**Supplementary Figures**

**Figure 1 λmax spectra of Lurasidone hydrochloride**

A graph of a sample

Description automatically generated

**Figure 2: FT-IR Spectrum of LH**

**A graph of a graph

Description automatically generated with medium confidence**

**Figure 3: DSC thermograph of Pure LH**

A graph with numbers and a line

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**Figure 4a: IR spectra of LH and excipients at Day 1**

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Description automatically generated with medium confidence

**Figure 4b: IR spectra of LH and excipients at Day 28**

**A screenshot of a computer

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**Figure 5 : Compiled DSC Thermograms of LH and Excipients**

A graph of a graph

Description automatically generated with medium confidence

**Figure 6: Optimized LH-NLC formulation under SEM.**

**A close-up of a microscope

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**Figure 7a: Invitro drug release Kinetics Zero order for LH-NLC and LH suspension**

A graph on a white background

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**Figure 7b: Invitro drug release Kinetics first order for LH-NLC and LH suspension**

A white background with a line of lines

Description automatically generated with medium confidence

**Figure 7c: Invitro drug release Kinetics Higuchi model for LH-NLC and LH suspension**

A graph of a drug release model

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**Figure 7d: Invitro drug release Kinetics Koresemeyer Peppas for LH-NLC and LH suspension**

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**Figure 7e: Invitro drug release Kinetics Hixon-crowel for LH-NLC and LH suspension**



**A screenshot of a computer

Description automatically generatedFigure 8: Representative RP-HPLC Chromatogram of Ex Vivo experiment, for sample withdrawn at 0.5 Hr, showing distinct peak at RT of 4.08 min**

**Figure 9 Results of *Ex vivo* permeation studies for LH-NLC and drug suspension (Flux for LH-NLC-0.1005 µg/cm2/hour and drug suspension- 0.0493 µg/cm2/hour)**

**Figure 10: FT IR Overlay of LH-NLC with Lurasidone**

**A graph of a graph

Description automatically generated with medium confidence**