**Supplemental Methods**

**Loading efficiency of leelamine in liposomes.** Loading of leelamine into Nanolipolee-007 was estimated by UV-visible spectrophotometry (SPECTRAmax M2 plate reader; Molecular devices) ([1](#_ENREF_1)). Free drug not incorporated into the nanoliposomes was removed using a 10 kDa Centricon filter (Millipore). Briefly, 0.5 mL of the Nanolipolee-007 was added to 5 mL of hydration buffer followed by centrifugation at 3,750 rpm for 30 minutes.  Next, 0.1 mL of purified nanoliposomal solution was combined with 1 mL of methanol to destroy the nanoliposomal structure and release the drug into the solution. Following vortexing for 5 minutes, the precipitated lipids were separated following centrifugation at 10,000 rpm for 10 minutes.  The supernatant was then used to measure the amount of drug and concentrations were compared with standard curve of leelamine ranging from 0.01 to 0.1 mg/mL.  Methanol was used as the reference blank. Percentage drug incorporated in the nanoliposome was calculated as the free drug(s)/total drug(s)x100.

1. Panwar P, Pandey B, Lakhera PC, Singh KP. Preparation, characterization, and in vitro release study of albendazole-encapsulated nanosize liposomes. Int J Nanomedicine. 2010;5:101-8.

 **Supplemental figure legends**

**Supplemental Figure S1.** Leelamine hydrochloride salt is poorly soluble in saline. \* Indicates the stock concentration of drug used in this report.

**Supplemental Figure 2. S2A.** HPLC chromatogram of tritium labeled leelamine synthesized by bromination, followed **by** replacement of the bromine atom with tritium. **S2B.** Efficacy of tritiated leelamine for killing UACC **903** melanoma cells was compared to leelamine using the MTS assay.

**Supplemental Figure S3.** Loading efficiency of leelamine in the nanoliposomal formulation was measured by UV-visible spectrophotometry following centrifugation using 10kDa a Centricon filter to remove free drug from the nanoparticle. Methanol was used as the reference blank. Percentage drug incorporated in the nanoliposome was calculated as the free drug(s)/total drug(s)x100.

**Supplemental Figure S4.** The *in vitro* release of tritium labeled leelamine from Nanolipolee-007 was measured at room temperature using a molecular weight cut off 25 kDa dialysis membrane. 68.32% of leelamine was released from Nanolipolee-007 within 36 hours.