Mucin dispersions as a model for the oromucosal mucus layer in in vitro and ex vivo buccal permeability studies of small molecules - DTU Orbit (25/12/2018)

Mucin dispersions as a model for the oromucosal mucus layer in in vitro and ex vivo buccal permeability studies of small molecules

The mucus layer is believed to play a part in drug permeation across the oral mucosa. Human freeze-dried saliva (HFDS) and porcine gastric mucin (PGM) was evaluated as model for mucus layer per se or in conjunction with in vitro and ex vivo buccal permeability models. Four small molecules (nicotine, mannitol, propranolol, caffeine) showed decreased permeability across mucin dispersions, compared to controls, and a greater effect was seen with HFDS than with PGM. Permeability of propranolol and caffeine across filter-grown TR146 cells was decreased by the presence of mucin, whereas no effect was found on nicotine and mannitol. Incubation of porcine buccal mucosa with mucin dispersions for 24 h compromised the integrity of the tissue, whereas 30 min incubation did not affect tissue integrity. Tissue incubation with mucin dispersions did not decrease nicotine permeability. For the studied model drugs, it is concluded that mucin dispersions constitute a minor barrier for drug diffusion compared to the epithelium.

General information
State: Published
Organisations: Center for Intelligent Drug Delivery and Sensing Using Microcontainers and Nanomechanics, Department of Micro- and Nanotechnology, University of Copenhagen
Contributors: Marxen, E., Mosgaard, M. D., Pedersen, A. M. L., Jacobsen, J.
Number of pages: 8
Pages: 121-128
Publication date: 1 Dec 2017
Peer-reviewed: Yes

Publication information
Journal: European Journal of Pharmaceutics and Biopharmaceutics
Volume: 121
ISSN (Print): 0939-6411
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 4.67 SJR 1.342 SNIP 1.378
Web of Science (2017): Impact factor 4.491
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4.49 SJR 1.411 SNIP 1.416
Web of Science (2016): Impact factor 4.159
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 4.37 SJR 1.437 SNIP 1.471
Web of Science (2015): Impact factor 3.975
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 4.44 SJR 1.481 SNIP 1.583
Web of Science (2014): Impact factor 3.85
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 4.64 SJR 1.566 SNIP 1.696
Web of Science (2013): Impact factor 4.245
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 5.15 SJR 1.99 SNIP 1.926
Web of Science (2012): Impact factor 3.826
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2