Supplementary Materials

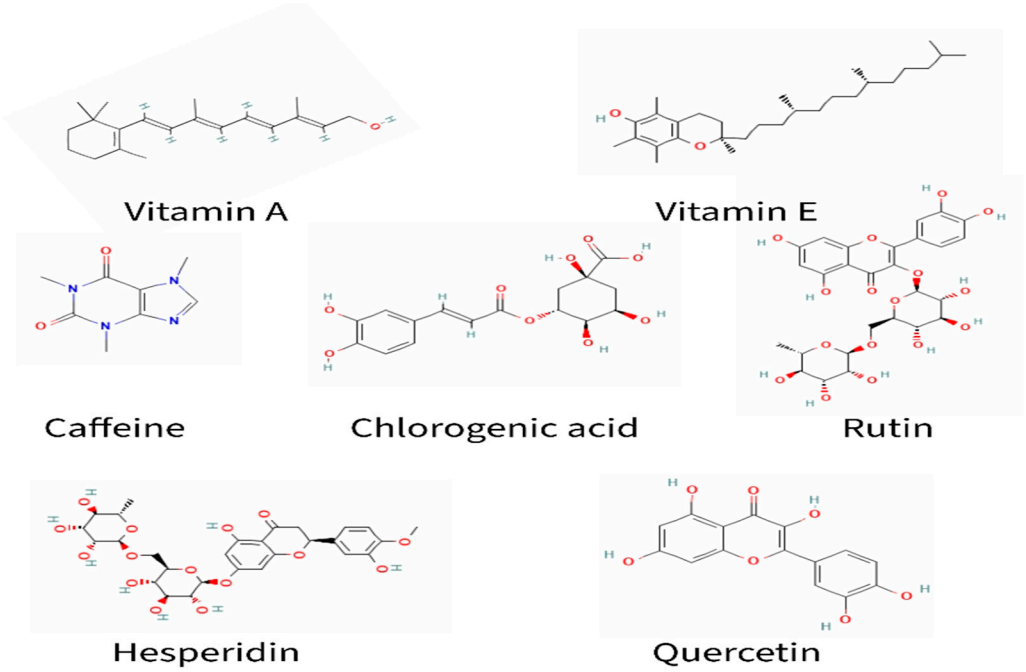


Figure S1. Chemical structures of antioxidants.

Table S1. Concentrations of the standard solutions.

Standard solution	$C_{chlorogenic\ acid}$ (µg/ml)	$C_{caffeine}$ (µg/ml)	C_{rutin} (µg/ml)	$C_{hesperidin}$ (µg/ml)	$C_{quercetin}$ (µg/ml)	$C_{vitaminA}$ (µg/ml)	$C_{vitaminE}$ (µg/ml)
SS1	0.93	0.465	0.56	0.63	0.11	0.285	1.55
SS2	1.86	0.93	1.12	1.26	0.22	0.57	3.1
SS3	3.72	1.86	2.24	2.52	0.44	1.14	6.2
SS4	7.44	3.72	4.48	5.04	0.88	2.28	12.4
SS5	9.3	4.65	5.6	6.3	1.10	2.35	15.55
SS6	13.02	6.51	7.87	8.82	1.54	3.99	21.7
SS7	18.6	9.3	11.2	12.6	2.22	5.7	31

Table S2. Emulsion samples with different compositions.

Sample	Oil Phase (10%)	Surfactant (10%)
1	Jojoba Oil	Span 20
2	Jojoba Oil	Tween 20
3	Jojoba Oil	Tween 80
4	Jojoba Oil	50% Span 20:50% Tween 20
5	Jojoba Oil	50% Span 20:50% Tween 80
6	Peanut Oil	Span 20
7	Peanut Oil	Tween 20
8	Peanut Oil	Tween 80
9	Peanut Oil	50% Span 20:50% Tween 20
10	Peanut Oil	50% Span 20:50% Tween 80
11	Coconut Oil	Span 20
12	Coconut Oil	Tween 20
13	Coconut Oil	Tween 80
14	Coconut Oil	50% Span 20:50% Tween 20
15	Coconut Oil	50% Span 20:50% Tween 80

Table S3. Design summary, limits and requirements used.

