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| Table S1. Design expert assisted with formulations and features for *Artimesia absinthium* nanoparticles. | | | | | | |
| Zeta potential | **Polydispersity index** | **Z-average** | **Time (min)** | **pH** | **Concentration of HAuCl4 (mM)** | **Volume of extracted gold nanoparticles (mL)** | **Entry** | |
| -2.79 | 0.574 | 51.01 | 10 | 4 | 1 | 0.5 | 1 | |
| -8.30 | 0.239 | 176.8 | 50 | 7 | 2 | 0.5 | 2 | |
| -3.54 | 0.374 | 187.40 | 100 | 8 | 4 | 0.5 | 3 | |
| -3.95 | 0.228 | 123.10 | 100 | 7 | 1 | 2 | 4 | |
| -5.91 | 0.311 | 110.20 | 10 | 8 | 2 | 2 | 5 | |
| -3.54 | 0.381 | 150.20 | 50 | 4 | 4 | 2 | 6 | |
| -5.04 | 0.291 | 174.00 | 50 | 8 | 1 | 4 | 7 | |
| vbgnhjp;[‘]  \]-09876 | 0.243 | 81.28 | 100 | 4 | 2 | 4 | 8 | |
| -7.46 | 0.293 | 130.20 | 10 | 7 | 4 | 4 | 9 | |

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| Table S2. Design expert assisted formulations and features for *Morrus nigra* nanoparticles. | | | | | | | |
| Zeta potential | **Polydispersity index** | **Z-average** | **Time (min)** | **pH** | **Concentration of HAuCl4 (mM)** | **Volume of extracted gold nanoparticles (mL)** | **Entry** |
| -5.6 | 0.400 | 54.11 | 10 | 4 | 1 | 0.5 | 1 |
| -2.6 | 0.386 | 44.67 | 50 | 7 | 2 | 0.5 | 2 |
| -3.2 | 0.356 | 126.50 | 100 | 8 | 4 | 0.5 | 3 |
| -7.4 | 0.392 | 174.60 | 100 | 7 | 1 | 1 | 4 |
| -16.0 | 0.572 | 54.32 | 10 | 8 | 2 | 1 | 5 |
| -8.0 | 0.841 | 109.70 | 50 | 4 | 4 | 1 | 6 |
| -12.5 | 0.296 | 172.20 | 50 | 8 | 1 | 2 | 7 |
| -11.7 | 0.611 | 90.50 | 100 | 4 | 2 | 2 | 8 |
| -5.9 | 0.703 | 93.000 | 10 | 7 | 4 | 2 | 9 |

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| Table S3. Design expert assisted with formulations and features for *Peganum harmala* nanoparticles. | | | | | | | |
| Zeta potential | **Polydispersity index** | **Z-average** | **Time (min)** | **pH** | **Concentration of HAuCl4 (mM)** | **Volume of extracted gold nanoparticles (mL)** | **Entry** |
| -19.8 | 0.291 | 217.80 | 10 | 4 | 1 | 0.5 | 1 |
| precipitated | precipitated | precipitated | 50 | 7 | 2 | 0.5 | 2 |
| precipitated | precipitated | precipitated | 100 | 8 | 4 | 0.5 | 3 |
| precipitated | precipitated | precipitated | 100 | 7 | 1 | 2 | 4 |
| precipitated | precipitated | precipitated | 10 | 8 | 2 | 2 | 5 |
| precipitated | precipitated | precipitated | 50 | 4 | 4 | 2 | 6 |
| precipitated | precipitated | precipitated | 50 | 8 | 1 | 4 | 7 |
| precipitated | precipitated | precipitated | 100 | 4 | 2 | 4 | 8 |
| precipitated | precipitated | precipitated | 10 | 7 | 4 | 4 | 9 |