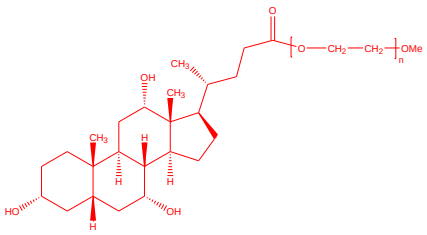
Sample Name: **Cholic acid-end functionalized with Poly (ethylene glycol) methyl ether**

Sample #: **P12014- EGOCH3-CA**

Structure:



Composition:

$M_n \times 10^3$ (PEG)	PDI
2.0	1.09
Functionality	>71%

Synthesis Procedure:
Esterification of the carboxylic group of cholic acid (CA) was carried out by a reaction between the COOH group of the CA and the terminal OH group of the methoxy PEG in THF solvent using selected catalysts.

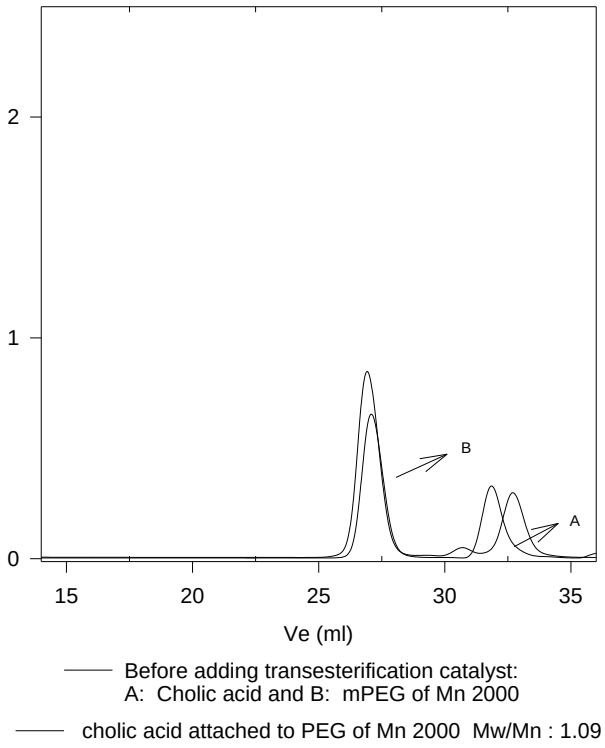
Purification of the obtained polymer:
The obtained polymer was purified by a rigorous treatment to remove residual catalyst and side products as described below:
i.) The polymer was dissolved in de-ionized distilled water to remove insoluble organic catalyst and side products. Further, dichloromethane was added to water-polymer mixture to extract the polymer. The obtained polymer was dried over anhydrous sodium sulfate.
ii) Solution filtered; passed through a column packed with basic Al_2O_3 and concentrated on rota-evaporator.
iii) The concentrated solution precipitated out in cold diethyl ether and vacuum dried for 48h at 38 ^oC.

Characterization:
The molecular weight and polydispersity index of this polymer were determined by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector. Polymer architecture was validated by ^{H}NMR

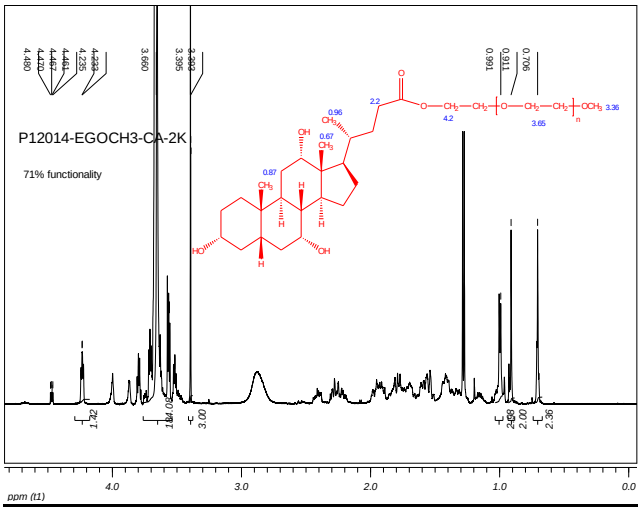
Solubility:
Polymer is soluble in, DMSO, THF, toluene, ethanol, methanol and $CHCl_3$. It precipitates out from diethyl ether.

SEC of Sample:

P12014-EGOCH3CA



^{H}NMR of the Polymer:



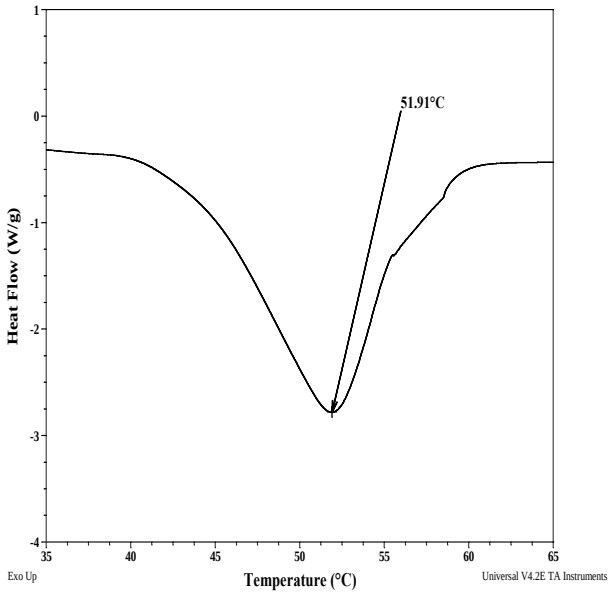
Thermal analysis of the P12014 EGOCH3CA

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10^{o}C/min.The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Melting and crystallization curve for the sample

The melting temperature (T_m) was taken as the maximum of the endothermic peak where as the crystallization temperature (T_c) was considered as the minimum of the exothermic peak.

Melting curve for EO block:



Thermal analysis results at a glance

Sample	T_m (^{o}C)	T_c (^{o}C)	T_g (^{o}C)
EO (homopolymer)	38	26	-65
Cholic acid (CA)	62	43	-
EO in EOCH3CA	52	27	-
CA in EOCH3CA	-	-	-

Crystallization curve for EO block: