.73	0.01
	7.000	0.01	1.65	0.61	1.63	76.98	0.01
9.000	0.02	1.70	0.61	1.23	79.43	0.01	
11.000	0.03	1.75	0.59	1.35	82.12	0.01	
Diclofenac sodium 40% GMS 40% matrix pellets #18/20	0.125	4.43	1.11	0.00	81.00	20.25	0.00
	0.375	-0.18	1.06	0.90	54.99	34.00	0.05
	0.625	0.28	1.13	0.94	38.12	43.53	0.03
	0.875	0.40	1.23	0.88	36.10	52.55	0.02
	1.250	0.32	1.39	0.81	19.01	62.06	0.02
	1.750	0.41	1.60	0.72	9.06	66.59	0.02
	2.500	0.12	1.72	0.63	6.56	73.15	0.02
	3.500	0.09	1.81	0.58	3.59	76.74	0.01
	4.500	0.11	1.91	0.55	2.13	78.87	0.01
	5.500	0.08	2.00	0.52	1.93	80.80	0.01
	7.000	-0.02	1.95	0.50	1.82	84.45	0.01
9.000	0.03	2.01	0.51	0.88	86.20	0.01	
11.000	0.04	2.08	0.50	0.91	88.02	0.01	
Diclofenac sodium 40% GMS50% matrix pellets #14/18	0.125	3.85	0.96	0.00	48.32	12.08	0.00
	0.375	-0.14	0.93	1.04	28.04	19.09	0.08
	0.625	0.16	0.97	1.08	24.22	25.14	0.05
	0.875	0.25	1.03	1.04	16.48	29.26	0.04
	1.250	0.17	1.12	0.97	14.75	36.64	0.03
	1.750	0.16	1.20	0.90	12.15	42.72	0.03
	2.500	0.07	1.27	0.84	8.24	50.95	0.02
	3.500	0.08	1.35	0.79	7.27	58.23	0.02
	4.500	0.04	1.39	0.74	6.30	64.53	0.02
	5.500	0.10	1.48	0.72	5.21	69.73	0.02
	7.000	0.02	1.53	0.67	4.23	78.19	0.01
9.000	0.03	1.58	0.65	2.78	83.75	0.01	
11.000	0.03	1.65	0.63	2.34	88.43	0.01	
Diclofenac sodium 40% GMS50% matrix pellets #18/20	0.125	4.38	1.10	0.00	58.62	14.65	0.00
	0.375	-0.28	1.03	0.91	38.14	24.19	0.07
	0.625	0.35	1.11	0.97	31.07	31.96	0.04
	0.875	0.21	1.17	0.90	21.41	37.31	0.03
	1.250	0.25	1.29	0.86	15.81	45.22	0.03
	1.750	0.21	1.40	0.78	12.45	51.44	0.02
	2.500	0.04	1.43	0.72	7.89	59.33	0.02
	3.500	0.09	1.53	0.70	7.20	66.52	0.02
	4.500	0.06	1.59	0.66	6.83	73.35	0.02
	5.500	0.06	1.65	0.63	4.42	77.77	0.01
	7.000	0.03	1.70	0.61	4.68	87.13	0.01
9.000	0.03	1.75	0.59	2.55	92.23	0.01	
11.000	0.02	1.79	0.57	1.94	96.11	0.01	

Table 6C Value for rate, amount released and the corresponding reciprocal for the release of diclofenac sodium matrix pellets from series of Lubritab®.

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Diclofenac sodium 40% Lubritab 40% matrix pellets #14/18	0.125	3.94	0.99	0.00	53.50	13.37	0.00
	0.375	-0.12	0.96	1.01	43.73	24.31	0.07
	0.625	0.32	1.04	1.05	34.72	32.99	0.04
	0.875	0.28	1.11	0.97	27.85	39.95	0.03
	1.250	0.30	1.26	0.90	21.78	50.84	0.03
	1.750	0.20	1.36	0.80	16.16	58.87	0.02
	2.500	0.08	1.44	0.74	13.78	72.65	0.02
	3.500	0.13	1.57	0.69	8.26	80.90	0.01
	4.500	0.08	1.65	0.64	5.89	86.79	0.01
	5.500	0.07	1.72	0.61	4.66	91.45	0.01
	7.000	0.03	1.78	0.58	1.65	94.74	0.01
9.000	0.05	1.88	0.56	1.02	96.78	0.01	
11.000	0.07	2.02	0.53	1.46	99.71	0.01	
Diclofenac sodium 40% Lubritab 40% matrix pellets #18/20	0.125	4.71	1.18	0.00	69.07	17.27	0.00
	0.375	0.17	1.22	0.85	47.73	29.20	0.06
	0.625	0.26	1.29	0.82	38.21	38.75	0.03
	0.875	0.31	1.36	0.78	27.40	45.60	0.03
	1.250	0.24	1.48	0.73	20.74	55.97	0.02
	1.750	0.25	1.61	0.67	15.11	63.52	0.02
	2.500	0.03	1.64	0.62	11.55	75.07	0.02
	3.500	0.09	1.73	0.61	7.93	83.00	0.01
	4.500	0.11	1.84	0.58	5.96	88.97	0.01
	5.500	0.04	1.88	0.54	4.04	93.00	0.01
	7.000	0.02	1.91	0.53	2.01	97.01	0.01
9.000	0.06	2.02	0.52	1.12	99.25	0.01	
11.000	0.07	2.16	0.49	1.27	101.79	0.01	
Diclofenac sodium 40% Lubritab 50% matrix pellets #14/18	0.125	3.71	0.93	0.00	40.86	10.21	0.00
	0.375	-0.033	0.84	1.08	30.77	17.91	0.10
	0.625	0.25	0.91	1.18	32.33	25.99	0.06
	0.875	0.23	0.96	1.10	21.70	31.41	0.04
	1.250	0.24	1.08	1.04	17.86	40.34	0.03
	1.750	0.19	1.18	0.92	14.08	47.38	0.02
	2.500	0.019	1.36	0.85	11.55	58.93	0.02
	3.500	0.13	1.49	0.73	7.12	66.05	0.02
	4.500	0.06	1.55	0.67	5.32	71.37	0.02
	5.500	0.05	1.59	0.65	4.79	76.16	0.01
	7.000	0.06	1.72	0.63	3.79	83.74	0.01
9.000	0.02	1.76	0.58	2.40	88.53	0.01	
11.000	0.04	1.85	0.57	1.89	92.31	0.01	
Diclofenac sodium 40% Lubritab 50% matrix pellets #18/20	0.125	4.43	1.11	0.00	55.57	13.89	0.00
	0.375	-0.23	1.05	0.90	37.01	23.15	0.07
	0.625	0.21	1.10	0.95	32.56	31.29	0.04
	0.875	0.30	1.18	0.91	21.00	36.54	0.03
	1.250	0.25	1.30	0.85	17.50	45.29	0.03
	1.750	0.12	1.36	0.77	12.66	51.62	0.02
	2.500	0.22	1.58	0.73	10.89	62.51	0.02
	3.500	0.08	1.66	0.63	6.16	68.67	0.02
	4.500	0.06	1.72	0.60	5.23	73.90	0.01
	5.500	0.08	1.80	0.58	6.15	80.06	0.01
	7.000	0.04	1.87	0.56	2.76	85.57	0.01
9.000	0.02	1.91	0.53	2.58	90.73	0.01	
11.000	0.05	2.02	0.52	2.02	94.76	0.01	

Table 7C Value for rate, amount released and the corresponding reciprocal for the release of diclofenac sodium matrix pellets from series of Compritol® ATO 888.

