Current Issue
Browse Issues
Search
About this Journal
Instruction to Authors
Online Submission
Subscription
Contact Us
RSS Feed

Acta Medica Iranica
2009;47(4) : 209-216

Original Article

Salbutamol sulphate-ethylcellulose microparticles: formulation and in-vitro evaluation with emphasis on mathematical approaches

Murtaza G., *Ahmad A., Waheed Asghar A., Naeem Aamir M.

Department of Pharmacy, Faculty of Pharmacy and Alternative Medicines,The Islamia University of Bahawalpur, Bahawalpur 63100, Pakistan

Corresponding Author:

Ahmad A

Received: May 28,2008
Accept : October 12,2008
Available online: October 20,2009

Abstract:

Background and the purpose of the study: This study reports the laboratory optimization for the preparation of salbutamol sulphate-ethylcellulose microparticles by a non-solvent addition coacervation technique through adjustment of the ratio of salbutamol sulphate to ethylcellulose. The variation of drug release between the microparticles and tabletted microparticles was also investigated.

Methods: In vitro release profiles of developed microparticles and tabletted microparticles were studied using USP XXIV dissolution apparatus I and II, respectively, in 450 ml double distilled water at 50 rpm maintained at 37°C.

Results: White microparticles with no definite shape having good entrapment efficiency (96.68 to 97.83%) and production yield (97.48 ± 1.21 to 98.35 ± 1.08%) were obtained. In this investigation, initial burst effect was observed in the drug release behavior. The rate of drug release from microparticles decreased as the concentration of polyisobutylene was increased from 6% to 12% during microencapsulation. The release pattern of tabletted microparticles was affected significantly ($p < 0.05$) by the addition of hydroxy propyl methyl cellulose (HPMC) as excepient and insignificantly ($p > 0.05$) by the type of dissolution media and stirring speed. Tabletted microparticles showed good stability and reproducibility. Ethylcellulose was found to be compatible with salbutamol sulphate. The drug release from all formulations was best fit to Higuchi's equation and the mechanism of drug release was anomalous diffusion from all formulations.

Conclusion: The results of this study suggest that by using ethylcellulose it is possible to design a single-unit, sustained-release oral dosage form of salbutamol sulphate for indication of twice a day.

Keywords:

Salbutamol Sulphate ، Ethylcellulose ، Non-solvent addition Coacervation ، Dissolution

TUMS ID: 14387

Full Text HTML Full Text PDF 965 KB

top ▲