12th International Conference and Exhibition on **Pharmacovigilance & Drug Safety**
&
22nd International Conference and Exhibition on **Pharmaceutical Formulations**
&
21st Euro-Global Summit on **Toxicology and Applied Pharmacology**

July 04-06, 2019 Valencia, Spain

Experimentally designed tizanidine hydrochloride aspasomes as nanocarriers for transdermal drug delivery: *In-Vitro* evaluation and *In-Vivo* assessment

Hadeer A. El-Hashemy[1], Rawia M. Khalil[1], Silvia Kocova El Arini[1], Mona Basha[1] and **Ahmed Abdelbary[2]**
[1]National Research Centre, Egypt
[2]Cairo University, Egypt

In the present study, aspasomes were developed to enhance the *in-vitro* dissolution and the *in-vivo* performance for tizanidine hydrochloride (TZN), a skeletal muscle relaxant with low oral bioavailability. A Full factorial experimental design was applied to statistically optimize the formulation variables: the amount of drug, amount of ascorbyl palmitate (AP) and the amount of span 60 on the entrapment efficiency, the vesicle size and the *in-vitro* release. Aspasomal formulation (TZN-AS 6) composed of 20 mg TZN, 50 mg AP and 50 mg span60 was obtained by employing the desirability function of Design-Expert® software. It exhibited encapsulation efficiency of 95.0 % and smooth surface with particle size 191.8 nm. In addition, skin permeation profile was obtained using static vertical diffusion Franz cells and hairless mouse skin treated with TZN-AS 6 aspasomes 0.2% (w/w) TZN, and compared with unformulated drug. *Ex-vivo* drug permeation across rat skin for TZN-AS 6 showed a superior skin permeation potential with the highest enhancement ratio value compared to the unformulated drug (ER=4.4). The pharmacokinetic study revealed that aspasomes formulation successively enhanced the bioavailability of TZN compared to oral drug. In conclusion, aspasomes could serve as an effective transdermal delivery of tizanidine hydrochloride.