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Palm Olein Emulsion : a Novel Vehicle for Topical Drug Delivery of Betamethasone 17-Valerate (Article)

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Abstract

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This study aims to investigate the use of palm olein as the oil phase for betamethasone 17-valerate (BV) emulsions. The physicochemical properties of the formulations were characterized. In vitro drug release study was performed with the Hanson Vertical Diffusion Cell System; the samples were quantified with HPLC and the results were compared with commercial products. Optimized emulsion formulations were subjected to stability studies for 3 months at temperatures of 4, 25, and 40°C; the betamethasone 17-valerate content was analyzed using HPLC. The formulations produced mean particle size of 2–4 μm, viscosities of 50–250 mPa.s, and zeta potential between –45 and –68 mV. The rheological analyses showed that the emulsions exhibited pseudoplastic and viscoelastic behavior. The in vitro release of BV from palm olein emulsion through cellulose acetate was 4.5 times higher than that of commercial products and more BV molecules deposited in rat skin. Less than 4% of the drug was degraded in the formulations during the 3-month period when they were subjected to the three different temperatures. These findings indicate that palm olein -in-water emulsion can be an alternative vehicle for topical drug delivery system with superior permeability. © 2017, American Association of Pharmaceutical Scientists.

Reaxys Database Information

View Compounds

Author keywords

betamethasone 17-valerate emulsions | in vitro drug release tests | palm olein | rheology | stability study

Indexed keywords

EMTREE drug terms: betamethasone valerate | carbomer | cellulose acetate | chlorocresol | methyl paraben | norethisterone | palm oil | polysorbate 20 | propyl paraben | propylene glycol | sorbitan laurate | triolein

EMTREE medical terms: animal experiment | animal tissue | Article | controlled study | drug degradation | drug delivery system | drug formulation | drug penetration | drug release | drug solubility | drug stability | emulsion | flow kinetics | high performance liquid chromatography | male | nonhuman | particle size | photodegradation | physicochemical model | priority journal | rat | shelf life | thermostability | viscoelasticity | viscosity | zeta potential

Chemicals and CAS Registry Numbers:

betamethasone valerate, 2152-44-5, 57654-97-4; carbomer, 9007-20-9, 9062-04-8; cellulose acetate, 9004-35-7; chlorocresol, 1321-10-4, 59-50-7; methyl paraben, 99-76-3; norethisterone, 68-22-4; palm oil, 8002-75-3; polysorbate 20, 12244-25-6, 9005-64-5; propyl paraben, 94-13-3; propylene glycol, 57-55-6; sorbitan laurate, 1338-39-2; triolein, 122-32-7

Manufacturers:

Drug manufacturer:

Apollo, China;

Sigma Aldrich

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References (44)

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1 Şenyiit, T., Tekmen, I., Sönmez, Ü., Santi, P., Özer, Ö.
Deoxycholate hydrogels of betamethasone-17-valerate intended for topical use: In vitro and in vivo evaluation
(2011) *International Journal of Pharmaceutics*, 403 (1-2), pp. 123-129. Cited 15 times.
doi: 10.1016/j.ijpharm.2010.10.036
View at Publisher

2 Reilly, W.J.
Pharmaceutical necessities
(1995) *Remington: the science and practice of pharmacy*, pp. 1081-1082. Cited 28 times.
Remington JP, Gennaro AR, (eds), 19, Lippincott Williams Wilkins, Philadelphia

3 Walker, G.
(1993) *ABPI data sheet compendium 1993–94 with the code of practice for the pharmaceutical industry*
Datapharm Publications, UK

4 Munayyer, F.J., Sequeira, J.A.
Stable cream and lotion bases for lipophilic drug compositions
(1995) *US Patent*
US5422361

5 Muniyappa, P.R., Brammer, S.C., Noureddini, H.
Improved conversion of plant oils and animal fats into biodiesel and co-product
(1996) *Bioresource Technology*, 56 (1), pp. 19-24. Cited 171 times.
www.elsevier.com/locate/biortech
doi: 10.1016/0960-8524(95)00178-6
View at Publisher

6 Mohd Nawi, M.S.
Palm olein-in-water emulsions stabilized by Span® 20/Tween® 20 surfactants as potential vehicles for drug delivery
(2008) *International Islamic University Malaysia (Master thesis)*