

Supporting information

Figure S1. The effect of the parameters on the ratio of autolysis. The effect of solid-liquid ratio, concentration of NaCl, pH, temperature, and the duration of treatment on the ratio of autolysis was analyzed. (A) The effect of solid-liquid ratio on the ratio of autolysis. (B) The effect of the concentration of NaCl on the ratio of autolysis. (C) The effect of the concentration of pH on the ratio of autolysis. (D) The effect of the concentration of temperature on the ratio of autolysis. (E) The effect of the concentration of time on the ratio of autolysis.

Figure S2. The effect of the parameters on the efficiency of hot-water treatment. The effect of solid-liquid ratio, NaCl, pH, temperature on the yield of polysaccharide from hot-water treatment was analyzed. (A) The effect of solid-liquid ratio on the efficiency of hot-water treatment. (B) The effect of pH on the efficiency of hot-water treatment. (C) The effect of the duration of treatment on the efficiency of hot-water treatment.

Figure S3. The effect of the parameters on the efficiency of ultrasonication. The effect of the number of cycles, the power, and the solid-liquid ratio was analyzed. (A) The effect of the number of cycles on the efficiency of ultrasonication. (B) The effect of the power on the efficiency of ultrasonication. (C) The effect of solid-liquid ratio on the efficiency of ultrasonication.

Figure S4. The effect of the parameters on the efficiency of protease treatment. The effect of different enzymes, the duration of treatment and the amount of enzyme added were analyzed. (A) The effect of different enzymes on the ratio of protein removal. (B) The effect of the duration of treatment on the ratio of protein removal. (C) The effect of the amount of enzyme added on the ratio of protein removal.

Figure S5. Gram stain and ethylene blue stain of yeast cells before and after autolysis. *P. pastoris* cells undergone Gram stain were imaged before (A) and after (C) the induced autolysis. The results were confirmed by an ethylene blue staining of the cells yeast cells before (B) and after (D) induced autolysis. The images were recorded with a Nikon optical microscope at 1000 × magnification (Nikon, Japan).

