

Optimization of Potential Nanoemulgels for Boosting Transdermal Glimepiride Delivery and Upgrading Its Anti-Diabetic Activity

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Table S1. Solubility of glimepiride in various nanoemulsion components.

Oils	Solubility (mg/g)
Peppermint oil	3.67 ± 0.13
Bergamot oil	2.75 ± 0.91
Mandarin oil	2.22 ± 0.19
Tea tree oil	2.11 ± 0.24
Eucalyptus oil	2.02 ± 0.17
Fennel oil	1.92 ± 0.26
Lavandar oil	1.40 ± 0.11
Rosemary oil	0.82 ± 0.10
Orange oil	0.50 ± 0.24
Lemon oil	0.43 ± 0.09
Surfactants	Solubility (mg/g)
Tween 80	2.94 ± 0.09
Tween 20	1.66 ± 0.21
Span 20	0.92 ± 0.19
Span 85	0.50 ± 0.13
Labrafil isostearyl	0.61 ± 0.08
Labrafil 1944 CS	0.12 ± 0.03
Co-surfactant	Solubility (mg/g)
Transcutol P	2.54 ± 0.20
PEG 400	1.15 ± 0.14
PG	0.84 ± 0.29
Ethanol	0.81 ± 0.05
Lauroglycol FCC	0.32 ± 0.10
Glycerin	0.11 ± 0.05

Table S2. Miscibility of various surfactants and co-surfactants in oil phase.

Gel base type	Gel:NE ratio	Gel strength (sec)
Carbopol 940 (1%)	1.5:1	14.01 ± 0.23
	2.5:1	28.13 ± 0.84
Carbopol 940 (1.5%)	1.25:1	11.38 ± 0.88
	1.5:1	26.30 ± 1.02
Carbopol 940 (2%)	0.5:1	17.47 ± 0.10
	1:1	26.25 ± 0.91

Carbopol 934 (1%)	2:1	8.54 ± 1.12
	3:1	17.95 ± 0.41
	3.5:1	25.26 ± 0.86
Carbopol 934 (1.5%)	1:1	10.28 ± 0.35
	2:1	18.84 ± 1.40
	3:1	31.35 ± 0.74
Carbopol 934 (2%)	1:1	15.82 ± 1.21
	1.25:1	29.30 ± 0.30
	3:1	12.89 ± 0.91
Na-CMC (5%)	3.25:1	21.34 ± 0.75
	3.5:1	31.85 ± 0.29
	1:1	13.39 ± 0.35
Sodium alginate (5%)	1.25:1	31.24 ± 0.42
	2:1	10.02 ± 0.96
HPMC (5%)	3:1	19.29 ± 1.11
	5:1	27.35 ± 0.82

Table S3. Preliminary study for measuring gel strength values of different GM-loaded nanoemulgel formulations using different gel bases.

Oil/Surfactant	Number of additions (5 µL)
Peppermint oil + (tween 80/water)	7 additions of oil
Peppermint oil + (tween 20/water)	6 additions of oil
Bergamot oil + (tween 80/water)	55 additions of oil
Bergamot oil + (tween 20/water)	50 additions of oil