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Diclofenac sodium 40% Compritol 40% matrix pellets #14/18	0.125	2.73	0.68	0.00	10.50	2.63	0.00
	0.375	-0.34	0.60	1.47	10.07	5.14	0.38
	0.625	-0.09	0.57	1.68	10.60	7.79	0.19
	0.875	-0.02	0.57	1.74	10.23	10.35	0.13
	1.250	0.04	0.59	1.76	10.44	15.57	0.10
	1.750	0.08	0.63	1.70	10.73	20.93	0.06
	2.500	0.11	0.74	1.59	10.16	31.09	0.05
	3.500	0.08	0.82	1.35	9.22	40.31	0.03
	4.500	0.12	0.94	1.22	8.85	49.16	0.02
	5.500	0.12	1.06	1.06	6.20	55.35	0.02
	7.000	0.15	1.36	0.94	4.15	63.65	0.02
9.000	0.11	1.59	0.73	3.23	70.12	0.02	
11.000	0.08	1.76	0.63	2.97	76.06	0.01	
Diclofenac sodium 40% Compritol 40% matrix pellets #18/20	0.125	2.94	0.73	0.00	11.07	2.77	0.00
	0.375	-0.43	0.63	1.36	10.99	5.51	0.36
	0.625	-0.09	0.60	1.60	11.76	8.45	0.18
	0.875	0.00	0.61	1.65	11.42	11.31	0.12
	1.250	0.05	0.63	1.65	10.98	16.80	0.09
	1.750	0.11	0.68	1.59	10.56	22.08	0.06
	2.500	0.12	0.80	1.47	10.17	32.25	0.05
	3.500	0.09	0.89	1.25	10.51	42.76	0.03
	4.500	0.13	1.02	1.12	7.88	50.65	0.02
	5.500	0.16	1.17	0.98	6.27	56.91	0.02
	7.000	0.16	1.49	0.85	5.04	66.99	0.02
9.000	0.12	1.72	0.67	3.19	73.37	0.01	
11.000	0.05	1.81	0.58	3.34	80.04	0.01	
Diclofenac sodium 40% Compritol 50% matrix pellets #14/18	0.125	2.89	0.72	0.00	12.61	3.15	0.00
	0.375	-0.18	0.68	1.38	12.76	6.34	0.32
	0.625	0.05	0.69	1.47	11.31	9.17	0.16
	0.875	0.05	0.71	1.44	8.93	11.40	0.11
	1.250	0.18	0.79	1.42	8.62	15.71	0.09
	1.750	0.18	0.88	1.26	8.08	19.75	0.06
	2.500	0.10	0.99	1.13	6.99	26.74	0.05
	3.500	0.16	1.14	1.01	7.59	34.33	0.04
	4.500	0.14	1.28	0.87	4.98	39.32	0.03
	5.500	0.11	1.40	0.78	5.39	44.71	0.03
	7.000	0.03	1.46	0.72	3.98	52.66	0.02
9.000	0.08	1.61	0.69	2.97	58.59	0.02	
11.000	0.07	1.76	0.62	2.53	63.65	0.02	
Diclofenac sodium 40% Compritol 50% matrix pellets #18/20	0.125	3.22	0.80	0.00	26.63	6.66	0.00
	0.375	-0.06	0.79	1.24	19.03	11.42	0.15
	0.625	0.10	0.82	1.27	14.64	15.07	0.09
	0.875	0.18	0.86	1.22	13.73	18.51	0.07
	1.250	-0.52	0.60	1.16	11.27	24.14	0.05
	1.750	0.87	1.03	1.67	11.27	29.78	0.04
	2.500	0.13	1.17	0.97	9.20	38.98	0.03
	3.500	0.16	1.33	0.86	7.66	46.64	0.03
	4.500	0.14	1.47	0.75	5.06	51.71	0.02
	5.500	0.09	1.56	0.68	6.39	58.09	0.02
	7.000	0.03	1.61	0.64	3.40	64.90	0.02
9.000	0.08	1.76	0.62	2.91	70.72	0.01	
11.000	0.05	1.86	0.57	2.09	74.91	0.01	

Table 8C Value for rate, amount released and the corresponding reciprocal for the release of propranolol hydrochloride matrix pellets from various concentration of propranolol hydrochloride and glyceryl monostearate (GMS) at 60%.

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Propranolol hydrochloride 20% GMS 60% matrix pellets #14/18	0.125	183.88	45.97	0.00	151.98	37.99	0.00
	0.375	76.56	65.97	0.02	52.33	51.08	0.03
	0.625	56.22	79.17	0.02	49.42	63.43	0.02
	0.875	37.48	88.54	0.01	27.78	70.38	0.02
	1.250	22.41	99.74	0.01	17.96	79.35	0.01
	1.750	6.01	102.75	0.01	11.35	85.03	0.01
	2.500	2.84	105.59	0.01	6.09	91.12	0.01
	3.500	0.73	106.31	0.01	3.82	94.94	0.01
	4.500	-0.05	106.27	0.01	2.78	97.72	0.01
	5.500	0.90	107.17	0.01	-0.05	97.67	0.01
7.000	0.45	108.07	0.01	-	-	-	
Propranolol hydrochloride 20% GMS 60% matrix pellets #18/20	0.125	223.61	55.90	0.00	189.05	47.26	0.00
	0.375	91.40	78.75	0.02	68.55	64.40	0.02
	0.625	49.09	91.03	0.01	37.12	73.68	0.02
	0.875	24.86	97.24	0.01	26.79	80.38	0.01
	1.250	8.29	101.38	0.01	13.53	87.14	0.01
	1.750	2.56	102.67	0.01	6.16	90.22	0.01
	2.500	0.90	103.56	0.01	4.53	94.75	0.01
	3.500	0.51	104.07	0.01	1.71	96.47	0.01
	4.500	0.69	104.76	0.01	1.19	97.65	0.01
	5.500	-0.28	104.49	0.01	0.65	98.30	0.01
7.000	0.53	105.55	0.01	-	-	-	
Propranolol hydrochloride 30% GMS 60% matrix pellets #14/18	0.125	224.33	56.08	0.00	197.95	49.49	0.00
	0.375	89.09	78.36	0.02	61.72	64.92	0.02
	0.625	56.03	92.36	0.01	42.38	75.52	0.02
	0.875	36.00	101.36	0.01	25.68	81.94	0.01
	1.250	10.96	106.84	0.01	13.92	88.89	0.01
	1.750	5.64	109.66	0.01	13.34	95.56	0.01
	2.500	0.39	110.06	0.01	5.42	100.99	0.01
	3.500	1.03	111.09	0.01	2.85	103.84	0.01
	4.500	1.67	112.76	0.01	3.47	107.31	0.01
	5.500	0.00	112.76	0.01	0.04	107.35	0.01
7.000	0.90	114.55	0.01	0.37	108.09	0.01	
Propranolol hydrochloride 30% GMS 60% matrix pellets #18/20	0.125	275.88	68.97	0.00	233.19	58.30	0.00
	0.375	92.76	92.16	0.01	72.11	76.33	0.02
	0.625	45.81	103.61	0.01	41.93	86.81	0.01
	0.875	22.57	109.25	0.01	16.65	90.97	0.01
	1.250	2.88	110.69	0.01	11.25	96.60	0.01
	1.750	0.56	110.98	0.01	8.98	101.09	0.01
	2.500	1.05	112.02	0.01	3.57	104.66	0.01
	3.500	0.92	112.94	0.01	3.13	107.79	0.01
	4.500	0.65	113.59	0.01	1.24	109.03	0.01
	5.500	-0.38	113.21	0.01	0.53	109.56	0.01
7.000	0.44	114.10	0.01	0.56	110.68	0.01	

