

Supplementary data for

Storage Stability of Plant Leaf-Derived Extracellular Vesicles According to Preservative and Storage Temperature

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Condition	Temperature		-20 °C			4 °C			25 °C			45 °C		
	Date	N	Odor	Color	Phase Separation									
LEVs	0 w	3	Slightly characteristic odor	Light yellow	No change	Slightly characteristic odor	Light yellow	No change	Slightly characteristic odor	Light yellow	No change	Slightly characteristic odor	Light yellow	No change
	1 w	3	N.C	N.C	N.C									
	2 w	3	N.C	N.C	N.C									
	3 w	3	N.C	N.C	N.C									
	4 w	3	N.C	N.C	N.C									
	5 w	3	N.C	N.C	N.C									

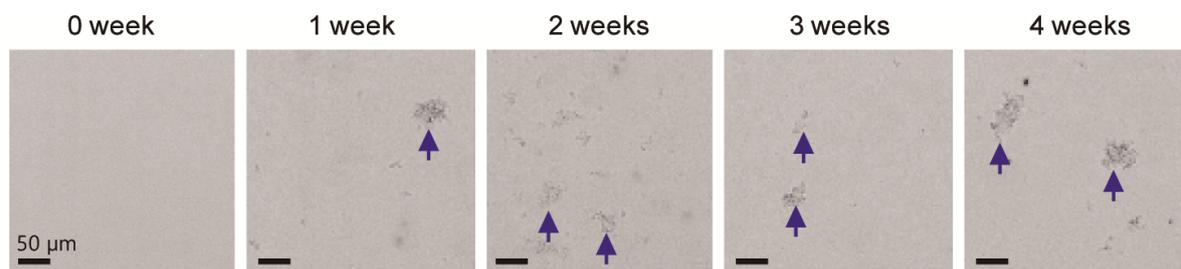
Supplementary Table S1. Physical characteristics of LEVs.

Condition	Temperature		-20 °C			4 °C			25 °C			45 °C		
	Date	N	Odor	Color	Phase Separation									
LEVs -1,3BG	0 w	3	Slightly characteristic odor	Light yellow	No change	Slightly characteristic odor	Light yellow	No change	Slightly characteristic odor	Light yellow	No change	Slightly characteristic odor	Light yellow	No change
	1 w	3	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	Soluble sediment
	2 w	3	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	Soluble sediment
	3 w	3	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	Soluble sediment
	4 w	3	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	Soluble sediment
	5 w	3	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	N.C	Soluble sediment

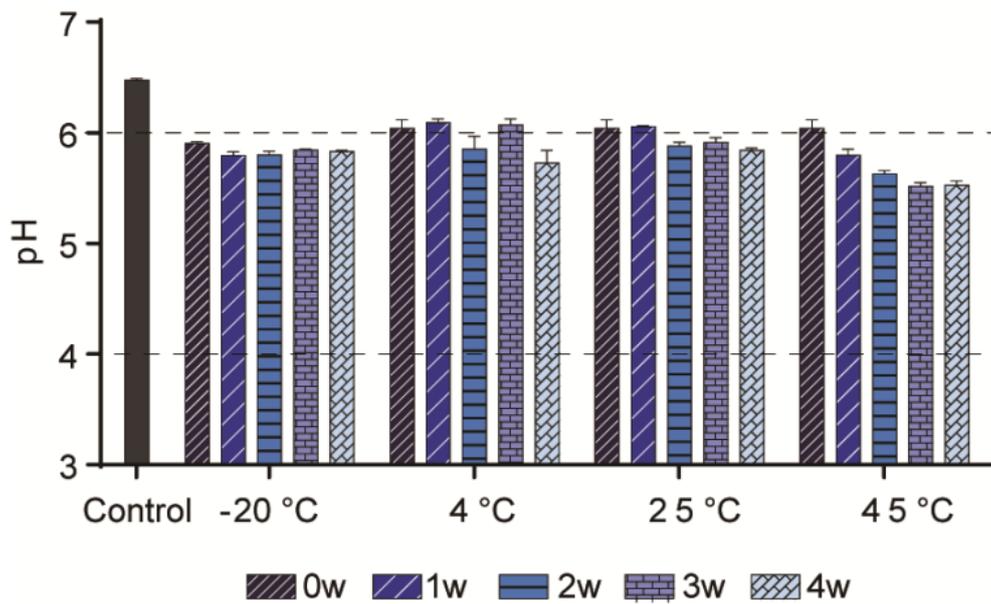
Supplementary Table S2. Physical characteristics of mixture of LEVs and 1,3 BG.