Component	Name	Unit	Type	Minimum	Maximum
A	Glycerin	ml	Mixture 1	1	7
B	H2O	ml	Mixture 1	1	7
				Total =	8

Component	Name	Unit	Type	Minimum	Maximum
C	Jojoba	ml	Mixture 2	0.1	1.9
D	Span 20	ml	Mixture 2	0.1	1.9
				Total =	2

Response	Name	Unit	Observations	Analysis	Minimum	Maximum
R1	Z-potential	mv	11	Polynomial	8	37.5
R2	Particle Size	nm	11	Polynomial	257	1200

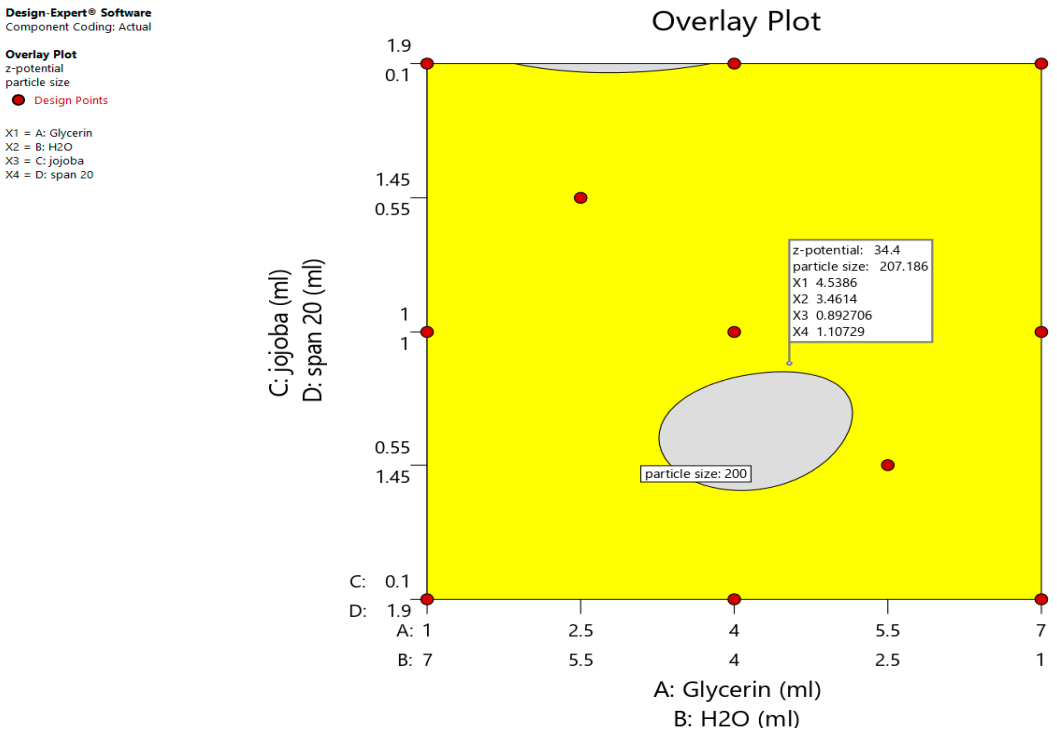
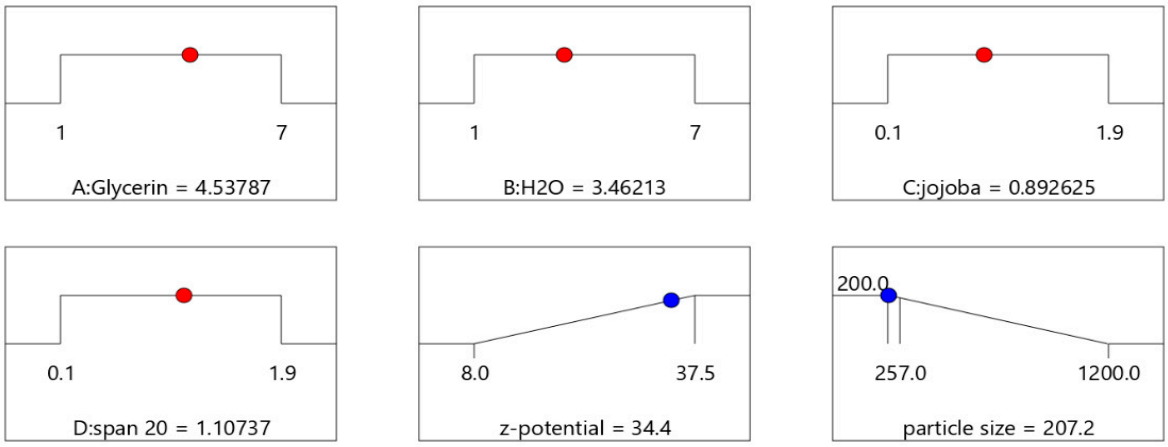


