Supplementary Data

Mechanism of resveratrol stabilization and loss by sodium ca-seinate, whey and soy protein isolates: loading, antioxidant ac-tivity, oxidability

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Turbidity was determined from the transmission at 500 nm according the method by (Liang et al., 2011), using a UV-1800 UV-Vis spectrophotometer (Shimadzu Co., Tokyo, Japan) and expressed as (100-% transmission).

Table S1. Turbidity of WPI-resveratrol, SC-resveratrol and SPI-resveratrol complex nanoparticles at various concentrations of proteins and resveratrol.

Concentration of proteins (%)	Concentration of resveratrol (μM)			
	0	25	50	100
		WPI		
0.01	0.29 ± 0.11^{Aa}	0.79 ± 0.11^{Ba}	0.60 ± 0.10^{Ba}	0.81 ± 0.14^{Ba}
0.1	0.51 ± 0.07^{Ab}	0.90 ± 0.15^{Ba}	0.97 ± 0.02^{Bb}	0.82 ± 0.21^{Ba}
1	4.96 ± 0.13^{Ac}	5.00 ± 0.34^{Ab}	4.82 ± 0.27^{Ac}	4.74 ± 0.18^{Ab}
		SC		
0.01	0.27 ± 0.03^{Aa}	0.35 ± 0.03^{Ba}	0.35 ± 0.08^{Ba}	0.33 ± 0.01^{Ba}
0.1	2.19 ± 0.14^{Ab}	2.05 ± 0.18^{Ab}	2.00 ± 0.14^{Ab}	2.01 ± 0.09^{Ab}
1	17.82 ± 0.13^{Ac}	17.86 ± 0.30^{Ac}	17.80 ± 0.07^{Ac}	17.58 ± 0.07^{Ac}
		SPI		
0.01	0.98 ± 0.09^{Aa}	1.92 ± 0.48^{Ba}	1.88 ± 0.49^{Ba}	2.07 ± 0.28^{Ba}
0.1	9.19 ± 0.08^{Ab}	13.70 ± 1.72^{Bb}	13.78 ± 1.81^{Bb}	13.90 ± 1.83^{Bb}
1	51.50 ± 0.19^{Ac}	51.60 ± 2.41^{Ac}	51.66 ± 2.12^{Ac}	51.04 ± 2.12^{Ac}

Note: Different lower case letters in the same column represent different significance levels, different upper case letters in the same row represent different significance levels ($P < 0.05$).

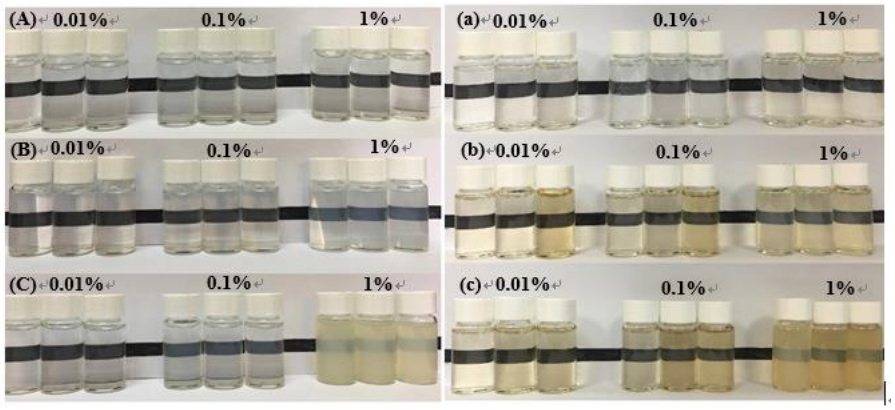

Figure S1. Appearance of WPI-resveratrol, SC-resveratrol and SPI-resveratrol complex nanoparticles before (A-C, respectively) and after (a-c, respectively) storage at 45℃ for 30 days. The concentration of proteins from left to right were 0.01%, 0.1% and 1%. The concentrations of resveratrol from left to right were 25, 50 and 100 μM.

X-ray diffraction

X-ray diffractogram of resveratrol, proteins, resveratrol-loaded protein particles, physical mixture of protein and resveratrol were analyzed by using a Bruker D2 PHASER X-ray diffractometer (Brucker, Odelzhausen, Germany) equipped with a copper anode that produces Cu Kα radiation. The 2θ angle was set from 3° to 60° in continuous mode using a step size of 0.02° and step time of 5 s and measured at 40 kV of an accelerating voltage and 40 mA of a tube current.

