

Supporting Information

Ultrasonic Assisted Extraction of *Dictyophora rubrovolvata* Volva Proteins: Process Optimization,

Structural Characterization, Intermolecular Forces, and Functional Properties

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Table S1. The factors and levels of the orthogonal test

Factors	Levels		
	1	2	3
A. pH	10	10.5	11
B. Time (min)	20	25	30
C. Ultrasonic power (W)	440	495	550
D. Material to solvent (g/mL)	1:15	1:20	1:25

Table S2. Orthogonal array design with experimental results

No.	A	B	C	D	Proteins extraction rate (%)
1	10	20	440	1:15	30.81±0.93
2	10	25	495	1:20	33.84±1.05
3	10	30	550	1:25	35.93±1.49
4	10.5	20	495	1:25	35.75±0.96
5	10.5	25	550	1:15	38.11±1.69
6	10.5	30	440	1:20	34.09±0.52
7	11	20	550	1:20	42.84±0.65
8	11	25	440	1:25	38.62±1.01
9	11	30	495	1:15	39.85±1.40
k ₁	33.53	36.47	34.51	36.26	
k ₂	35.98	36.86	36.48	36.92	
k ₃	40.44	36.62	38.96	36.77	
R	6.91	0.39	4.45	0.66	

Table S3. Variance analysis of orthogonal test.

Factors	Sum of square	Degree of freedom	Mean of square	<i>F</i> -value	<i>P</i> -value	Significant
A	211.02	2	110.51	57.03	0.0001	**
B	0.71	2	0.36	0.18	0.83	
C	89.62	2	44.81	23.12	0.0001	**
D	2.18	2	1.09	0.56	0.58	
Error	34.88	18	1.94			
Total	36613.	27				
	95					

