Supplementary information for

An eco-friendly one-pot extraction process for curcumin and its bioenhancer, piperine from edible plants in exosome-like nanovesicles

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Supplementary Figures & Tables.

Figure S1. Lipid yield in TENV, TPENV and PENV quantified by Sulpho-vanillin assay.

Figure S2. Absorption spectra of TPENV and TENV samples obtained from two independent varieties of turmeric (Punjab and Haryana variety).

Figure S3. Lipid yield in TPENVs fabricated with different concentrations of Pepper.

Figure S4. Soxhlet extraction of curcumin and piperine in turmeric and pepper respectively. Figure S5. Cell viability analysis of TENVs, TPENVs and PENVs treated RAW 264.7 macrophages (A) and HaCaT keratinocytes (B).

 Table S1: Proximate analysis of turmeric rhizome and pepper (in %)

Table S2: Weight of plant material that was taken in each group for ENV purification

Table S3: Primer sequences used for qRT-PCR in this study



Figure S1: Lipid yield in TENV, TPENV and PENV measured by sulpho-vanillin assay.



Figure S2: Absorption spectra of TENV/TPENV samples demonstrating increased curcumin yield (peak at 425 nm) in TPENVs prepared from two other varieties (Pubjab and Haryana) of turmeric.



Figure S3: Lipid yield in TPENVs on inclusion of different concentrations of Pepper as indicated.



Figure S4: Soxhlet extraction of curcumin and piperine in turmeric (madras variety) and pepper respectively. HPLC chromatograms of standard curcumin and piperine is shown in top panels. Bottom panels show HPLC chromatograms of curcumin/piperine purified from raw turmeric rhizomes (madras variety) and pepper seeds by conventional Soxhlet extraction.



Lipid equivalent ENV concentration (ug)

Figure S5: Cell viability analysis of TENV, TPENV and PENV in RAW264.7 macrophages (A) and HaCaT keratinocytes (B). To assess the effect of TENV, TPENV and PENVs on macrophages, cells were incubated with indicated concentrations (lipid equivalent) of ENVs for 24 h. Cell viability of ENV-treated cells was measured using a standard MTT assay. Bar graph showing relative cell viability upon treatment with indicated ENVs at different concentrations. n.s: non-significant.

Plant	Moisture	Protein	Lipid	Carbohydrate	Ash	Fiber	Reference
Turmeric	84.25	1.20	1.08	9.10	0.66	0.72	[5]
Pepper	13.18	10.39	2.74	36.22	4.58	33.16	[5]

 Table S1: Proximate analysis of turmeric rhizome and pepper (in %)

Table S2: Weight of plant material that was taken in each group for ENV purification

Sample	TENV (Turmeric alone)	TPENV (Turmeric + Pepper)	PENV (pepper alone)
Weight of sample taken (in g)	93	46.4 + 18.3	36.6
Lipid content (in g)	1	0.5 + 0.5	1

Table S3: Primer sequences used for qRT-PCR in this study

Gene	Forward primer	Reverse primer
GAPDH	TCAAGCTCATTTCCTGGTATGACA	TATGGGGGTCTGGGATGGAA
COX2	TCAAGACAGATCATAAGCGAGG	TGAGGAGGGTAGATCATCTCT
IL-6	CAGAGGATACCACTCCCAACA	TCCAGTTTGGTAGCATCCATC
TNFα	GAGTGACAAGCCTGTAGCCCA	ACGGTGTGGGGTGAGGAGCAC