Nanostructure Lipid Carriers of a mixture of essential oils with insect repellent action

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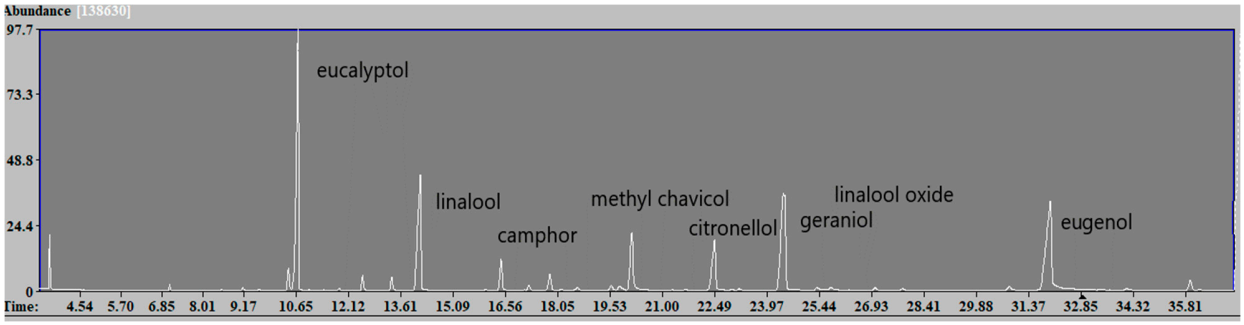

Figure S1: Representative GC-MS chromatogram of EO.

Table S1: Change of droplet size and ζ-potential distribution of NLC and NLC EO, during stability study.

NLC					
Storage at 4 °C	**Time (days)**	**Mean size (nm)**	**PdI**	**ζ-potential (mV)**	**Width**
	1	136.0 ± 10.7	0.22 ± 0.10	-68.0 ± 2.2	4.3 ± 0.1
	8	131.3 ± 4.3	0.26 ± 0.01	-63.7 ± 2.7	4.6 ± 0.5
	15	135.7 ± 16.4	0.26 ± 0.01	-64.1 ± 3.7	4.0 ± 0.1
	30	116.0 ± 1.8	0.26 ± 0.01	-65.3 ± 6.4	1.5 ± 3.1
	60	113.2 ± 5.9	0.29 ± 0.05	-58.1 ± 3.5	2.7 ± 0.8
	90	98.6 ± 15.1	0.19 ± 0.10	-54.1 ± 0.3	0.5 ± 0.0
After centrifugation		136.0 ± 10.7	0.21 ± 0.09	-74.7 ± 5.4	4.6 ± 0.5
After accelerated aging		130.5 ± 6.9	0.28 ± 0.02	-73.0 ± 5.4	10.7 ± 0.8
NLC EO					
Storage at 4 °C	**Time (days)**	**Mean size (nm)**	**PdI**	**ζ-potential (mV)**	**Width**
	1	121.9 ± 8.3	0.26 ± 0.02	-68.7 ± 4.3	8.6 ± 0.5
	8	122.6 ± 12.9	0.25 ± 0.04	-71.3 ± 5.9	10.4 ± 0.9
	15	121.3 ± 6.5	0.27 ± 0.01	-68.9 ± 5.2	6.0 ± 0.3
	30	118.3 ± 5.0	0.28 ± 0.00	-68.9 ± 5.2	9.6 ± 0.7
	60	117.3 ± 9.1	0.28 ± 0.01	-64.9 ± 8.8	8.4 ± 0.8
	90	115.6 ± 4.3	0.28 ± 0.03	-64.0 ± 12.9	7.9 ± 1.6
After centrifugation		124.1±14.2	0.29 ± 0.05	-64.3 ± 8.0	8.5 ± 0.6
Accelerated aging		107.9±11.8	0.23 ± 0.08	-54.3 ± 16.7	10.8 ± 3.3

Table S2: Content of EO components in CE EO and NLC EO (mg/mL)

Ingredient	CE EO				NLC EO			
	1d	**30d**	**60d**	**90d**	**1d**	**30d**	**60d**	**90d**
Cymene	n.d.	n.d.	n.d.	n.d.	0,09±0.01	n.d.	n.d.	n.d.
eucalyptol (cineole 1,8)	3.94 ± 0.1	1.62 ± 0.02	0.74 ± 0.01	0.06 ± 0.00	4.32 ± 0.02	3.50 ± 0.30	2.33 ± 0.03	0,38 ± 0.02
trans-linalyl oxide (furanoid)	n.d.	n.d.	n.d.	n.d.	0.1 ± 0.02	n.d.	n.d.	n.d.
linalool	3.31 ± 0.02	1.12 ± 0.03	0.08 ± 0.00	0.04 ± 0.01	2.14 ± 0.03	1.31 ± 0.03	0.63 ± 0.03	0,43 ± 0.12
camphor	0.44 ± 0.04	n.q.	0.08 ± 0.02	n.q..	0.34 ± 0.04	0.22 ± 0.02	0.19 ± 0.04	0,04 ± 0.01
borneol	n.d.	n.d.	n.d.	n.d.	0.19 ± 0.02	0.09 ± 0.02	0.08 ± 0.01	0,02 ± 0.01
α-terpineol	0.12 ± 0.02	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
methyl chavicol	0.08 ± 0.01	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
linalyl acetate	0.31 ± 0.01	0.26 ± 0.03	0.15 ± 0.01	0.01 ± 0.00	0.56 ± 0.06	0.45 ± 0.03	0.25 ± 0.03	0,17 ± 0.01
eugenol	0.37 ± 0.02	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Total EO	**8,57±0.15**	**3.01±0.15**	**1.05±0.09**	**0.13±0.01**	**7.75±0.05**	**5.22±0.01**	**3.56±0.05**	**1.29±0.04**
% Release								
Eucalyptol		58.88 ± 0.40	81.22 ± 0.23	98.58 ± 0.04		18.99 ± 6.78	46.06 ± 0.85	91.20 ± 0.44
Linalool		66.06 ± 0.96	97.58 ± 0.01	98.70 ± 0.23		38.53 ± 1.54	70.51 ± 1.65	79.76 ± 5.22
Camphor		100.00 ± 0.00	82.4 ± 4.51	100.00 ± 0.00		34.22 ± 13.72	43.03 ± 8.70	87.99 ± 4.13
Linalyl acetate		15.06 ± 9.31	50.54 ± 0.93	96.32 ± 0.13		20.08 ± 6.03	55.00 ± 4.83	70.41 ± 1.32
Total EO		64.80 ± 0.32	87.75 ± 0.55	98.48 ± 0.10		32.77 ± 0.38	54.07 ± 0.42	83.36 ± 0.41

n.d.: not detected; n.q.: non quantifiable