Table 9C Value for rate, amount released and the corresponding reciprocal for the release of propranolol hydrochloride matrix pellets from various concentration of propranolol hydrochloride and Lubritab® at 60%.

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Propranolol hydrochloride 20% Lubritab 60% matrix pellets #14/18	0.125	296.29	74.07	0.00	247.64	61.91	0.00
	0.375	80.61	94.23	0.01	69.18	79.21	0.02
	0.625	37.40	103.57	0.01	31.35	87.04	0.01
	0.875	9.93	106.06	0.01	16.66	91.21	0.01
	1.250	1.52	106.82	0.01	10.54	96.48	0.01
	1.750	1.12	107.38	0.01	3.85	98.40	0.01
	2.500	1.52	108.90	0.01	2.11	100.52	0.01
	3.500	0.95	109.84	0.01	0.70	101.22	0.01
	4.500	1.33	111.17	0.01	1.59	102.80	0.01
	5.500	1.14	112.31	0.01	0.70	103.50	0.01
7.000	0.57	113.45	0.01	0.53	104.56	0.01	
Propranolol hydrochloride 20% Lubritab 60% matrix pellets #18/20	0.125	318.71	79.68	0.00	256.21	64.05	0.00
	0.375	72.36	97.77	0.01	73.56	82.44	0.02
	0.625	23.64	103.68	0.01	29.35	89.78	0.01
	0.875	6.07	105.19	0.01	11.06	92.55	0.01
	1.250	2.27	106.33	0.01	9.14	97.12	0.01
	1.750	1.88	107.27	0.01	3.15	98.69	0.01
	2.500	1.13	108.40	0.01	1.58	100.27	0.01
	3.500	1.13	109.53	0.01	-0.02	100.25	0.01
	4.500	1.13	110.66	0.01	2.82	103.08	0.01
	5.500	1.13	111.80	0.01	-0.91	102.17	0.01
7.000	0.57	112.93	0.01	0.52	103.21	0.01	
Propranolol hydrochloride 30% Lubritab 60% matrix pellets #14/18	0.125	243.92	60.98	0.00	209.38	52.35	0.00
	0.375	100.65	86.14	0.02	68.04	69.36	0.02
	0.625	54.83	99.85	0.01	35.44	78.21	0.01
	0.875	24.47	105.97	0.01	21.99	83.71	0.01
	1.250	2.29	107.11	0.01	14.67	91.05	0.01
	1.750	1.78	108.00	0.01	7.43	94.76	0.01
	2.500	1.02	109.02	0.01	4.10	98.86	0.01
	3.500	1.14	110.16	0.01	1.76	100.62	0.01
	4.500	1.14	111.30	0.01	0.93	101.55	0.01
	5.500	1.14	112.45	0.01	1.17	102.72	0.01
7.000	0.57	113.59	0.01	0.47	103.65	0.01	
Propranolol hydrochloride 30% Lubritab 60% matrix pellets #18/20	0.125	269.18	67.29	0.00	219.86	54.96	0.00
	0.375	95.26	91.11	0.01	66.25	71.53	0.02
	0.625	44.22	102.16	0.01	36.49	80.65	0.01
	0.875	9.62	104.57	0.01	18.76	85.34	0.01
	1.250	2.52	105.83	0.01	14.46	92.57	0.01
	1.750	2.78	107.22	0.01	5.56	95.35	0.01
	2.500	1.13	108.35	0.01	3.63	98.98	0.01
	3.500	1.13	109.49	0.01	1.04	100.02	0.01
	4.500	1.13	110.62	0.01	1.04	101.07	0.01
	5.500	1.13	111.75	0.01	1.04	102.11	0.01
7.000	0.57	112.89	0.01	0.46	103.03	0.01	

Table 10C Value for rate, amount released and the corresponding reciprocal for the release of propranolol hydrochloride matrix pellets from various concentration of propranolol hydrochloride and Compritol® ATO 888 at 60%.