Condition	Temperature		-20 °C			4 °C			25 °C			45 °C		
	Date	N	Odor	Color	Phase Separation									
LEVs -TMO	0 w	3	Slightly characteristic odor	Light yellow	No change	Slightly characteristic odor	Light yellow	No change	Slightly characteristic odor	Light yellow	No change	Slightly characteristic odor	Light yellow	No change
	1 w	3	N.C	N.C	N.C									
	2 w	3	N.C	N.C	N.C									
	3 w	3	N.C	N.C	N.C									
	4 w	3	N.C	N.C	N.C									
	5 w	3	N.C	N.C	N.C									

Supplementary Table S3. Physical characteristics of mixture of LEVs and TMO.



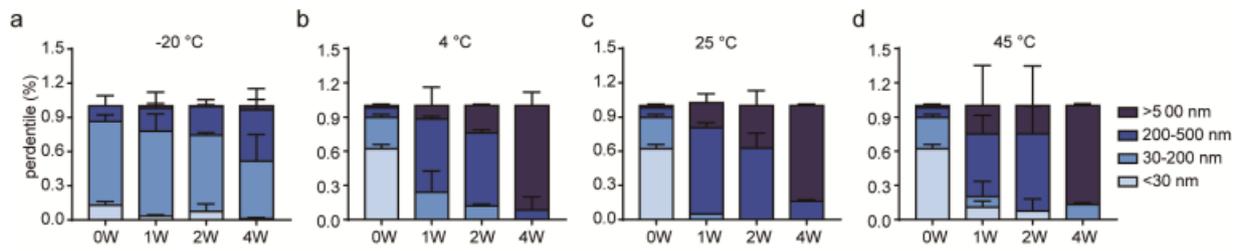
Supplementary Figure S1. Optical microscopy images of mixture of LEVs and 1,3-BG using at 45°C during 4 weeks. The mixture of LEVs and 1,3-BG showed soluble sediment at 45°C from 1 weeks to 4 weeks.



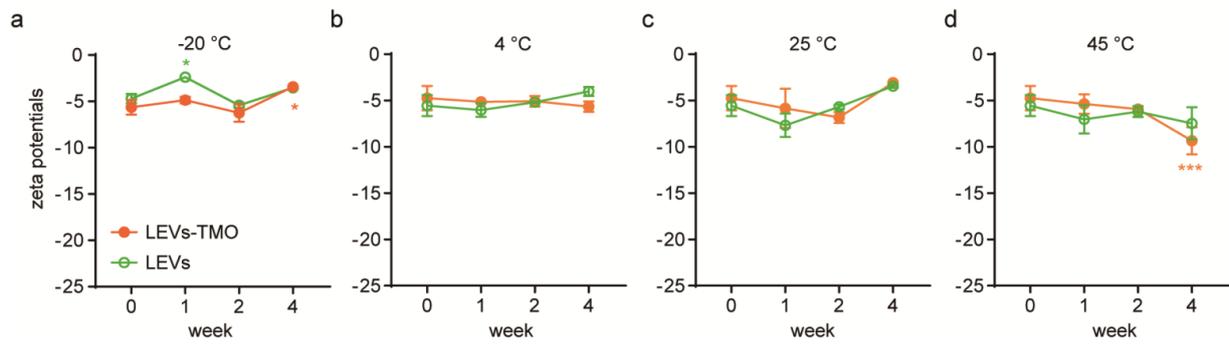
Supplementary Figure S2. pH tests of LEVs-1,3BG over time.

