Supporting Information

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Stability indicating liquid chromatographic method for the estimation of remogliflozin etabonate

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S.1. Introduction of Remogliflozin

Remogliflozin Etabonate (REM) is chemically Ethyl[(2R,3S,4S,5R,6S)-3,4,5-trihydroxy-6-[5-methyl-1-propan-2-yl-4-[(4-propan-2-yloxyphenyl)methyl]pyrazol-3-yl]oxyoxan-2-yl]methyl carbonate. This is an inactive prodrug which upon the administration and absorption is converted to its active form remogliflozin which acts particularly on the sodium-glucose co-transporter subtype 2 (SGLT2) and used for treatment of Diabetes Mellitus Type-2.

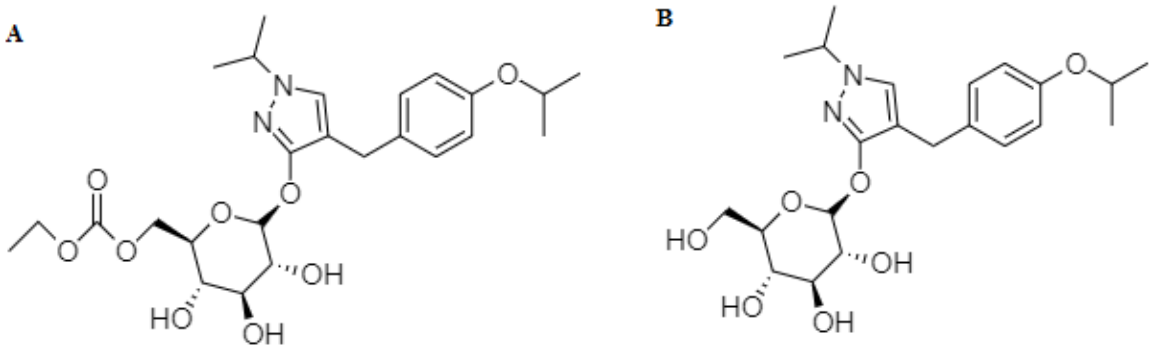

Figure S1: Chemical structures of (A) remogliflozin etabonate and (B) remogliflozin

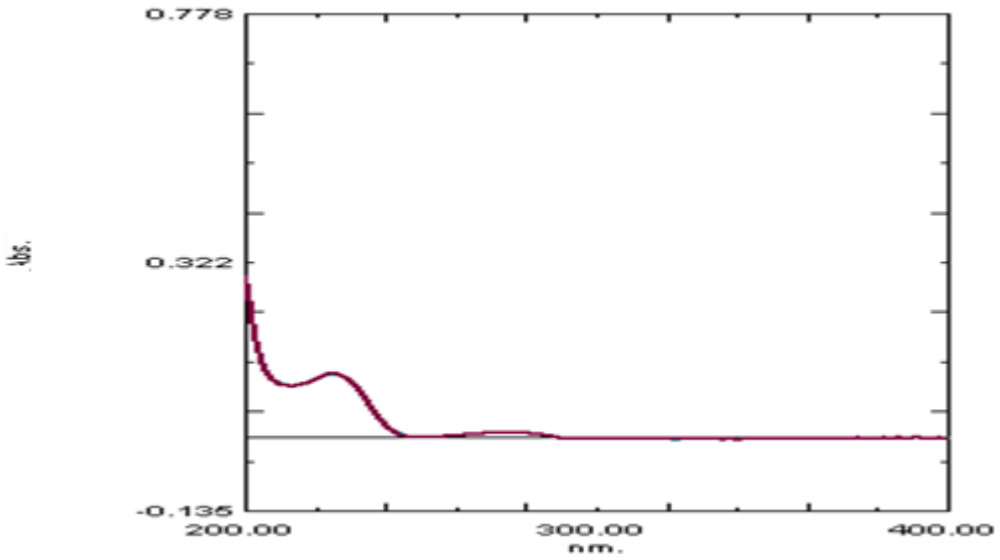

Figure S2: UV Spectra of Remogliflozin etabonate 10µg/mL in methanol.