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Propranolol hydrochloride 20% Compritol 60% matrix pellets #14/18	0.125	40.45	10.11	0.00	35.62	8.91	0.00
	0.375	34.55	18.75	0.01	54.68	22.58	0.11
	0.625	29.44	26.11	0.05	62.21	38.13	0.04
	0.875	24.73	32.29	0.04	48.39	50.23	0.03
	1.250	27.96	46.27	0.03	37.07	68.76	0.02
	1.750	24.89	58.72	0.02	24.36	80.94	0.01
	2.500	25.77	84.48	0.02	9.45	90.39	0.01
	3.500	12.71	97.19	0.01	4.90	95.29	0.01
	4.500	4.91	102.10	0.01	0.30	95.59	0.01
	5.500	2.06	104.16	0.01	2.44	98.03	0.01
7.000	0.45	105.06	0.01	-1.45	95.12	0.01	
9.000	0.26	105.58	0.01	-	-	-	
Propranolol hydrochloride 20% Compritol 60% matrix pellets #18/20	0.125	63.26	15.82	0.00	68.19	17.05	0.00
	0.375	47.95	27.80	0.06	58.04	31.56	0.06
	0.625	38.96	37.54	0.04	56.54	45.69	0.03
	0.875	31.42	45.40	0.03	65.46	62.06	0.02
	1.250	26.67	58.73	0.02	26.36	75.24	0.02
	1.750	25.85	71.65	0.02	18.42	84.45	0.01
	2.500	17.78	89.44	0.01	9.12	93.57	0.01
	3.500	11.01	100.45	0.01	5.64	99.21	0.01
	4.500	3.97	104.42	0.01	-0.38	98.84	0.01
	5.500	1.49	105.92	0.01	2.11	100.95	0.01
7.000	0.75	107.41	0.01	-1.17	98.60	0.01	
9.000	0.56	108.53	0.01	-	-	-	
Propranolol hydrochloride 30% Compritol 60% matrix pellets #14/18	0.125	35.06	8.77	0.00	26.51	6.63	0.00
	0.375	29.46	16.13	0.11	40.68	16.80	0.15
	0.625	24.99	22.38	0.06	45.74	28.23	0.06
	0.875	21.34	27.71	0.05	43.97	39.23	0.04
	1.250	20.24	37.84	0.04	38.00	58.23	0.03
	1.750	13.45	44.56	0.03	21.75	69.10	0.02
	2.500	15.95	60.50	0.02	12.42	81.52	0.01
	3.500	11.86	72.37	0.02	7.07	88.59	0.01
	4.500	9.28	51.65	0.01	4.52	93.11	0.01
	5.500	8.86	90.51	0.01	1.94	95.05	0.01
	7.000	4.73	99.98	0.01	2.52	100.09	0.01
9.000	1.62	103.23	0.01	-0.37	99.35	0.01	
11.000	1.18	105.60	0.01	-	-	-	
Propranolol hydrochloride 30% Compritol 60% matrix pellets #18/20	0.125	49.70	12.43	0.08	46.75	11.69	0.00
	0.375	35.96	21.42	0.05	50.42	24.29	0.09
	0.625	30.64	29.08	0.03	52.27	37.36	0.04
	0.875	23.68	34.99	0.03	39.36	47.20	0.03
	1.250	19.07	44.53	0.02	33.89	64.15	0.02
	1.750	19.78	54.42	0.02	22.35	75.32	0.02
	2.500	15.66	70.08	0.01	10.93	86.25	0.01
	3.500	12.74	82.82	0.01	6.52	92.78	0.01
	4.500	8.23	91.06	0.01	3.25	96.03	0.01
	5.500	4.71	95.76	0.01	3.28	99.30	0.01
	7.000	2.57	100.90	0.01	1.95	103.20	0.01
9.000	2.01	104.92	0.01	-1.73	99.75	0.01	
11.000	1.32	107.55	0.01	-	-	-	

Table 11C Value for rate, amount released and the corresponding reciprocal for the release of diclofenac sodium matrix pellets from various concentration of diclofenac sodium and glyceryl monostearate (GMS) at 60%.

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Diclofenac sodium 20% GMS 60% matrix pellets #14/18	0.125	8.86	2.22	0.00	81.66	20.41	0.00
	0.375	-0.69	2.04	0.45	43.81	31.37	0.05
	0.625	0.23	2.10	0.49	33.68	38.79	0.03
	0.875	0.28	2.17	0.48	21.21	45.09	0.03
	1.250	0.16	2.25	0.46	14.70	52.44	0.02
	1.750	0.26	2.38	0.44	13.96	59.42	0.02
	2.500	0.23	2.61	0.42	8.82	68.24	0.02
	3.500	0.05	2.66	0.38	6.37	74.61	0.01
	4.500	0.12	2.79	0.38	6.21	80.82	0.01
	5.500	0.10	2.88	0.36	7.38	88.20	0.01
	7.000	0.07	3.02	0.35	1.40	91.01	0.01
9.000	0.11	3.24	0.33	2.46	95.93	0.01	
11.000	0.06	3.36	0.31	2.82	101.57	0.01	
Diclofenac sodium 20% GMS 60% matrix pellets #18/20	0.125	10.77	2.69	0.00	109.09	27.27	0.00
	0.375	-0.81	2.49	0.37	58.27	41.84	0.04
	0.625	0.02	2.49	0.40	39.46	51.70	0.02
	0.875	1.18	2.79	0.40	21.29	57.03	0.02
	1.250	-0.22	2.68	0.36	16.06	65.06	0.02
	1.750	0.17	2.77	0.37	14.01	72.06	0.02
	2.500	0.18	2.95	0.36	7.63	79.69	0.01
	3.500	0.08	3.02	0.34	7.71	87.40	0.01
	4.500	0.10	3.12	0.33	6.57	93.97	0.01
	5.500	0.07	3.19	0.32	5.96	99.93	0.01
	7.000	0.08	3.35	0.31	1.96	103.85	0.01
9.000	0.13	3.61	0.30	0.59	105.03	0.01	
11.000	0.06	3.73	0.28	0.43	105.89	0.01	
Diclofenac sodium 30% GMS 60% matrix pellets #14/18	0.125	4.26	1.07	0.00	60.89	15.22	0.00
	0.375	-0.39	0.97	0.94	35.61	24.13	0.07
	0.625	0.14	1.00	1.03	50.29	36.70	0.04
	0.875	0.20	1.05	1.00	41.49	47.07	0.03
	1.250	0.18	1.14	0.95	20.81	57.47	0.02
	1.750	0.10	1.19	0.88	14.95	64.95	0.02
	2.500	0.12	1.31	0.84	9.19	74.14	0.02
	3.500	0.10	1.41	0.76	7.80	81.94	0.01
	4.500	0.07	1.48	0.71	1.88	83.83	0.01
	5.500	0.08	1.56	0.67	4.86	88.68	0.01
	7.000	0.07	1.70	0.64	2.64	93.97	0.01
9.000	0.09	1.87	0.59	1.15	96.27	0.01	
11.000	0.03	1.92	0.53	1.24	98.74	0.01	
Diclofenac sodium 30% GMS 60% matrix pellets #18/20	0.125	5.63	1.41	0.00	86.48	21.62	0.00
	0.375	-0.12	1.38	0.71	71.68	39.54	0.05
	0.625	0.22	1.43	0.73	52.84	52.75	0.03
	0.875	0.34	1.52	0.70	30.66	60.41	0.02
	1.250	0.16	1.59	0.66	15.64	68.24	0.02
	1.750	0.13	1.66	0.63	14.71	75.59	0.01
	2.500	0.14	1.80	0.60	7.82	83.41	0.01
	3.500	0.10	1.90	0.56	6.42	89.83	0.01
	4.500	0.11	2.02	0.53	4.61	94.44	0.01
	5.500	0.08	2.09	0.50	2.70	97.15	0.01
	7.000	0.06	2.21	0.48	1.13	99.40	0.01
9.000	0.09	2.38	0.45	0.75	100.89	0.01	
11.000	0.05	2.49	0.42	0.67	102.23	0.01	

Table 12C Value for rate, amount released and the corresponding reciprocal for the release of diclofenac sodium matrix pellets from various concentration of diclofenac sodium and Lubritab® at 60%.

