Table II. Advantages and disadvantages of LN preparation methods

Preparation method	Advantages	Disadvantages
High Pressure Homogenization (Hot and Cold)	▪ Good reproducibility ▪ Well established homogenization technology on large scale ▪ Organic solvent free method	▪ High temperature process ▪ High energy input ▪ Complex equipment required ▪ Possible degradation of the components caused by high pressure homogenization
Microemulsion Technique	▪ Reduces mean particle size and narrow size distribution ▪ Organic solvent free method ▪ No energy consuming method ▪ Easy to scale up	▪ High concentration of surfactants and co-surfactants ▪ Concentration of final formulation is required
Microemulsion Precursor Technique	▪ Rapid, reproducible and cost-effective method ▪ Dilution of the final formulation is not needed ▪ Organic solvent free method ▪ Non energy-consuming method	▪ High concentration of surfactants and co-surfactants
Coacervation method	▪ Allows incorporation of thermosensitive drugs ▪ Inexpensive for laboratory and industrial application ▪ Possibility to control shape and size of SLNs by reaction conditions	▪ Possible degradation of the components under acidic conditions
Phase Inversion Temperature Method	▪ Organic solvent free method ▪ Non-energy consuming method ▪ Easy to scale up	▪ Not suitable for thermosensitive molecules like peptides or proteins
Emulsion Formation Solvent-Evaporation or -Diffusion Method	▪ Allows incorporation of thermosensitive drugs ▪ Reduces mean particle size and narrow size distribution ▪ Good reproducibility	▪ Concentration of final formulation is required ▪ Possible organic solvent residues in the final formulation
Water-in-Oil-in-Water (w/o/w) Double Emulsion Method	▪ Allows incorporation of hydrophilic drugs	▪ Concentration of final formulation is required ▪ Large particle size of the final formulation
Emulsification Dispersion Followed by Ultrasonication	▪ Allows incorporation of thermosensitive drugs	▪ Possible metal contamination
Hot Homogenization by High Shear Homogenization and/or Ultrasonication	▪ Easy to handle ▪ No complex equipment is required ▪ High concentration of surfactants and co-surfactants are not required ▪ Organic solvent free method	▪ High energy input ▪ Polydisperse distributions ▪ Possible metal contamination ▪ Concentration of final formulation is required
Solvent Injection Method	▪ Easy to handle and fast production process	▪ Possible organic solvent residues in the final formulation