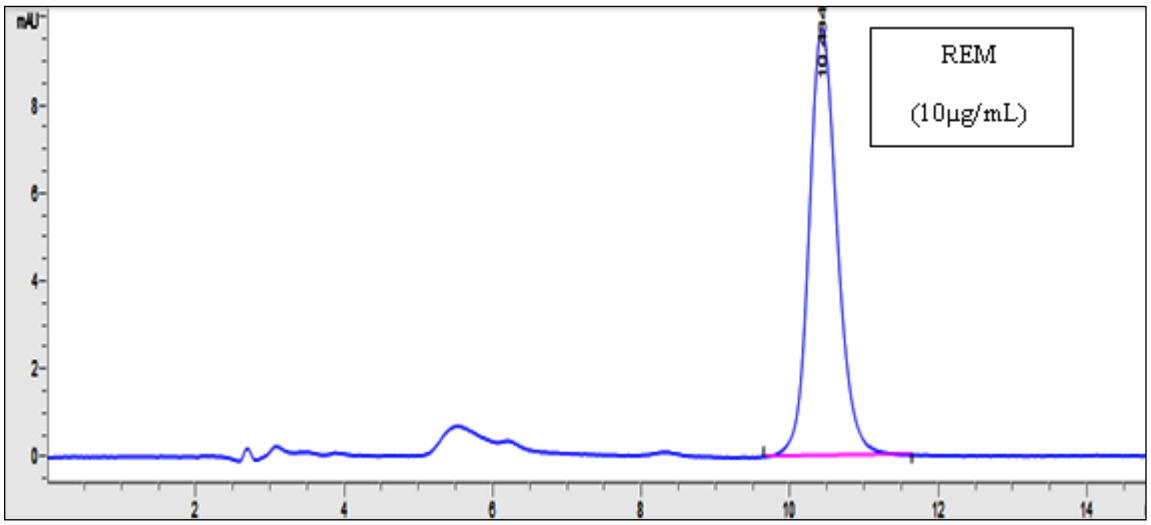

Figure S3. Chromatogram of REM (Methanol: Water, 70:30 %v/v)

S.2. Experimental

S.2.1. Chromatographic Conditions

The Shimadzu ODS-C18 column equilibrated with mobile phase methanol: water 70:30%v/v was used. The flow rate was maintained at 1 mL/min, effluents were monitored with DAD detector at 229 nm & the injection volume was 20 μL. Total run time was kept 15 min.

S.2.2. Preparation of mobile phase

Methanol (700 mL) was taken in 1000 mL Volumetric flask and 300 mL of water was added. The solution was filtered using Whatman paper (0.45) and sonicated for 5 minutes for degassing. This solution was used as mobile phase.

S.2.3. Preparation of calibration curve

Appropriate aliquots of remogliflozin etabonate working standard solutions were taken in different 10 mL volumetric flasks and diluted up to the mark with mobile phase to obtain final concentrations of 1, 5, 10, 15, 20, 25 μg/mL. A 20 μL solution were injected using program and chromatograms were recorded. Calibration curves were constructed by plotting average peak area versus concentrations and regression equations were computed.

S.2.4. Solution stability

The stock solution of remogliflozin etabonate was prepared and stored at room temperature (25 ± 2°C) for 24 hr and analyzed at interval of 0, 4, 8 and 24 hr by suitable dilution to obtain 20 μg/mL.

S.3. Results and Discussion

S.3.1. Selection of Detection Wavelength

A 10 µg/mL solution of Remogliflozin etabonate was prepared in Methanol. The solution was scanned between 400-200 nm. UV spectra of drug showed that Remogliflozin etabonate absorbed appreciably at 229 nm, so it was selected as a detection wavelength in HPLC analysis (Figure S2).

S.3.2. Optimization of Mobile pPhase

The objective of the method development was to obtain sharp peaks for active drug ingredients with less asymmetric factor for remogliflozin etabonate. Different mobile phases (in combination of methanol & water) were tried to obtain sharp and well resolved peak of the drug. The mobile phase Methanol : Water (70:30 %v/v) was found to be satisfactory which gave two symmetric and well-resolved peaks for Remogliflozin etabonate and its degradants. The retention time for Remogliflozin etabonate was found to be 10.4 mins (Figure S3).