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Diclofenac sodium 20% Lubritab 60% matrix pellets #14/18	0.125	6.02	1.50	0.00	35.42	8.86	0.00
	0.375	-1.38	1.16	0.66	24.24	14.92	0.11
	0.625	0.24	1.22	0.86	21.81	20.37	0.07
	0.875	0.38	1.31	0.82	18.28	24.94	0.05
	1.250	0.38	1.50	0.76	14.66	32.27	0.04
	1.750	0.40	1.71	0.67	10.80	37.67	0.03
	2.500	0.36	2.06	0.59	10.36	48.03	0.03
	3.500	0.29	2.35	0.49	7.04	55.07	0.02
	4.500	0.14	2.49	0.43	5.01	60.09	0.02
	5.500	0.11	2.60	0.40	4.84	64.93	0.02
	7.000	0.12	2.85	0.38	4.82	74.57	0.02
	9.000	0.16	3.17	0.35	1.94	78.46	0.01
11.000	0.04	3.25	0.32	2.51	93.48	0.01	
Diclofenac sodium 20% Lubritab 60% matrix pellets #18/20	0.125	5.93	1.48	0.00	65.51	16.38	0.00
	0.375	-0.45	1.37	0.68	42.94	27.11	0.06
	0.625	0.48	1.49	0.73	29.10	34.39	0.04
	0.875	0.53	1.62	0.67	23.19	40.18	0.03
	1.250	0.52	1.88	0.62	17.69	49.03	0.02
	1.750	0.48	2.13	0.53	12.79	55.42	0.02
	2.500	0.48	2.60	0.47	10.11	65.53	0.02
	3.500	0.26	2.86	0.38	6.90	72.43	0.02
	4.500	0.11	2.98	0.35	3.87	76.29	0.01
	5.500	0.17	3.15	0.34	6.11	82.41	0.01
	7.000	0.11	3.37	0.32	2.59	87.58	0.01
	9.000	0.12	3.61	0.30	1.89	91.37	0.01
11.000	0.06	3.73	0.28	1.74	94.86	0.01	
Diclofenac sodium 30% Lubritab 60% matrix pellets #14/18	0.125	3.98	1.00	0.00	31.48	7.87	0.00
	0.375	-0.27	0.93	1.00	25.61	14.27	0.13
	0.625	0.32	1.01	1.08	31.32	22.10	0.07
	0.875	0.45	1.12	0.99	24.63	28.26	0.05
	1.250	0.43	1.33	0.89	21.96	39.24	0.04
	1.750	0.17	1.42	0.75	16.90	47.69	0.03
	2.500	0.22	1.64	0.70	10.49	58.17	0.02
	3.500	0.22	1.86	0.61	7.56	65.73	0.02
	4.500	0.08	1.94	0.54	6.00	71.73	0.02
	5.500	0.11	2.04	0.52	3.49	75.22	0.01
	7.000	0.08	2.20	0.49	3.82	82.87	0.01
	9.000	0.07	2.33	0.46	2.69	88.25	0.01
11.000	0.04	2.41	0.43	2.10	92.44	0.01	
Diclofenac sodium 30% Lubritab 60% matrix pellets #18/20	0.125	3.89	0.97	0.00	47.62	11.90	0.00
	0.375	-0.21	0.92	1.03	36.17	20.95	0.08
	0.625	0.48	1.04	1.09	30.31	28.53	0.05
	0.875	0.45	1.15	0.96	26.49	35.15	0.04
	1.250	0.43	1.37	0.87	18.83	44.56	0.03
	1.750	0.18	1.46	0.73	14.05	51.59	0.02
	2.500	0.28	1.74	0.69	9.98	61.57	0.02
	3.500	0.19	1.93	0.58	7.20	68.77	0.02
	4.500	0.07	1.99	0.52	4.94	73.71	0.01
	5.500	0.12	2.12	0.50	4.67	78.39	0.01
	7.000	0.06	2.24	0.47	3.41	85.21	0.01
	9.000	0.07	2.38	0.45	2.51	90.22	0.01
11.000	0.07	2.51	0.42	1.44	93.11	0.01	

Table 13C Value for rate, amount released and the corresponding reciprocal for the release of diclofenac sodium matrix pellets from various concentration of diclofenac sodium and Compritol® ATO 888 at 60%.

Formulations	Mean time	Dissolution medium					
		0.1 N HCl			Phosphate buffer pH 6.8		
		dQ/dt	Q	1/Q	dQ/dt	Q	1/Q
Diclofenac sodium 20% Compritol 60% matrix pellets #14/18	0.125	5.18	1.30	0.00	13.07	3.27	0.00
	0.375	-0.32	1.22	0.77	7.39	5.11	0.31
	0.625	-0.23	1.16	0.82	9.57	7.51	0.20
	0.875	0.28	1.23	0.86	7.53	9.39	0.13
	1.250	0.33	1.40	0.81	7.59	13.18	0.11
	1.750	0.24	1.51	0.72	9.49	17.93	0.08
	2.500	0.46	1.97	0.66	8.35	26.28	0.06
	3.500	0.58	2.55	0.51	8.12	34.40	0.04
	4.500	0.32	2.87	0.39	8.65	43.05	0.03
	5.500	0.23	3.10	0.35	6.19	49.24	0.02
	7.000	0.19	3.47	0.32	5.75	60.75	0.02
	9.000	0.05	3.57	0.29	2.66	66.07	0.02
11.000	0.09	3.74	0.28	1.75	69.57	0.02	
Diclofenac sodium 20% Compritol 60% matrix pellets #18/20	0.125	5.37	1.34	0.00	16.01	4.00	0.00
	0.375	-0.31	1.26	0.75	11.11	6.78	0.25
	0.625	0.01	1.27	0.79	12.50	9.90	0.15
	0.875	0.15	1.30	0.79	9.59	12.30	0.10
	1.250	0.35	1.48	0.77	9.38	16.99	0.08
	1.750	0.31	1.64	0.68	10.14	22.06	0.06
	2.500	0.58	2.21	0.61	9.43	31.49	0.05
	3.500	0.51	2.72	0.45	7.90	39.40	0.03
	4.500	0.24	2.96	0.37	6.73	46.13	0.03
	5.500	0.26	3.22	0.34	5.64	51.77	0.02
	7.000	0.16	3.53	0.31	4.48	60.73	0.02
	9.000	0.05	3.64	0.28	2.89	66.52	0.02
11.000	0.08	3.80	0.28	4.21	74.93	0.02	
Diclofenac sodium 30% Compritol 60% matrix pellets #14/18	0.125	3.55	0.89	0.00	12.57	3.14	0.00
	0.375	-0.27	0.82	1.13	7.59	5.04	0.32
	0.625	0.00	0.82	1.22	7.01	6.79	0.20
	0.875	-0.03	0.81	1.22	6.00	8.29	0.15
	1.250	0.14	0.88	1.23	6.44	11.51	0.12
	1.750	0.16	0.96	1.13	6.28	14.65	0.09
	2.500	0.13	1.09	1.04	6.76	21.41	0.07
	3.500	0.17	1.26	0.92	1.84	23.25	0.05
	4.500	0.19	1.46	0.79	5.31	28.56	0.04
	5.500	0.12	1.58	0.69	4.82	33.38	0.04
	7.000	0.12	1.83	0.63	4.27	41.92	0.03
	9.000	0.11	2.05	0.55	6.77	55.45	0.02
11.000	0.07	2.18	0.49	2.52	60.48	0.02	
Diclofenac sodium 30% Compritol 60% matrix pellets #18/20	0.125	3.30	0.82	0.00	14.82	3.70	0.00
	0.375	-0.30	0.75	1.21	7.27	5.52	0.27
	0.625	0.03	0.76	1.34	7.32	7.35	0.18
	0.875	0.06	0.77	1.32	6.86	9.07	0.14
	1.250	0.09	0.82	1.29	6.91	12.52	0.11
	1.750	0.20	0.92	1.22	7.34	16.19	0.08
	2.500	0.13	1.05	1.09	6.88	23.07	0.06
	3.500	0.23	1.28	0.95	3.67	26.75	0.04
	4.500	0.19	1.47	0.78	6.60	33.34	0.04
	5.500	0.12	1.58	0.68	5.11	38.45	0.03
	7.000	0.16	1.90	0.63	4.53	47.51	0.03
	9.000	0.11	2.12	0.53	6.41	60.32	0.02
11.000	0.05	2.22	0.47	3.13	66.57	0.02	