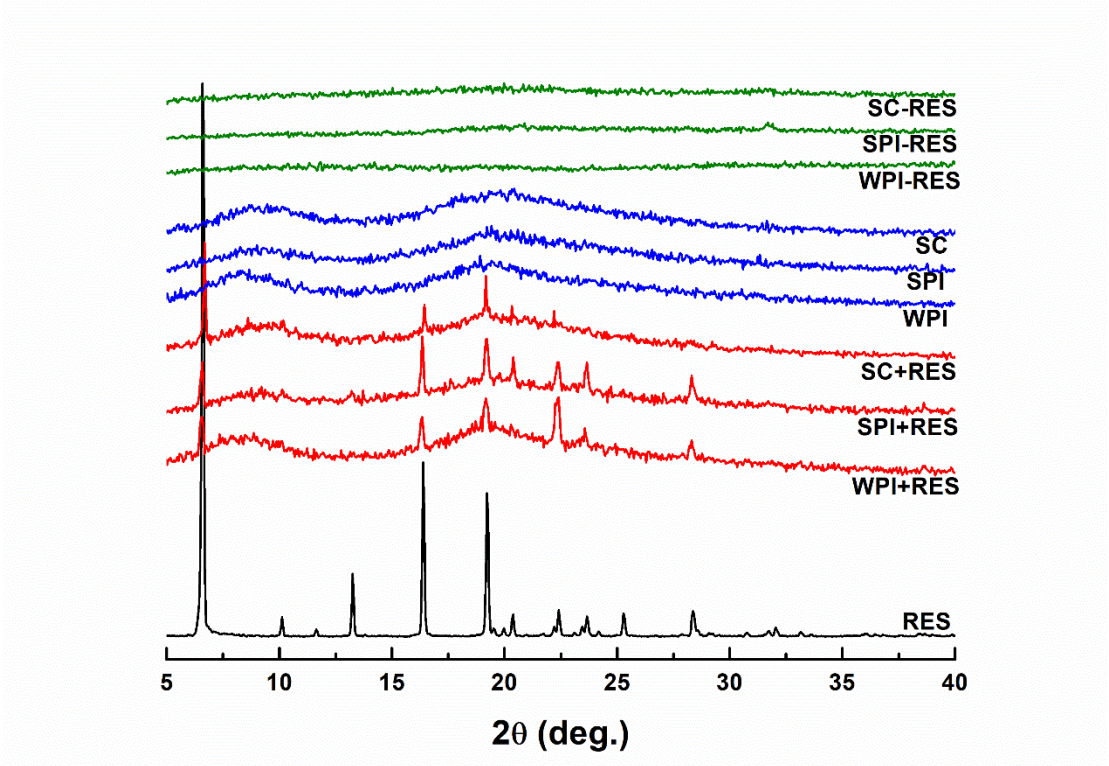

Figure S2. XRD patterns of resveratrol (black), proteins (blue), their physical mixtures (red) and resveratrol-loaded protein particles (green). The concentration of protein was 1%.

Figure S3

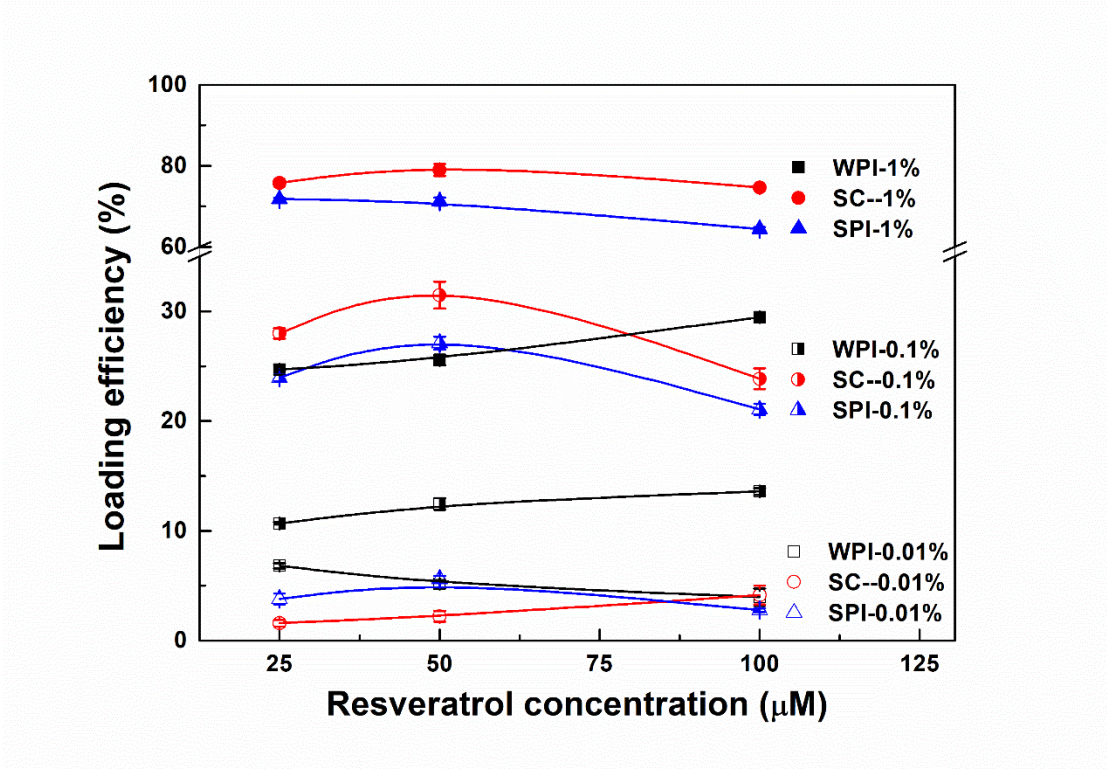

Figure S3. Loading efficiency of resveratrol in its complex particles with WPI (black), SC (red) and SPI (blue) at 0.01%, 0.1% and 1% after storage at 45°C.