S.3.3. Linearity and Range

The calibration curve of Remogliflozin etabonate was plotted in the range of 1- 25 µg/ ml at 229 nm which show the linear absorbance with the correlation coefficient (r^2) 0.997 (Figure S4). The peak area were plotted against concentration and regression equation was computed. The overlay chromatogram was reported as Figure S5.

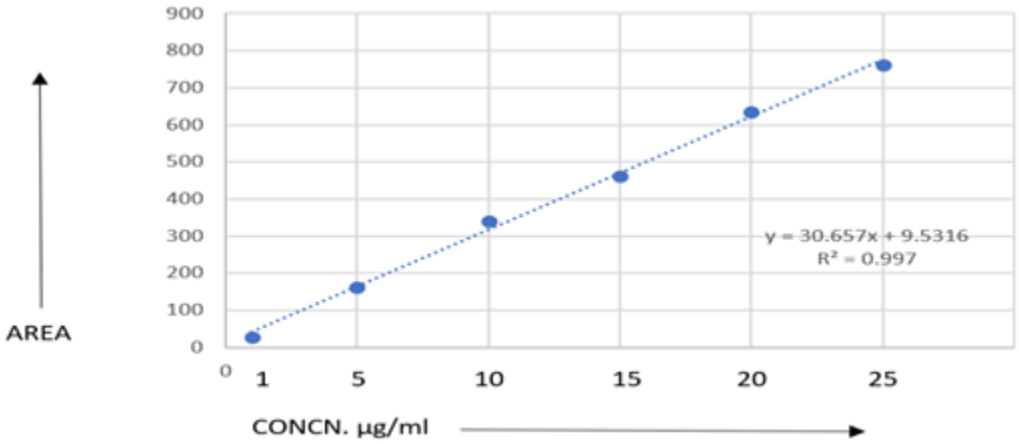

Figure S4 : Calibration curve of Remogliflozin etabonate

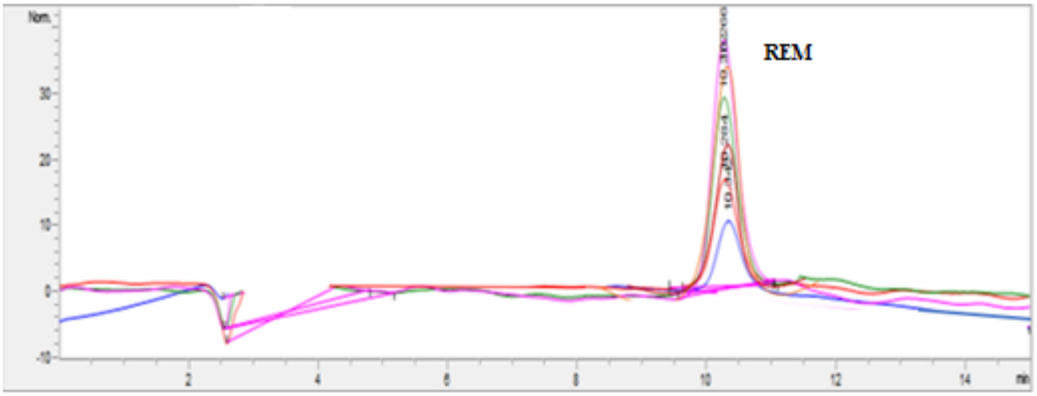

Figure S5: Overlay Chromatogram of Remogliflozin etabonate (Methanol :Water, 70:30%v/v)

S.3.4. Solution Stability

Solution stability was performed at different time of interval at room temperature. The %RSD were found to be less than 2 (Table S1).

Table S1: Solution stability

Drug Concentration	**Time (hr)**	**Peak Area ± S.D (n=3)**	**% Amount of drug found (*n*=3)**
20 μg/mL	0	618.43 ± 3.99	99.3
	4	617.37± 7.26	99.13
	8	615.73± 10.12	98.87
	24	612.68 ± 8.63	98.37