Appendix D

Physicochemical Data

Table 1D Characteristic peaks of the IR spectra of matrix pellet products produced by different type of glycerides.

Formulations	Characteristic Peaks (cm ⁻¹)
Propranolol hydrochloride	773, 790, 1108, 1243, 1269, 1151
Diclofenac sodium	749, 771, 1287, 1308, 1500, 1576
MCC	3300-3400
Lactose	3300-3400
GMS	1183, 1470, 1737, 2852, 2920
Lubritab [®]	1176, 1469, 1741, 2852, 2920
Compritrol [®] ATO 888	1177, 1469, 1738, 2851, 2919
PL40% + GMS40%	773, 798, 1108, 1242, 1270, 1467, 1631, 1739, 2851, 2919, 3343
PL40% + Lubritab [®] 40%	773, 798, 1108, 1242, 1269, 1467, 1631, 1741, 2851, 2920, 3349
PL40% + Compritrol [®] ATO 888	773, 798, 1108, 1243, 1270, 1467, 1630, 1737, 2852, 2920, 3343
DS40% + GMS40%	749, 771, 1288, 1309, 1470, 1507, 1576, 1738, 2851, 2919
DS40% + Lubritab [®] 40%	748, 768, 1285, 1310, 1460, 1507, 1578, 1741, 2852, 2920
DS40% +Compritrol [®] ATO 888	749, 768, 1285, 1310, 1469, 1506, 1570, 1736, 2852, 2919

Table 2D Characteristic peaks of the X-ray diffraction patterns of matrix pellets produced by different types of glycerides.

Formulations	Characteristic Peaks (degree)
Propranolol hydrochloride	9.670, 12.430, 16.630, 19.470, 21.150, 25.030
Diclofenac sodium	6.630, 8.550, 15.230, 17.150, 19.910, 23.510, 27.910
MCC	14.830, 22.430
Lactose	12.470, 19.950, 21.190
GMS	19.470, 22.870, 23.430
Lubritab [®]	19.270, 23.070, 23.990
Compritrol [®] ATO 888	21.030, 22.950
PL40% + GMS40%	9.750, 12.470, 16.710, 19.550, 21.270, 22.910, 23.630, 25.030
PL40% + Lubritab [®] 40%	9.830, 12.830, 16.830, 19.550, 21.310, 22.390, 24.270, 25.190
PL40% + Compritrol [®] ATO 888	9.750, 12.430, 16.630, 19.510, 19.790, 21.230, 22.670, 25.030
DS40% + GMS40%	6.710, 15.270, 17.150, 19.550, 22.910, 23.630, 28.070
DS40% + Lubritab [®] 40%	6.670, 15.310, 17.110, 19.430, 23.190, 23.630, 28.430
DS40% +Compritrol [®] ATO 888	5.790, 15.270, 17.870, 19.710, 23.110, 23.510, 28.310

Table 3D The endotherm peaks of propranolol hydrochloride, diclofenac sodium, glycerides, and matrix pellet produced by different types of glycerides.

Formulations	Endotherm Peaks of DSC (degree Celsius)
Propranolol HCl	164.3
Diclofenac sodium	288.7
Lactose	149.4 and 217.4
GMS	60.8
Lubritab®	64.1
Compritol® ATO 888	71.5
PL40% + GMS40%	62.4 and 157.6
PL40% + Lubritab®40%	65.6 and 164.7
PL40% + Compritol® ATO 888	74.6 and 164.0
DS40% + GMS40%	61.5, 104.9, and 268.5
DS40% + Lubritab®40%	66.8, 109.4, and 269.4
DS40% + Compritol® ATO 888	73.0, 107.3, and 262.2

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Appendix E

Table 1E The value of coefficient of determination (r^2) between percent drug release versus time (Zero), percent drug release versus square root of time (Higuchi), and log percent drug remained versus time (First) of matrix pellet formulation in 0.1 N HCl.

Formulations	0.1 N HCl					
	Zero	k_1	Higuchi	k_2	First	k_3
PL40%Compritol40% #14/18	0.6734	8.2790	0.8698	34.6787	0.8789	-0.5029
PL40%Compritol50%	0.8074	8.8697	0.9489	35.4396	0.9718	-0.2235
PL20%Compritol60%	0.7777	11.1866	0.9220	40.8989	0.9159	-0.3585
PL30%Compritol60%	0.8705	9.0151	0.9753	35.1701	0.7226	-0.3386
PL40%Compritol40% #18/20	0.6531	7.9392	0.8634	33.6431	0.9401	-0.4650
PL40%Compritol50%	0.7867	8.6178	0.9463	34.8338	0.9639	-0.2650
PL20%Compritol60%	0.7383	10.40858	0.9179	38.9690	0.9826	-0.3129
PL30%Compritol60%	0.8143	0.6993	0.9576	34.7695	0.9835	-0.2169


 ศูนย์วิทยทรัพยากร
 จุฬาลงกรณ์มหาวิทยาลัย

Table 2E The value of coefficient of determination (r^2) between percent drug release versus time (Zero), percent drug release versus square root of time (Higuchi), and log percent drug remained versus time (First) of matrix pellet formulation in phosphate buffer pH 6.8.

