**Table1: Statistical Design Optimisation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Run | PLGA (%w/v) | Soya Lecithin (%w/v) | Sonication time (mins) | Particle size (nm) | Zeta potential (mV) | Entrapment efficiency (%) |
| 1 | 5 | 10 | 30 | 225.5 | -1.12 | 5.18 |
| 2 | 18.409 | 15 | 20 | 256.7 | -12.87 | 38.56 |
| 3 | 5 | 20 | 10 | 262.8 | 2.88 | 4.01 |
| 4 | 10 | 15 | 20 | 257.4 | -3.49 | 4.44 |
| 5 | 15 | 10 | 30 | 204.7 | -1.12 | 33.47 |
| 6 | 15 | 10 | 10 | 281.8 | -3.06 | 3.86 |
| 7 | 5 | 20 | 30 | 199.2 | 1.96 | 12.83 |
| 8 | 10 | 15 | 20 | 215.8 | 4.02 | 4.64 |
| 9 | 15 | 20 | 10 | 277.4 | 3.41 | 45.98 |
| 10 | 10 | 23.409 | 20 | 212.6 | -7.7 | 24.17 |
| 11 | 10 | 15 | 20 | 241.3 | 5.65 | 4.76 |
| 12 | 5 | 10 | 10 | 279.9 | -0.61 | 3.54 |
| 13 | 1.59104 | 15 | 20 | 281.8 | -0.64 | 4.38 |
| 14 | 15 | 20 | 30 | 189.9 | 6.57 | 42.8 |
| 15 | 10 | 6.59104 | 20 | 276.4 | 0.23 | 4.33 |
| 16 | 10 | 15 | 20 | 229.9 | -6.72 | 30.84 |
| 17 | 10 | 15 | 36.8179 | 181.6 | -2.36 | 4.08 |
| 18 | 10 | 15 | 20 | 212.3 | -8.79 | 5.35 |
| 19 | 10 | 15 | 3.18207 | 297.4 | -2.15 | 2.72 |
| 20 | 10 | 15 | 20 | 221.8 | 0.06 | 12.46 |
| **Equations in terms of coded variables** | | | | | | |
| Particle size=240.31-4.09\*PLGA-12.44\*Soya lecithin-34.95\*Sonication time | | | | | | |
| Zeta Potential=3.77+2.06\*PLGA+1.57\*Soya lecithin+0.0852\*Sonication time | | | | | | |
| Entrapment Efficiency=14.62+11.57\*PLGA+6.81\*Soya lecithin+2.87\*Sonication time | | | | | | |

Supplementary Figure legends

Figure 1: 3D graphs for (a) particle size; (b) zeta potential; (c) Entrapment efficiency; (d) Overlay plot for optimisation.

Figure 2: Particle size and zeta potential data of a) HNP and b) FC@HNP c)FC@HNP (in PBS)

Figure 3: FTIR spectra

Figure 4: TGA and DSC for ETH, HNP and FC@HNP.

Figure 5: X- Ray diffractograms

Figure 6: Dissolution profile of HNP and FC@HNP.

Figure 7: Dissolution profile of ETH