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Formulation and Characterization of Self Nano Emulsifying Drug Delivery System Containing Phytochemical

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ABSTRACT

Background and Aim: The objective of present work was to enhance the dissolution properties of a poorly water soluble phytochemical (a drug of natural origin) by formulating self nano emulsifying drug delivery system (SNEDDS). Self nano emulsifying region was determined by pseudo-ternary phase diagrams.

Methods: Box-Bhenken experimental design was employed to optimize the best formulation. Formulation contains amount of oil, surfactant and co-surfactant as independent variables.

Results: These formulations were characterized for self emulsifying time, particle size, zeta potential, PDI, entrapment efficiency and drug release (Table 1). The drug and excipients compatibility was verified by recording DSC and FTIR.

Conclusion: The optimized SNEDDS showed improved solubility of the poor water dissolving phytochemical.

Table 1: Particle Size of SNEDDS Analysis

Particle Size Source	Sum of Squares	df	Mean Square	F-Value	P-Value	VIF	Coefficient Estimate	95% CI Low	95% CI High
Model	2.276E±05	9	25286.49	1.17	0.5005		236.42	-8316	556
A: Oil	63606.78	1	63606.78	2.95	0.1844	3.00	182.97	-156	522
B: Surfactant	15609.30	1	15609.30	0.7238	0.4574	1.51	-58.42	-276	160
C: Consurfactant	1.389E±05	1	1.389E±05	6.44	0.0849	1.52	162.56	-41	366
AB	8905	1	8905	0.4129	0.5662	1.44	80	-316	476
AC	74610	1	74610	3.46	0.1598	1.75	211.08	-150	572
BC	11147	1	11147	0.5169	0.5241	1.08	-49	-267	169
A2	27861.08	1	27861	1.29	0.3383	1.38	-109	-414	196
B2	84707.32	1	84707	3.93	0.1418	2.23	-241	-630	146
C2	1.155E+05	1	1.155E+05	5.36	0.4036	2.32	-123	-234	156

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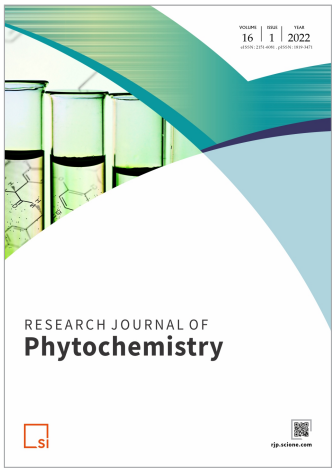

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