Formulations	Phosphate buffer pH 6.8					
	Zero	k_1	Higuchi	k_2	First	k_3
DS40% GMS40%#14/18	0.6992	5.6816	0.9003	23.7616	0.8685	-0.0585
DS40% GMS50%	0.8755	6.7644	0.9898	26.5095	0.9923	-0.0742
DS20% GMS60%	0.7865	7.7865	0.9543	28.5182	0.9874	-0.1280
DS30% GMS60%	0.7186	7.1101	0.9108	29.5038	0.9872	-0.1447
DS40% Lubritab40%	0.8360	7.1993	0.9723	28.6168	0.9902	-0.0899
DS40% Lubritab50%	0.7558	7.5719	0.9325	30.9987	0.9587	-0.1795
DS20% Lubritab60%	0.8220	6.6168	0.9884	25.8171	0.9851	-0.0637
DS30% Lubritab60%	0.8362	7.3984	0.9679	29.3373	0.9894	-0.0906
DS40% Compritol40%	0.9480	6.7661	0.9755	25.2966	0.9956	-0.0534
DS40% Compritol50%	0.9540	5.4254	0.9872	20.3403	0.9924	-0.0372
DS20% Compritol60%	0.9919	4.9962	0.9561	18.0798	0.9880	-0.0325
DS30% Compritol60%	0.9604	6.2819	0.9702	23.2712	0.9917	-0.0460
DS40% GMS40%#18/20	0.6136	5.4951	0.8404	23.7015	0.8429	-0.0697
DS40% GMS50%	0.8393	7.1051	0.9777	28.2639	0.9922	-0.1075
DS20% GMS60%	0.6967	6.9836	0.9025	29.2955	0.7706	-0.3762
DS30% GMS60%	0.6260	6.5673	0.8512	28.2254	0.9883	-0.2542
DS40% Lubritab40%	0.7390	7.3670	0.9265	30.4038	0.9924	-0.1966
DS40% Lubritab50%	0.8166	7.0351	0.9673	28.2209	0.9909	-0.993
DS20% Lubritab60%	0.7847	6.8318	0.9530	27.7491	0.9856	-0.1007
DS30% Lubritab60%	0.8125	7.0753	0.9637	28.3997	0.9873	-0.0938
DS40% Compritol40%	0.9515	7.0709	0.9775	26.4149	0.9986	-0.0591
DS40% Compritol50%	0.9117	6.1693	0.9914	23.7106	0.9839	-0.0503
DS20% Compritol60%	0.9920	5.5392	0.9635	20.1209	0.9920	-0.0383
DS30% Compritol60%	0.9556	6.3377	0.9848	23.7131	0.9972	-0.0490
PL40%Compritol40% #14/18	0.6759	11.9629	0.8644	40.7204	0.9217	-0.2422
PL40%Compritol50%	0.7335	10.2491	0.9002	38.1240	0.9745	-0.2313
PL20%Compritol60%	0.6767	11.7169	0.8686	39.9557	0.8371	-0.2148
PL30%Compritol60%	0.7301	939496	0.9039	37.1718	0.9933	-0.2290
PL40%Compritol40% #18/20	0.6180	10.9549	0.8337	38.2980	0.8433	-0.2266
PL40%Compritol50%	0.7338	10.1865	0.9048	37.9812	0.9870	-0.2844
PL20%Compritol60%	0.6468	11.1525	0.8597	38.7010	0.9592	-0.4384
PL30%Compritol60%	0.6907	9.4816	0.8877	36.0946	0.9747	-0.3262

Table 3E The value of coefficient of determination (r^2) between percent drug release versus time (Zero), percent drug release versus square root of time (Higuchi), and log percent drug remained versus time (First) of curing matrix pellet formulation in 0.1 N HCl and phosphate buffer pH 6.8.

Formulations	0.1 N HCl					
	Zero	k_1	Higuchi	k_2	First	k_3
PL40% Lubritab 40%						
55 C 30 minute	0.4035	16.6416	0.6995	47.2159	0.9922	-1.6999
55 C 60 minute	0.4762	17.9706	0.7637	49.0403	0.9920	-1.3053
55 C 90 minute	0.4905	14.7689	0.7566	44.5704	0.9870	-1.1890
60 C 30 minute	0.5283	14.6294	0.7957	43.6249	0.9931	-0.9705
60 C 60 minute	0.6208	14.4096	0.8425	44.8506	0.9418	-0.9548
60 C 90 minute	0.6560	15.0566	0.8641	46.1669	0.9533	-0.8152
65 C 7 minute	0.6183	16.7809	0.8590	48.0621	0.7843	-1.6460
65 C 7+ Cab-O Sil 1% 5 minute	0.5790	8.4879	0.8137	33.7860	0.9947	-0.4814
65 C 7 + Talcum 1% 5 minute	0.7358	10.0339	0.9218	37.7106	0.9751	-0.3671
Formulations	Phosphate buffer pH 6.8					
	A	k_1	B	k_2	C	k_3
PL40% Lubritab 40%						
55 C 30 minute	0.3781	7.0168	0.6389	27.4552	0.8244	-0.2515
55 C 60 minute	0.4479	7.6242	0.7100	28.8907	0.7494	-0.1639
55 C 90 minute	0.4512	7.7286	0.7088	29.1561	0.9343	-0.2859
60 C 30 minute	0.5057	8.1423	0.7608	30.0578	0.9601	-0.2451
60 C 60 minute	0.6887	14.1978	0.8871	43.0538	0.9876	-0.3984
60 C 90 minute	0.6988	14.3645	0.8953	43.4416	0.9559	-0.5529
65 C 7 minute	0.6496	8.9728	0.8655	34.7764	0.9976	-0.3551
65 C 7+ Cab-O Sil 1% 5minute	0.6490	8.4536	0.8647	32.7643	0.9509	-0.1906
65 C 7 + Talcum 1% 5 minute	0.7124	10.0709	0.9150	37.5469	0.9789	-0.9096

Table 4E Comparison of linearity between plots of rate of release against reciprocal amount ($1/Q$) and amount (Q) of drug released from matrix pellet in 0.1 N HCl and phosphate buffer pH 6.8.

