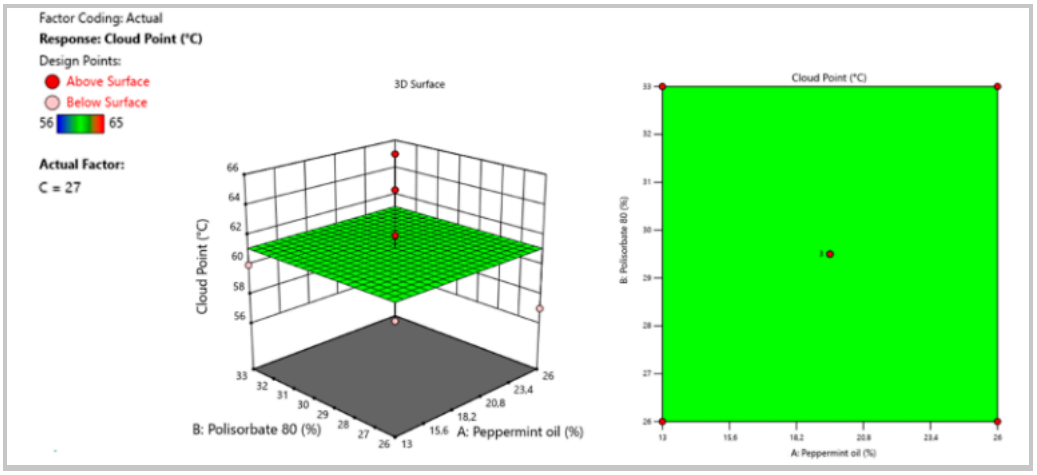

Figure S1. Response surface and contour plot of the cloud point response.
Three-dimensional response surface (left) and contour plot (right) illustrating the effect of peppermint oil (A) and polysorbate 80 (B) concentrations on the cloud point response of BBD- SEDDS predicted by the Box–Behnken model. Experimental data were obtained in triplicate (**n = 3**).

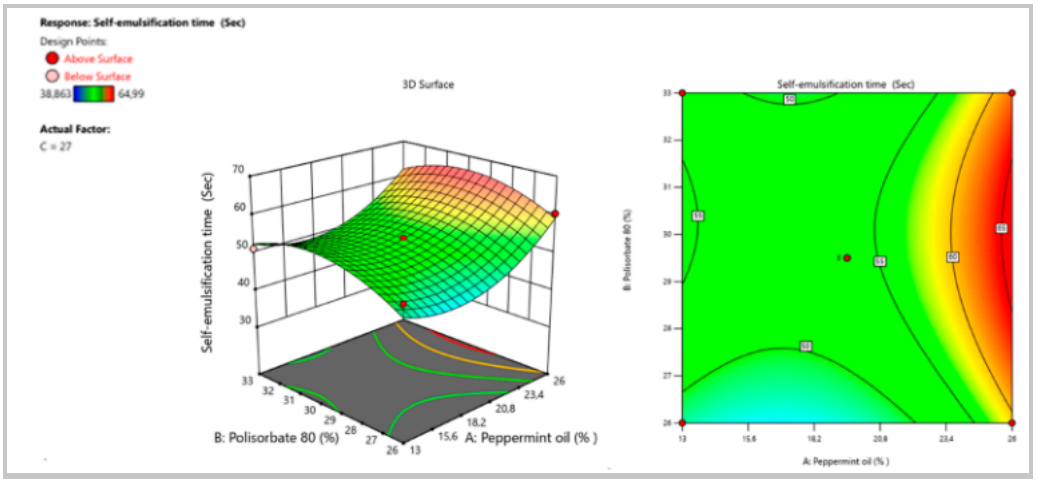

Figure S2. Response surface and contour plot of the self-emulsification time response.
Three-dimensional response surface (left) and contour plot (right) illustrating the effect of peppermint oil (A) and polysorbate 80 (B) concentrations on the self-emulsification response of BBD-SEDDS predicted by the Box–Behnken model. Experimental data were obtained in triplicate (**n = 3**).

