

Document details

[Back to results](#) | [Previous](#) 2 of 12 [Next](#)CSV export ▾ [Download](#) [Print](#) [E-mail](#) [Save to PDF](#) [Add to List](#) [More...](#)[Full Text](#) [View at Publisher](#)

Archives of Pharmacol Research

Volume 39, Issue 9, 1 September 2016, Pages 1242-1256

Preparation, characterization and in vitro release study of BSA-loaded double-walled glucose-poly(lactide-co-glycolide) microspheres (Article)

Ansary, R.H.^{1,2}, Rahman, M.M.², Awang, M.B.³, Katas, H.⁵, Hadi, H.⁴, Mohamed, F.⁴, Doolaanea, A.A.⁴, Kamaruzzaman, Y.B.⁴ ¹Kulliyah of Pharmacy, International Islamic University Malaysia (IIUM), Kuantan, Malaysia²Faculty of Pharmacy, Cyberjaya University College of Medical Sciences, Cyberjaya, Malaysia³Drug Delivery and Novel Targeting Research Group, Centre for Drug Delivery Research, Faculty of Pharmacy, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia[View additional affiliations](#) ▾

Abstract

[View references \(47\)](#)

The aim of this study was to prepare a model protein, bovine serum albumin (BSA) loaded double-walled microspheres using a fast degrading glucose core, hydroxyl-terminated poly(lactide-co-glycolide) (Glu-PLGA) and a moderate-degrading carboxyl-terminated PLGA polymers to reduce the initial burst release and to eliminate the lag phase from the release profile of PLGA microspheres. The double-walled microspheres were prepared using a modified water-in-oil-in-oil-in-water (w/o/o/w) method and single-polymer microspheres were prepared using a conventional water-in-oil-in-water (w/o/w) emulsion solvent evaporation method. The particle size, morphology, encapsulation efficiency, thermal properties, in vitro drug release and structural integrity of BSA were evaluated in this study. Double-walled microspheres prepared with Glu-PLGA and PLGA polymers with a mass ratio of 1:1 were non-porous, smooth-surfaced, and spherical in shape. A significant reduction of initial burst release was achieved for the double-walled microspheres compared to single-polymer microspheres. In addition, microspheres prepared using Glu-PLGA and PLGA polymers in a mass ratio of 1:1 exhibited continuous BSA release after the small initial burst without any lag phase. It can be concluded that the double-walled microspheres made of Glu-PLGA and PLGA polymers in a mass ratio of 1:1 can be a potential delivery system for pharmaceutical proteins. © 2016, The Pharmaceutical Society of Korea.

Reaxys Database Information

[View Compounds](#)

Author keywords

[Controlled release](#) [Drug delivery](#) [Encapsulation efficiency](#) [Microspheres](#) [Poly\(lactide-co-glycolide\)](#) [Therapeutic proteins](#)Metrics [View all metrics](#) >

3



Citations in Scopus

0



Field-Weighted Citation Impact



PlumX Metrics

Usage, Captures, Mentions,
Social Media and Citations
beyond Scopus.

Cited by 3 documents

[Controlled release of lysozyme from double-walled poly\(Lactide-Co-Glycolide\) \(PLGA\) microspheres](#)Ansary, R.H., Rahman, M.M., Mohamad, N.
(2017) *Polymers*[Micro-Flow Imaging as a quantitative tool to assess size and agglomeration of PLGA microparticles](#)van Beers, M.M.C., Slooten, C., Meulenaar, J.
(2017) *European Journal of Pharmaceutics and Biopharmaceutics*[Tunable delayed controlled release profile from layered polymeric microparticles](#)Dutta, D., Fauer, C., Hickey, K.
(2017) *Journal of Materials Chemistry B*[View all 3 citing documents](#)

Inform me when this document is cited in Scopus:

[Set citation alert >](#)[Set citation feed >](#)

Author keywords

Controlled release Drug delivery Encapsulation efficiency Microspheres Poly(lactide-co-glycolide) Therapeutic proteins

Indexed keywords

EMTREE drug terms:

bovine serum albumin glucose microsphere oil polyglactin water bovine serum albumin glucose lactic acid microsphere polyglycolic acid poly(lactide-co-glycolide) polyglycolic acid copolymer

EMTREE medical terms:

Article drug release drug stability drug structure encapsulation in vitro study particle size porosity animal bovine metabolism synthesis

MeSH:

Animals Cattle Drug Liberation Glucose Lactic Acid Microspheres Particle Size Polyglycolic Acid Serum Albumin, Bovine

Chemicals and CAS Registry Numbers:

glucose, 50-99-7, 84778-64-3; polyglactin, 26780-50-7, 34346-01-5; water, 7732-18-5; lactic acid, 113-21-3, 50-21-5; polyglycolic acid, 26009-03-0, 26124-68-5, 26202-08-4;

Glucose; Lactic Acid; Polyglycolic Acid; poly(lactide-co-glycolide) copolymer; Serum Albumin, Bovine

ISSN: 02536269

CODEN: APHRD

Source Type: Journal

Original language: English

DOI: 10.1007/s12272-016-0710-3

PubMed ID: 26818028

Document Type: Article

Publisher: Pharmaceutical Society of Korea

References (47)

[View in search results format >](#)

All CSV export Print E-mail Save to PDF Create bibliography

1

Andersen, D.C., Krummen, L.

Recombinant protein expression for therapeutic applications

(2002) *Current Opinion in Biotechnology*, 13 (2), pp. 117-123. Cited 216 times.
doi: 10.1016/S0958-1669(02)00300-2

Inform me when this document is cited in Scopus:

[Set citation alert >](#)

[Set citation feed >](#)

Related documents

Preparation, characterization, and in vitro release studies of insulin-loaded double-walled poly(lactide-co-glycolide) microspheres

Ansary, R.H., Rahman, M.M., Awang, M.B.
(2016) *Drug Delivery and Translational Research*

Controlled release of lysozyme from double-walled poly(Lactide-Co-Glycolide) (PLGA) microspheres

Ansary, R.H., Rahman, M.M., Mohamad, N.
(2017) *Polymers*

Modified emulsion solvent evaporation method for fabricating core-shell microspheres

Xiao, C.-D., Shen, X.-C., Tao, L.
(2013) *International Journal of Pharmaceutics*

[View all related documents based on references](#)

Find more related documents in Scopus based on:

[Authors >](#) [Keywords >](#)