ScienceDirect

Current Opinion in Colloid & Interface Science

Volume 51, February 2021, 101413

Exogenous pulmonary surfactant: A review focused on adjunctive therapy for severe acute respiratory syndrome coronavirus 2 including SP-A and SP-D as added clinical marker

Amit Ghati [1], Paulami Dam [2], Didar Tasdemir [3], Ahmet Kati [4], Hanen Sellami [5], Gulten Can Sezgin [6], Nilay Ildiz [7], Octavio L. Franco [8], Amit Kumar Mandal [2] ✉, Ismail Ocsoy [3] ✉

Show more

https://doi.org/10.1016/j.cocis.2020.101413 ↗

Get rights and content ↗

Abstract

Type I and type II pneumocytes are two forms of epithelial cells found lining the alveoli in the lungs. Type II pneumocytes exclusively secrete 'pulmonary surfactants,'a lipoprotein complex made up of 90% lipids (mainly phospholipids) and 10% surfactant proteins (SP-A, SP-B, SP-C, and SP-D). Respiratory diseases such as influenza, severe acute respiratory syndrome coronavirus infection, and severe acute respiratory syndrome coronavirus 2 infection are reported to preferentially attack type II pneumocytes of the lungs. After viral invasion, consequent viral propagation and destruction of type II pneumocytes causes altered surfactant production, resulting in dyspnea and acute respiratory distress syndrome in patients with coronavirus disease 2019. Exogenous animal-derived or synthetic pulmonary surfactant therapy has already shown immense success in the treatment of neonatal respiratory distress syndrome and has the potential to contribute efficiently toward repair of damaged alveoli and preventing severe acute