Figure S2. Isometric curves of the overlay plot.



Desirability = 0.938
Solution 1 out of 3

Figure S3. Optimal quantities and expected responses, based on the desirability function.

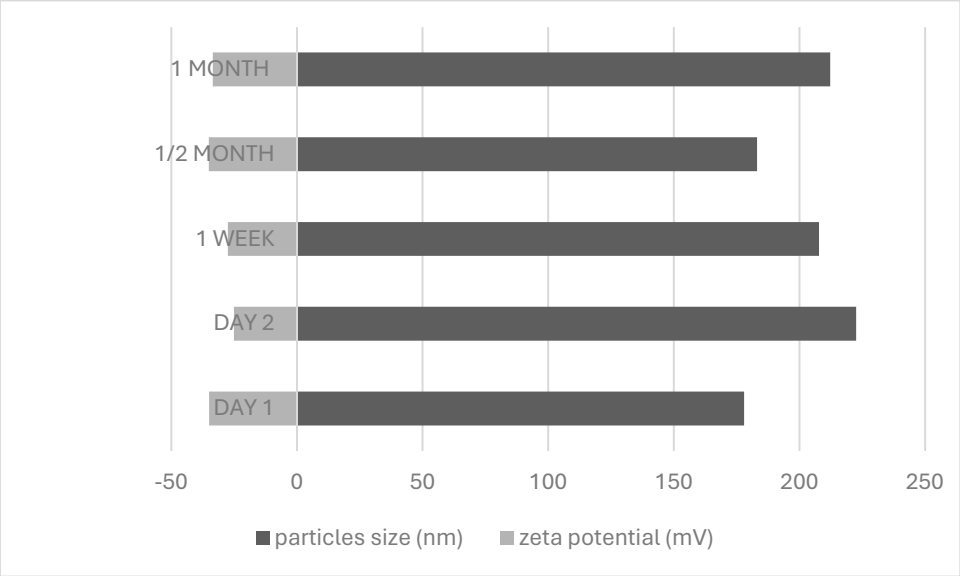


Figure S4. Emulsion stability study chart over a period of one month.



Figure S5. Visual representation of stable emulsions after one month.

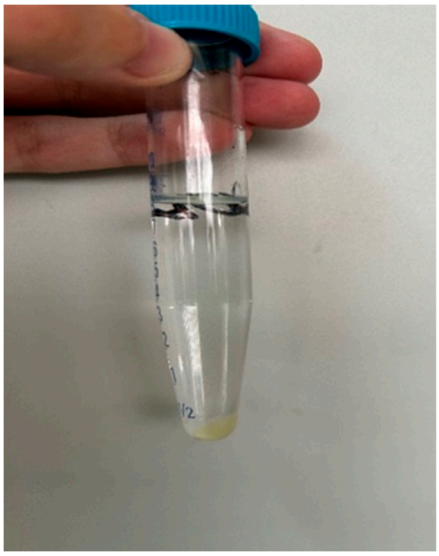


Figure S6. Emulsion sample after purification procedure.