** means that the differences are extremely significant, $P < 0.01$.

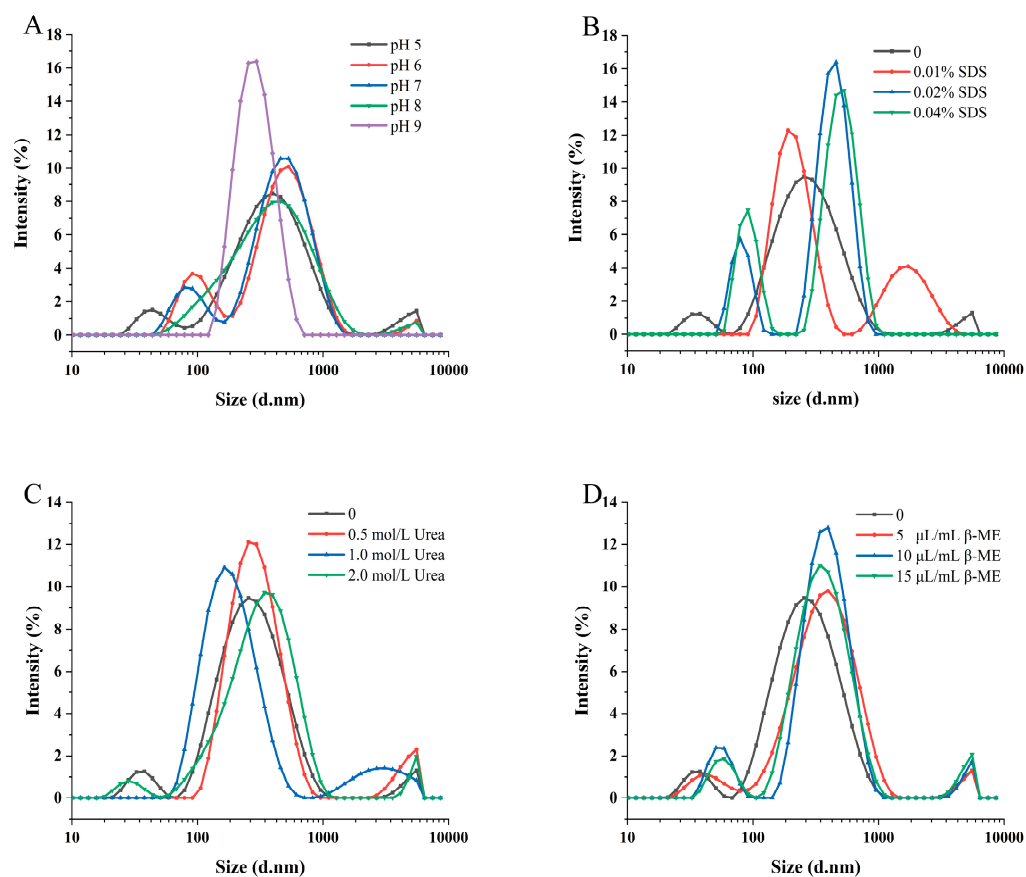


Figure S1. Effects of different dissociation agents on particle size distribution of U-DRVP. (A) pH, (B) SDS, (C) urea, and (D) β -ME. **Note:** U-DRVP, *D. rubrovolvata* volva proteins extracted by UAE.

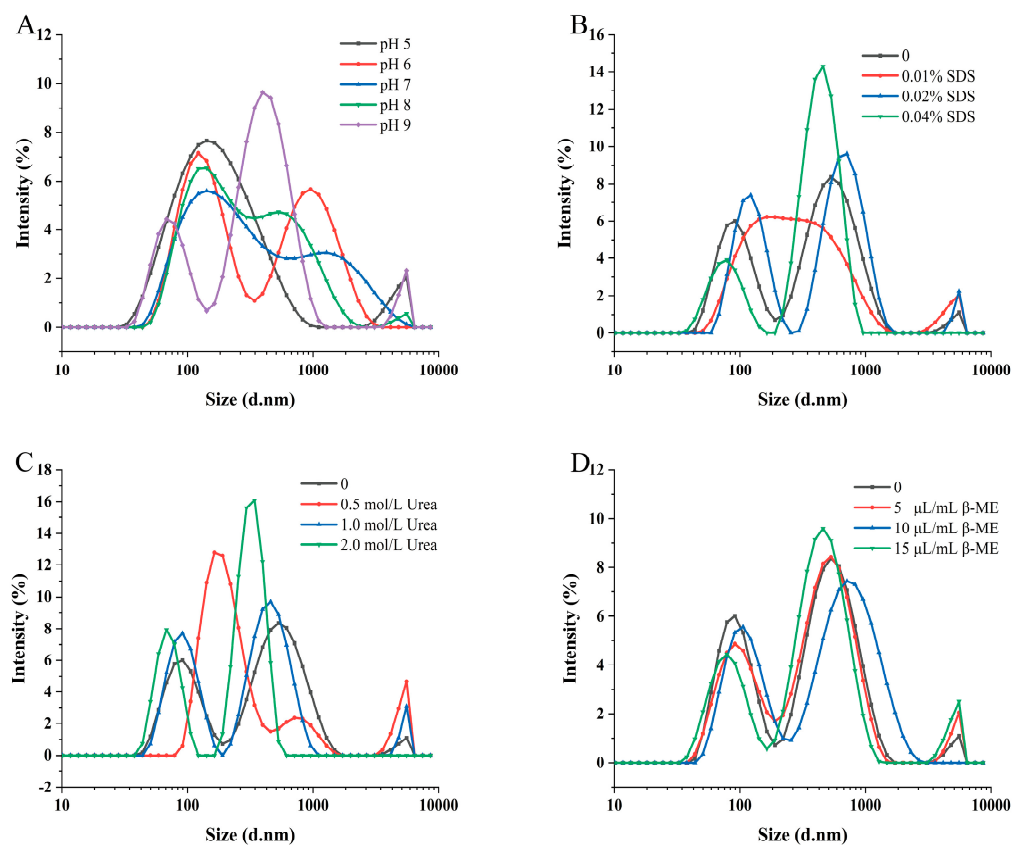


Figure S2. Effects of different dissociation agents on particle size distribution of C-DRVP. (A) pH, (B) SDS, (C) urea, and (D) β -ME. **Note:** C-DRVP, *D. rubrovolvata* volva proteins extracted by conventional alkaline extraction without UAE.