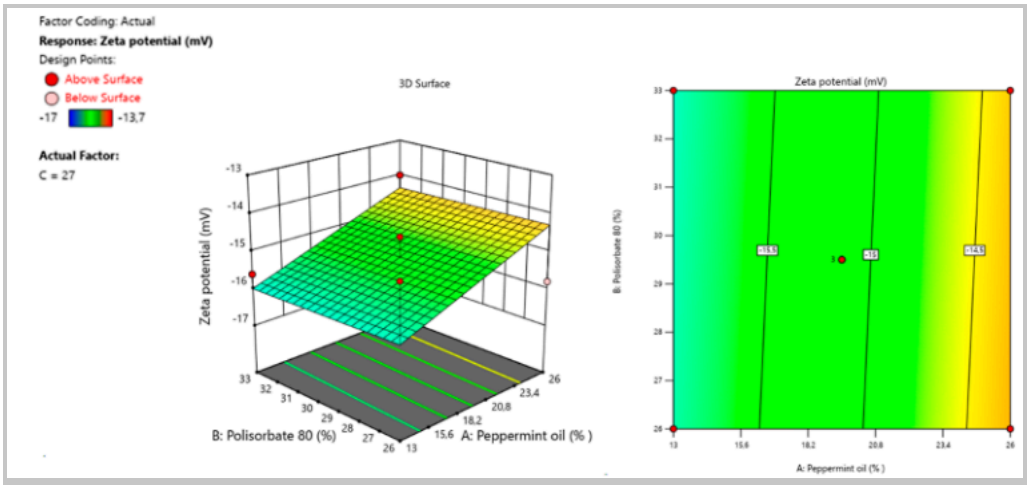

Figure S3. Response surface and contour plot of the zeta potential response.
Three-dimensional response surface (left) and contour plot (right) illustrating the effect of peppermint oil (A) and polysorbate 80 (B) concentrations on the zeta potential response of BBD-SEDDS predicted by the Box–Behnken model. Experimental data were obtained in triplicate (n = 3).

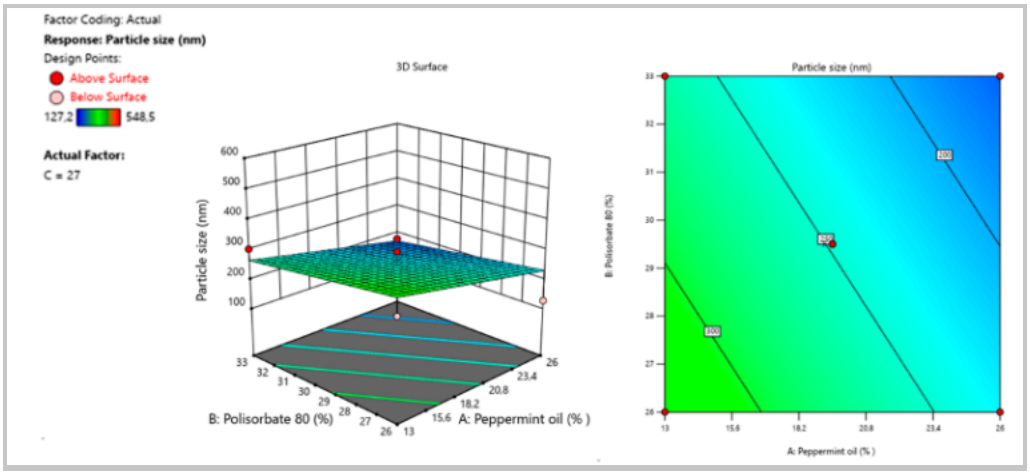

Figure S4. Response surface and contour plot of the droplet size response.
Three-dimensional response surface (left) and contour plot (right) illustrating the effect of peppermint oil (A) and polysorbate 80 (B) concentrations on the droplet size response of BBD-SEDDS predicted by the Box–Behnken model. Experimental data were obtained in triplicate (n = 3).