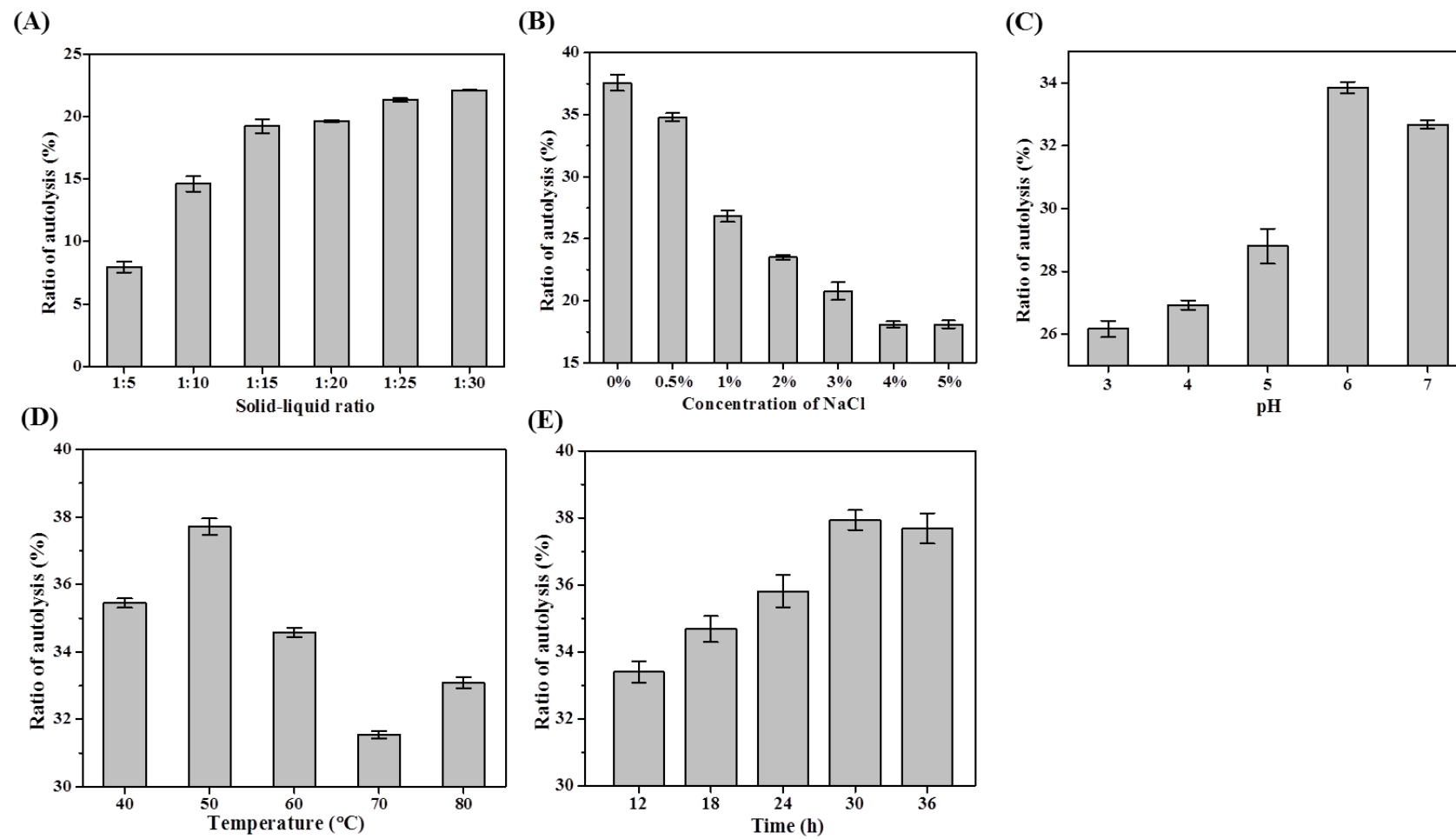


Figure S1. The effect of the parameters on the ratio of autolysis.

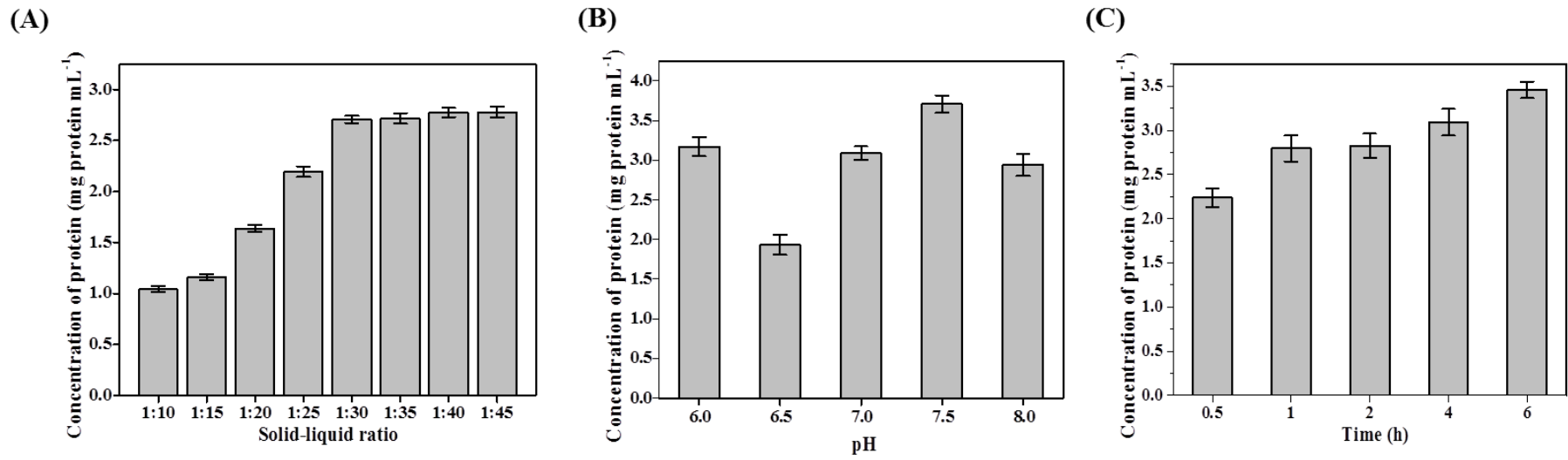


Figure S2. The effect of the parameters on the efficiency of hot-water treatment.

