Development and Evaluation of Sustained Release Multiparticulate Drug Delivery System for Baclofen
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Purpose
The present work was aimed to prepare sustained release pellet of Baclofen to reduce dosing frequency and minimize side effects of multiple dosage regimen.

Methods
Sustained release multiparticulate drug delivery system for Baclofen was prepared by Extrusion-Spheronization technique. Eudragit RLPO and Eudragit RSPO were used as core excipients to achieve desired drug release upto 12 h. Drug polymer interaction studies were carried out using Fourier Transform Infrared Spectrometry (FTIR). Two factors and 3 levels ($3^2$) full factorial design was employed to study the effect of independent variables ($X_1$ – concentration of Eudragit RLPO and $X_2$ – concentration of Eudragit RSPO) on response ($Y_1$ - drug release at 2 h and $Y_2$ – drug release at 10 h). The prepared pellets were characterized for size and size distribution, aspect ratio, derived properties, friability, drug loading and in-vitro drug release. The surface morphology of the pellets was determined by Scanning Electron Microscopy (SEM). Short term stability study was performed as per ICH guidelines for optimized batch.

Results
The drug excipients compatibility study showed that there was no drug-excipients interaction. Mutual contribution of Eudragit RLPO (7-9%) and RSPO (35-40%) was found in achieving desired drug release. Optimized batch revealed satisfactory physicochemical properties. Percentage drug release of optimized batch at 2 h and 10 h were 30.17 % and 87.38 %, respectively. The similarity factor ($f_2$) of optimized batch was found to be 86.80 indicating similarity of two dissolution profiles. Kinetic model study of the drug release data of optimized batch revealed diffusion and erosion as mechanism of drug release according to Korsmeyer and Peppas model. SEM study indicated smooth surface of pellets with spherical shape (figure 1). The results of stability study revealed stable characteristics of optimized formulation.

Conclusion
Sustained release Baclofen pellets were successfully prepared by extrusion-spheronization process anticipating drug release upto 12 h in controlled manner.