

Accepted Manuscript

Large porous particles for respiratory drug delivery. Glycine-based formulations

A.G. Ogienko, E.G. Bogdanova, N.A. Trofimov, S.A. Myz, A.A. Ogienko, B.A. Kolesov, A.S. Yunoshev, N.V. Zubikov, E.V. Boldyreva, A.Yu Manakov, V.V. Boldyrev



PII: S0928-0987(17)30235-X
DOI: doi: [10.1016/j.ejps.2017.05.007](https://doi.org/10.1016/j.ejps.2017.05.007)
Reference: PHASCI 4021

To appear in: *European Journal of Pharmaceutical Sciences*

Received date: 10 January 2017
Revised date: 17 April 2017
Accepted date: 4 May 2017

Please cite this article as: A.G. Ogienko, E.G. Bogdanova, N.A. Trofimov, S.A. Myz, A.A. Ogienko, B.A. Kolesov, A.S. Yunoshev, N.V. Zubikov, E.V. Boldyreva, A.Yu Manakov, V.V. Boldyrev , Large porous particles for respiratory drug delivery. Glycine-based formulations, *European Journal of Pharmaceutical Sciences* (2017), doi: [10.1016/j.ejps.2017.05.007](https://doi.org/10.1016/j.ejps.2017.05.007)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Large porous particles for respiratory drug delivery. Glycine-based formulations.

Ogienko A.G.^{1,2*}, Bogdanova E.G.², Trofimov N.A.³, Myz S.A.⁴, Ogienko A.A.⁵, Kolesov B.A.^{1,2}, Yunoshev A.S.^{1,6}, Zubikov N.V.³, Boldyreva E.V.^{2,4*}, Manakov A.Yu.^{1,2}, Boldyrev V.V.^{2,4}

¹Nikolaev Institute of Inorganic Chemistry SB RAS, Novosibirsk, Russia

²Novosibirsk State University, Novosibirsk, Russia

³JSC 'Nativa', Moscow, Russia

⁴Institute of Solid State Chemistry and Mechanochemistry SB RAS, Novosibirsk, Russia

⁵Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia

⁶Lavrentiev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia

* Corresponding authors:

Andrey G. Ogienko

Nikolaev Institute of Inorganic Chemistry SB RAS, Lavrentiev ave. 3, Novosibirsk 630090, Russia.

Novosibirsk State University, ul. Pirogova 2, Novosibirsk 630090, Russia

Tel: +7 (383)3165346 Fax: +7 (383) 3309489 E-mail: andreyogienko@gmail.com

Elena V. Boldyreva

Institute of Solid State Chemistry and Mechanochemistry SB RAS, ul. Kutateladze 18, Novosibirsk 630128, Russia

Novosibirsk State University, ul. Pirogova 2, Novosibirsk 630090, Russia

Tel: +7 (383) 3634272 Fax: +7 (383) 3309489 E-mail: eboldyreva@yahoo.com

Abstract

Large porous particles are becoming increasingly popular as carriers for pulmonary drug delivery with both local and systemic applications. These particles have high geometric diameters (5-30 μm) but low bulk density ($\sim 0.1 \text{ g/cm}^3$ or less) such that the aerodynamic diameter remains low (1-5 μm). In this study salbutamol and budesonide serve as model inhalable drugs with poor water solubility. A novel method is proposed for the production of dry powder inhaler formulations with enhanced aerosol performance (e.g. for salbutamol-glycine formulation the fine particle fraction ($\text{FPF}_{\leq 4.7\mu\text{m}}$) value is $67.0 \pm 1.3\%$) from substances that are poorly soluble in water. To overcome the problems related to extremely poor aqueous solubility of the APIs, not individual solvents are used for spray freeze-drying of API solutions, but organic-water mixtures, which can form clathrate hydrates at low temperatures and release APIs or their complexes as fine powders,

Download English Version:

<https://daneshyari.com/en/article/8512007>

Download Persian Version:

<https://daneshyari.com/article/8512007>

[Daneshyari.com](https://daneshyari.com)