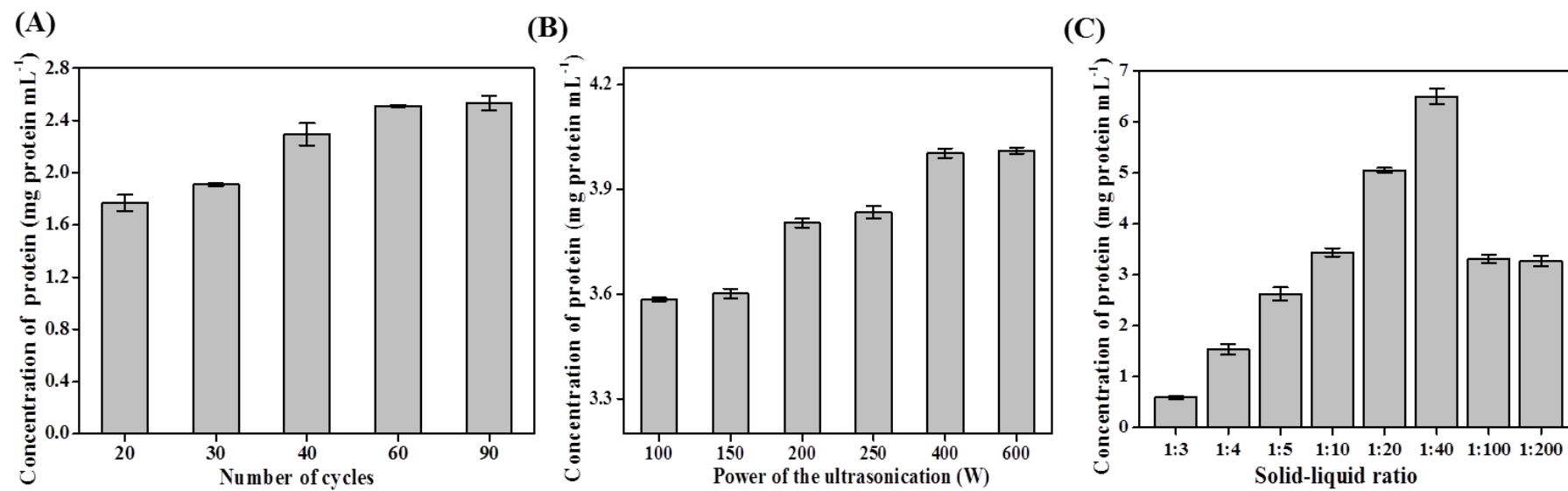


Figure. S3. The effect of the parameters on the efficiency of ultrasonication.

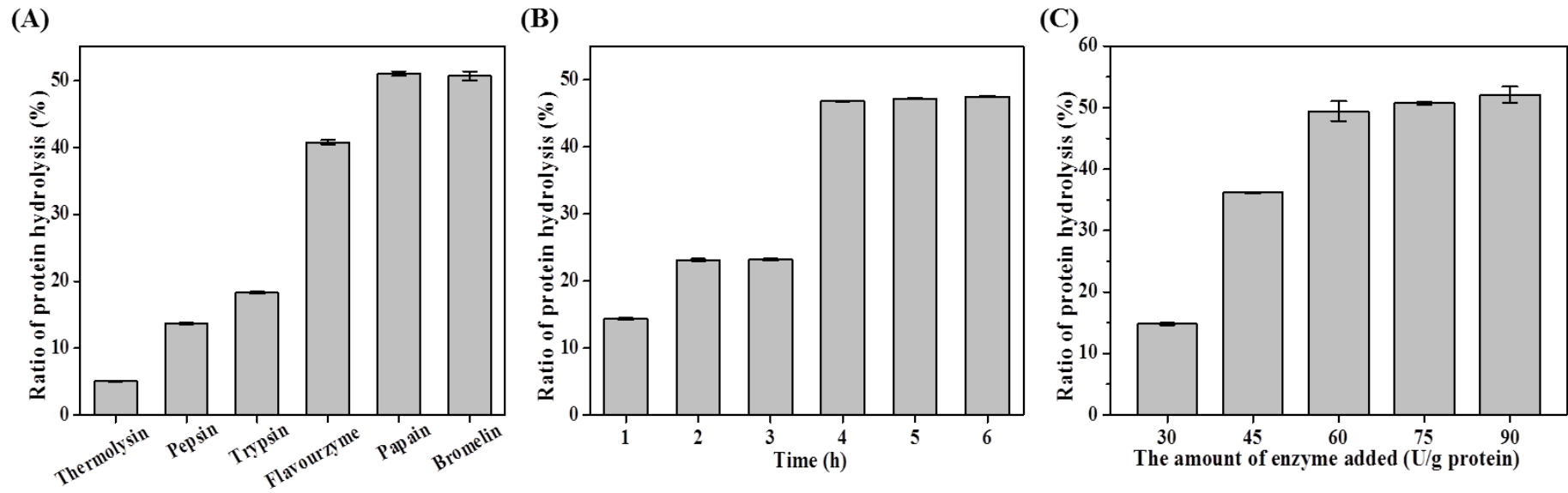


Figure S4. The effect of the parameters on the efficiency of protease treatment.