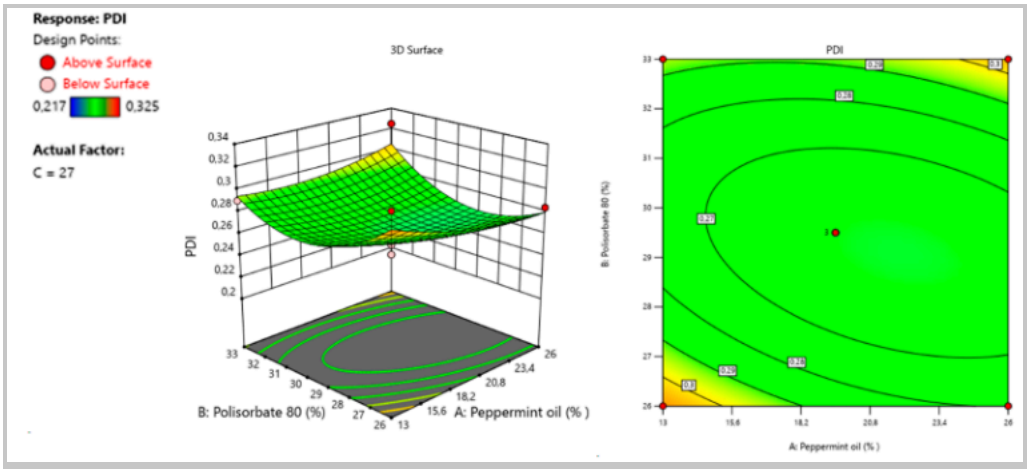

Figure S5. Response surface and contour plot of the PDI response.
Three-dimensional response surface (left) and contour plot (right) illustrating the effect of peppermint oil (A) and polysorbate 80 (B) concentrations on the PDI response of BBD-SEDDS predicted by the Box–Behnken model. Experimental data were obtained in triplicate (n = 3).

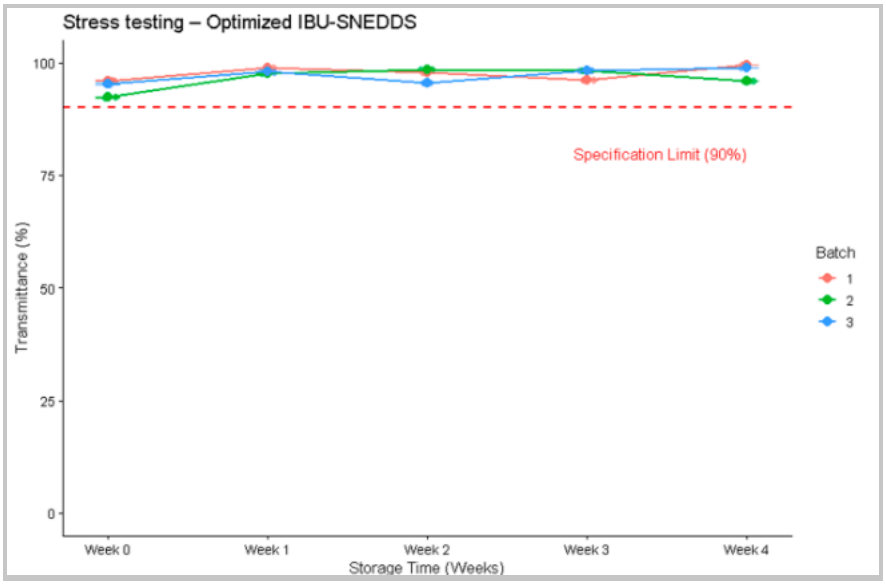

Figure S6. Transmittance profile of three independently prepared replicates of the optimized IBU-SNEDDS during accelerated stability testing over four weeks of storage at 40 ± 2 °C and 75 ± 5% RH. Replicates 1–3 correspond to independent preparation replicates (n = 3). The dashed red line represents the predefined transmittance specification limit (90%).