	LEVs	LEVs+1,3BG	LEVs+TMO
PDI	0.238 ± 0.105	0.270 ± 0.045	0.270 ± 0.060

Supplementary Figure S3. PDI values of LEVs, LEVs-1,3BG, and LEVs-TMO.

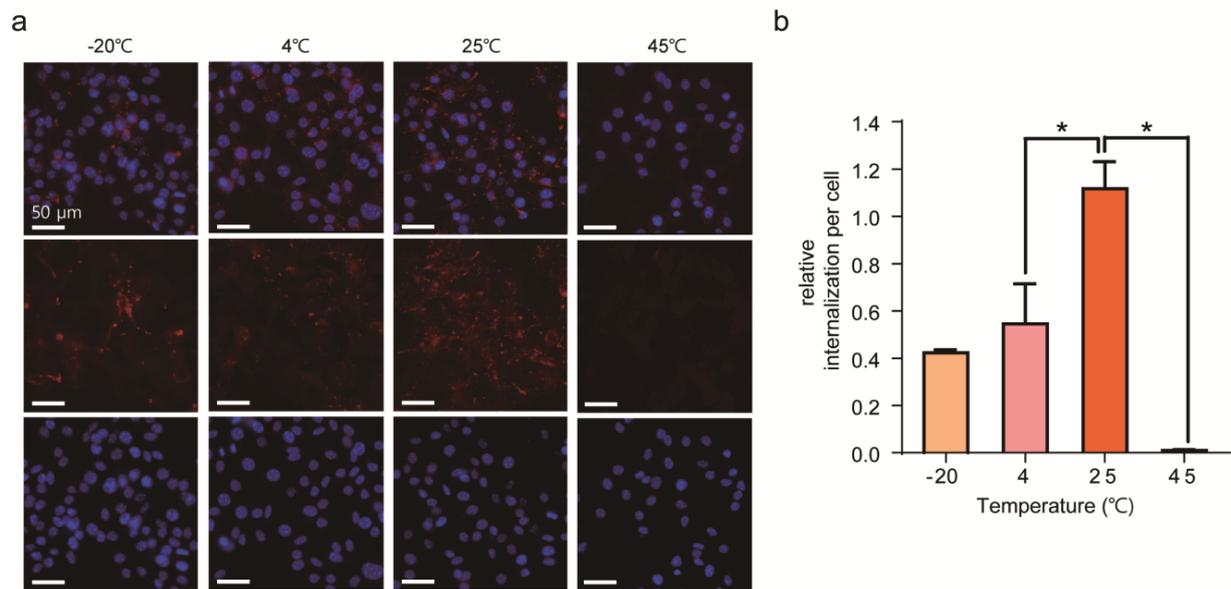


Supplementary Figure S4. Size distribution of LEVs-1,3BG over time under different temperature. The mixture of LEVs and 1,3-BG showed change of size distribution stored at -20, 4, 25, 45 °C.



Supplementary Figure S5. Zeta potentials over time under different temperatures.

Zeta potentials of LEVs and LEVs-TMO stored at (a) -20, (b) 4, (c) 25, and (d) 45 °C for 4 weeks. Data are presented as mean \pm standard error of mean (SEM). (***) $p < 0.001$, **** $p < 0.0001$).



Supplementary Figure S6. Cellular uptake for LEVs under different temperatures. (a) Representative fluorescence microscopic images of cellular uptake for LEVs stored at -20, 4, 25, and 45 °C. (b) Summary data comparing intracellular fluorescence intensity per cell. Data are presented as mean \pm standard error of mean (SEM). ($*p < 0.01$).