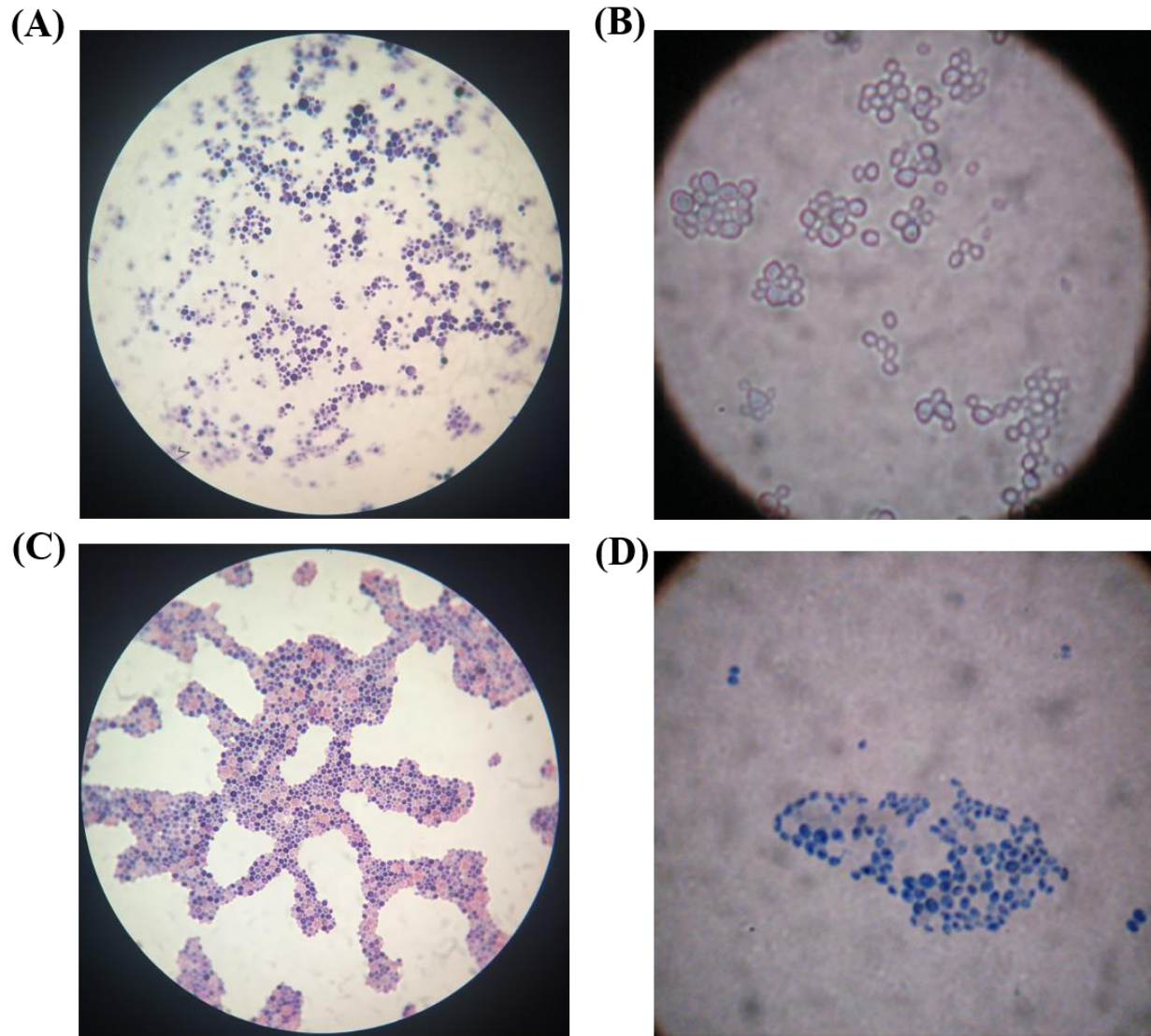


Figure S5. Gram stain and ethylene blue stain of yeast cells before and after autolysis.

Table S1 Step-wise analysis of the removal ratio and cumulative removal ratio (CRR) of each substance during the purification

	Crude protein (CRR) (%)	Lipid (CRR) (%)	Ash (CRR) (%)	Nucleic acid (CRR) (%)	Carbohydrate (CRR) (%)
Induced autolysis	64.1±0.03 (64.1±0.03)	48.1±0.05 (48.1±0.05)	49.1±0.15 (49.1±0.15)	90.1±0.84 (90.1±0.84)	13.3±0.05 (13.3±0.05)
Hot-water treatment	54.0±0.03 (83.5±0.09)	64.2±0.10 (81.4±0.15)	76.6±0.28 (88.0±0.84)	89.7±2.79 (99.0±0.23)	47.7±0.12 (54.6±0.09)
Ultrasonication	87.4±3.42 (97.9±1.96)	55.7±0.08 (91.7±0.34)	22.5±0.10 (90.7±0.99)	43.9±0.46 (99.4±0.22)	12.1±0.06 (60.1±0.09)
Isopropanol extraction	15.2±0.13 (98.2±4.47)	87.5±0.85 (98.9±9.53)	22.2±0.10 (92.8±1.40)	33.8±0.59 (99.6±0.69)	8.3±0.07 (63.4±0.12)
Protease treatment	52.1±0.24 (99.1±5.62)	55.9±0.27 (99.5±0.15)	40.9±0.13 (95.7±2.07)	70.1±0.98 (99.9±0.63)	25.9±0.08 (72.9±0.14)

The data was presented as mean of 3 replicates.