

Chapter 4:
Materials

4.0 Materials

4.1 Materials- API and excipients

The various excipients used in the formulation development have been presented in Table 6 with their chemical names, chemical structure, manufacturer name and their molecular weights.

Chemical Name	Manufacturer	Molecular weight (gm/mol)	Batch Number	Expiry Date
Lipids				
Cholesterol (CHOL)	Carbogen, Netherlands	386.65	117CCG0005	30-06-2022
1,2-distearoyl-sn-glycero-3-phosphoethanolamine-N-[methoxy(polyethylene glycol)-2000] (ammonium salt) [mPEG-2k-DSPE]	Lipoid GmbH Germany	2810	588200-2170081-01	31-08-2020
1,2-dimyristoyl-sn-glycero-3-phosphocholine (DMPC)	Avanti Polar lipids, USA	677.945	G140PC-22	12-07-2021
1,2-dipalmitoyl-sn-glycero-3-phosphocholine (DPPC)	Avanti Polar lipids, USA	734.039	G160PC-33	12-02-2023
1,2-distearoyl-sn-glycero-3-phosphocholine (DSPC)	Lipoid KGA, Germany	790.161	556500-2170363-01	31-07-2022
Hydrogenated Soya Phosphatidyl Choline (HSPC/SPC-3)	Lipoid GmbH Germany	783.774	525600-2150558-01	30-04-2020
1,2-Arachinoyl-sn-glycero-3-phosphocholine (DAPC)	Corden Pharma, Switzerland	831.1	S1188	31-07-2020
Storage conditions: The lipids were stored in well closed light protective containers and at the manufacturer recommended storage temperatures. DMPC, DPPC, DSPC, HSPC, DAPC, Cholesterol and mPEG-2k-DSPE were stored at $-20 \pm 5^\circ\text{C}$.				
Active Pharmaceutical Ingredient				
Doxorubicin Hydrochloride (DOX)	Synbias Pharma AG Germany	579.98	1000917	30-09-2020
Vincristine Sulphate (VCR)	Minakem Pharma, France	923.0	185980399	01-02-2020

Chemical Name	Manufacturer	Molecular weight (gm/mol)	Batch Number	Expiry Date
Storage conditions: The APIs were stored in the closed light protected containers as per vendor instructions. DOX was stored at 5 ± 3 °C and VCR was stored at -20 ± 5 °C.				
Transmembrane gradient salt				
Ammonium sulphate	Merck KGaA, Germany	132.14	AM0638716	31-01-2020
Ammonium phosphate	Merck KGaA, Germany	149.087	AM0862326	30-05-2020
Ammonium citrate	Merck KGaA, Germany	243.22	A0592654	30-05-2020
Copper gluconate	Spectrum Chemicals Mfg Corp (USA)	453.841	2HA0172	20-10-2021
Copper sulphate	Merck KGaA, Germany	159.609	AM0941287	30-11-2020
Ethylenediaminetetraacetic acid diammonium salt	Merck KGaA, Germany	326.30	7004K013	31-05-2022
Sulphobutylether Beta-Cyclodextrin ammonium salt	Biophore India Pharmaceuticals, India	1261	4014/I/013/19	31-03-2023
Triethanolamine	Merck KGaA, Germany	149.188	K49251222	31-07-2022
Dehydrated alcohol	Commercial Alcohols, Canada	46.07	018006	20-04-2020
l-Histidine	Merck KGaA, Germany	155.1546	K43313352	31-03-2020
Sucrose	Merck KGaA, Germany	342.2965	K48380592	31-10-2021
Storage conditions: These excipients were stored in the closed containers as per vendor instructions at controlled room temperature.				

Table 6: Chemical name, molecular weight, manufacturer, batch number and expiry date of the excipients used in formulation development.