Heba Mohamed Abd El-Azim, Pharm Anal Acta 2016, 7:1 (Suppl)
http://dx.doi.org/10.4172/2153-2435.C1.027

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8th International Conference and Exhibition on
Pharmaceutics & Novel Drug Delivery Systems
March 07-09, 2016 Madrid, Spain

Improvement of delivery and permeation of water-soluble vitamins using liposomal buccal dosage form

Heba Mohamed Abd El-Azim
Damanhour University, Egypt

This study aims at improving the buccal delivery of vitamin B6 (VB6) as a model which is highly water-soluble and low permeable vitamin. Two main strategies were combined; first VB6 was entrapped in liposomes, which were then formulated as mucoadhesive film. Both plain and VB6-loaded liposomes (LPs) containing Lipoid S100 and propylene glycol (~200 nm) were incorporated into mucoadhesive film composed of SCMC and HPMC. Results showed prolonged release of VB6 (72.65%, T50% diss 105 min) after 6 h from LP-film compared to control film containing free VB6 (96.37%, T50% diss 30 min). Mucoadhesion was assessed both ex vivo on chicken pouch and *in-vivo* in human. Mucoadhesive force of 0.2 N and residence time of 4.4 h were recorded. Ex vivo permeation of VB6, across chicken pouch mucosa indicated increased permeation from LP-systems compared to corresponding controls. Interestingly, incorporation of the vesicles in mucoadhesive film reduced the flux by 36.89% relative to LP-dispersion. Meanwhile, both films provided faster initial permeation than the liquid forms. Correlating the cumulative percent permeated ex vivo with the cumulative percent released *in-vitro* indicated that LPs retarded VB6 release but improved permeation. These promising results represent a step forward in the field of buccal delivery of water-soluble vitamins.

Biography

Heba Mohamed Abd El-Azim has completed her MSc degree in Pharmaceutics from Faculty of Pharmacy, Alexandria University. She is an Assistant Lecturer of Pharmaceutics in the Faculty of Pharmacy, Damanhour University. Her Master thesis investigated the role of liposomes as nanocarriers in the transmucosal delivery of water soluble drugs. She has published two posters in international conferences and a research article entitled; "*Liposomal buccal mucoadhesive film for improved delivery and permeation of water-soluble vitamins*" in the *International Journal of Pharmaceutics*. She has delivered about 10 seminars and presentations on nanotechnology and drug delivery systems. She has attended 11 national and international conferences.

h_m_abdelazim@hotmail.com

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