Formulations	Coefficient of determination of dQ/dt			
	0.1 N HCl		Phosphate buffer pH 6.8	
	versus Q	versus $1/Q$	versus Q	versus $1/Q$
DS40% GMS40%#14/18	-	-	0.9603	0.1342
DS40% GMS50%	-	-	0.7949	0.0640
DS20% GMS60%	-	-	0.8122	0.0126
DS30% GMS60%	-	-	0.9106	0.1467
DS40% Lubritab40%	-	-	0.9591	0.2342
DS40% Lubritab50%	-	-	0.9279	0.2323
DS20% Lubritab60%	-	-	0.8803	0.1668
DS30% Lubritab60%	-	-	0.9527	0.2905
DS40% Compritol40%	-	-	0.8843	0.1835
DS40% Compritol50%	-	-	0.9213	0.3956
DS20% Compritol60%	-	-	0.7089	0.0274
DS30% Compritol60%	-	-	0.4178	0.0263
DS40% GMS40%#18/20	-	-	0.9629	0.0687
DS40% GMS50%	-	-	0.8391	0.0903
DS20% GMS60%	-	-	0.8419	0.0014
DS30% GMS60%	-	-	0.9441	0.1453
DS40% Lubritab40%	-	-	0.9239	0.1216
DS40% Lubritab50%	-	-	0.8777	0.1185
DS20% Lubritab60%	-	-	0.8694	0.0749
DS30% Lubritab60%	-	-	0.9331	0.2030
DS40% Compritol40%	-	-	0.9249	0.2342
DS40% Compritol50%	-	-	0.8559	0.1665
DS20% Compritol60%	-	-	0.8751	0.1597
DS30% Compritol60%	-	-	0.4286	0.0011
PL40%Compritol40% #14/18	0.9366	0.3949	0.7573	0.3539
PL40%Compritol50%	0.9841	0.3017	0.7678	0.2666
PL20%Compritol60%	0.9476	0.2370	0.8090	0.3875
PL30%Compritol60%	0.9409	0.2787	0.8115	0.3521
PL40%Compritol40% #18/20	0.9690	0.2885	0.8707	0.3981
PL40%Compritol50%	0.9366	0.1612	0.8202	0.2941
PL20%Compritol60%	0.9740	0.1801	0.9131	0.2063
PL30%Compritol60%	0.9240	0.1869	0.9519	0.3589

Table 5E The value of kinetic constant (k), release exponent (n), and coefficient of determination (r^2) following linear regression of dissolution data for values of M_t/M_∞ in 0.1 N HCl and phosphate buffer pH 6.8

Formulations	0.1 N HCl			Phosphate buffer pH 6.8		
	n	r^2	k	n	r^2	k
DS40% GMS40%#14/18	-	-	-	0.4215	0.9174	0.3481
DS40% GMS50%	-	-	-	0.5051	0.9884	0.2790
DS20% GMS60%	-	-	-	0.3940	0.9744	0.4196
DS30% GMS60%	-	-	-	0.4601	0.9165	0.3901
DS40% Lubritab40%	-	-	-	0.5498	0.9636	0.2830
DS40% Lubritab50%	-	-	-	0.4999	0.9423	0.3608
DS20% Lubritab60%	-	-	-	0.5710	0.9829	0.2326
DS30% Lubritab60%	-	-	-	0.6185	0.9521	0.2502
DS40% Compritol40%	-	-	-	0.8961	0.9892	0.1026
DS40% Compritol50%	-	-	-	0.7692	0.9920	0.1088
DS20% Compritol60%	-	-	-	0.7710	0.9974	0.0861
DS30% Compritol60%	-	-	-	0.8483	0.9944	0.0990
DS40% GMS40%#18/20	-	-	-	0.3381	0.8838	0.4496
DS40% GMS50%	-	-	-	0.4626	0.9760	0.3410
DS20% GMS60%	-	-	-	0.3322	0.9544	0.5299
DS30% GMS60%	-	-	-	0.3528	0.8801	0.5134
DS40% Lubritab40%	-	-	-	0.4386	0.9447	0.4137
DS40% Lubritab50%	-	-	-	0.4753	0.9680	0.3356
DS20% Lubritab60%	-	-	-	0.4333	0.9649	0.3719
DS30% Lubritab60%	-	-	-	0.5088	0.9586	0.3143
DS40% Compritol40%	-	-	-	0.8873	0.9894	0.1093
DS40% Compritol50%	-	-	-	0.6299	0.9908	0.1799
DS20% Compritol60%	-	-	-	0.7712	0.9973	0.0961
DS30% Compritol60%	-	-	-	0.7749	0.9948	0.1233
PL40%Compritol40% #14/18	0.5954	0.8866	0.3444	0.6576	0.8471	0.3739
PL40%Compritol50%	0.6267	0.9588	0.2944	0.7369	0.8945	0.2807
PL20%Compritol60%	0.6682	0.9512	0.3170	0.6400	0.8492	0.3782
PL30%Compritol60%	0.6509	0.9783	0.2635	0.6911	0.8807	0.3042
PL40%Compritol40% #18/20	0.4890	0.8971	0.4255	0.5312	0.8235	0.4547
PL40%Compritol50%	0.5330	0.9605	0.3633	0.6919	0.8945	0.3058
PL20%Compritol60%	0.5277	0.9404	0.4217	0.4882	0.8666	0.4832
PL30%Compritol60%	0.5621	0.9681	0.3320	0.5542	0.8858	0.3915

Table 6E The value of kinetic constant (k), release exponent (n), and coefficient of determination (r^2) following linear regression of dissolution data after curing for values of M_t/M_∞ in 0.1 N HCl and phosphate buffer pH 6.8.

Formulations	0.1 N HCl			Phosphate buffer pH 6.8		
	n	r^2	k	n	r^2	k
PL40% Lubritab 40%						
55 C 30 minute	0.1839	0.7726	0.9112	0.1665	0.8031	0.7803
55 C 60 minute	0.2517	0.7942	0.8366	0.2195	0.8220	0.6971
55 C 90 minute	0.2976	0.7573	0.7778	0.2043	0.8350	0.7288
60 C 30 minute	0.2596	0.8709	0.7881	0.2246	0.8868	0.6951
60 C 60 minute	0.4394	0.8262	0.6125	0.5058	0.8393	0.5145
60 C 90 minute	0.4801	0.8536	0.5752	0.4880	0.8732	0.5252
65 C 7 minute	0.3610	0.8688	0.7129	0.4615	0.8564	0.4741
65 C 7 + Cab-O-Sil 1% 5minute	0.4202	0.7847	0.5307	0.4614	0.8545	0.4474
65 C 7 + Talcum 1% 5 minute	0.4794	0.9447	0.4544	0.6208	0.9079	0.3442

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Vita

Miss Benchawan Chamsai was born on 16th December 1976, in Anghong, Thailand. She had graduated with Bachelor Degree in Pharmacy in 1998 from the Faculty of Pharmaceutical Sciences, Rangsit University, Phatumthani, Thailand. After graduation, she continues studies the Master's Degree Program in Pharmaceutical Sciences at Chulalongkorn University.



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย