**Table S1:** Available Nanostructured Lipid Carriers **(**NLC) formulations

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| **Nanoformulations** | **Cell line used** | **Preclinical Outcome** | **Reference** |
| RGD peptide-mediated liposomal Curcumin (RGD-Lip-Cur) | CUR is incorporated into RGD modified Liposomes, and its cytotoxicity tested on the MCF-7 BC cell line | Liposomes induce cell death. CUR incorporated in RGD-Liposomes enhances CUR penetration in cell lines compared to free PI. | [82] |
| Chitosan coated NLC (THC-Ch-NLCs) | Tetrahydrocurcumin (THC) encapsulated with chitosan NLC tested on MD-MBA-231BC cells | Increased *in vitro* skin permeation, cell uptake, and remarkable cytotoxicity toward BC cell for treatment of TNBC. | [83] |
| Raloxifene (RLN) loaded NLC  (RLN-NLC) | Compritol® 888 ATO as a solid lipid and Transcutol® HP as a liquid lipid were used for RLN-NLC, tested on MCF-7 cells and in vivo on female vistar rats | Exhibited higher cytotoxicity towards selected cell lines *in vitro* and an *ex vivo* RLN-NLC improved intestinal permeability and *in vivo* it increased the oral bioavailability of RLN. | [84] |
| Ribociclib (RBO) NLC  (RBO-NLC) | RBO-NLC compared with RBO suspension. *In vitro* intestinal gut permeation studies performed also on MCF-7 cells | RBO-NLCs showed deeper penetration than RBO suspension. The *in vitro*, *ex vivo*, and *in vivo* outcomes indicated bioavailability enhancement of RBO. | [85] |
| Kaempferol (KAE) loaded NLC  (KAE-NLC) | These NLCs coadministered with paclitaxel and study performed on MDA-MB 468 BC cells | Cosdministered NLCs into cancer cells significantly strengthens the percentage of apoptosis (p < 0.05). | [86] |
| Stylosin, chitosan, and folic acid conjugated NLCs (STY-CF-NPs) | STY-CF-NPs toxicity measured on MCF-7 cells, Tubo cancer cell inoculated mouse model also used to check antitumor action | Elevated apoptotic cells, suppressed cells in SubG1 phase and also elevated Caspase and Bax expression and reduced BCL-2 and BCL-XL activation in *In vitro* and decreased the size of murine tumors. | [87] |