Electronic Supporting Information

Fabrication and characterization of ferritin-chitosan-lutein shell-core nanocomposites and lutein stability and release evaluation *in vitro*

Rui Yang[1,2], Yunjing Gao[1], Zhongkai Zhou[1,2,*], Padraig Strappe[3], Chris Blanchard[3]

[1]Key Laboratory of Food Nutrition and Safety, Ministry of Education, Tianjin University of Science and Technology, Tianjin 300457, China.

[2]Tianjin Food Safety & Low Carbon Manufacturing Collaborative Innovation Center , 300457, Tianjin, China.

[3]ARC Industrial Transformation Training Centre for Functional Grains, School of Biomedical Sciences, Charles Sturt University, Wagga Wagga NSW 2678, Australia.

*Corresponding author

Prof. Zhongkai Zhou (PhD)

School of Food Engineering and Biotechnology,

Tianjin University of Science and Technology, Tianjin, 300457, China.

Phone +862260601408

Fax +862260601371

E-mail: zkzhou@tust.edu.cn

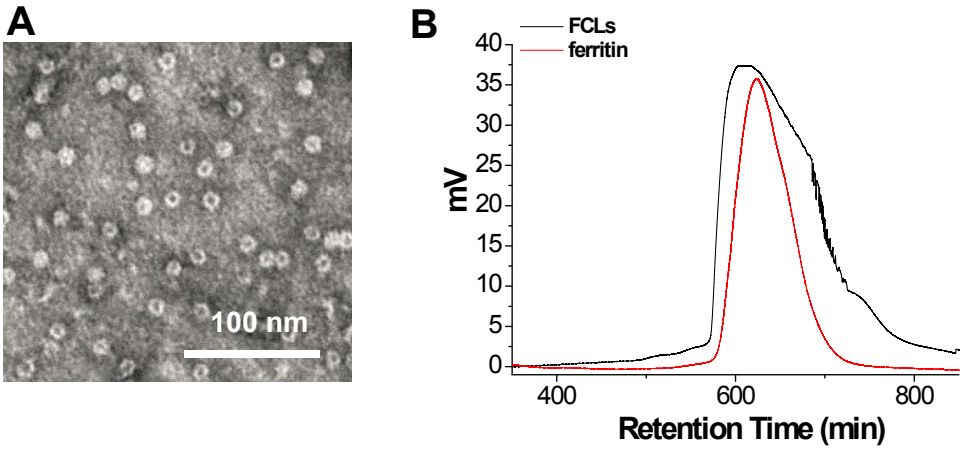

Fig. S1 (A) TEM of the apoSSF (2.0 μM) simply mixed with lutein (300 μM) followed by dialysis by Mops buffer (20 mM, pH 6.0) with two buffer changes (every 8.0 h intervals); (B) Size exclusion chromatography of ferritin and FCLs at pH 6.0.

Procedure and condition of Size exclusion chromatography experiment

Size exclusion chromatography was performed by a purificating column (1.5×120 cm) filling with Sephacryl S-300 resin (GE. Inc., USA) consisting of an UV detector (280 nm) (4.6×250mm, 5μm). Samples were eluted by the use of a mobile phase consisting of 50 mM Mops, 0.15 M NaCl. The injection volume was 5 mL, and the flow rate of the mobile phase was 0.4 mL/min. The flowed samples were collected by 10 mL tubes with a rate of 10 min/tubes.

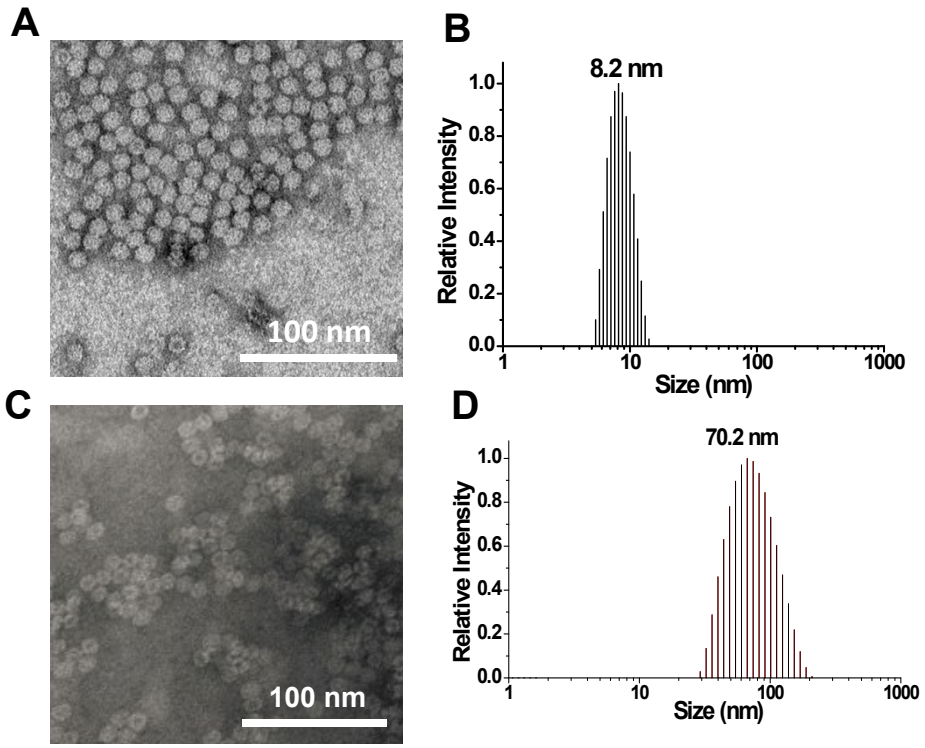

Fig. S2 (A) TEM of ferritin-lutein complex in the presence of 17% ethanol; (B) DLS of ferritin-lutein complex in the presence of 17% ethanol; (C) TEM of ferritin-lutein complex in the presence of 30% ethanol; (D) DLS of ferritin-lutein complex in the presence of 30% ethanol.

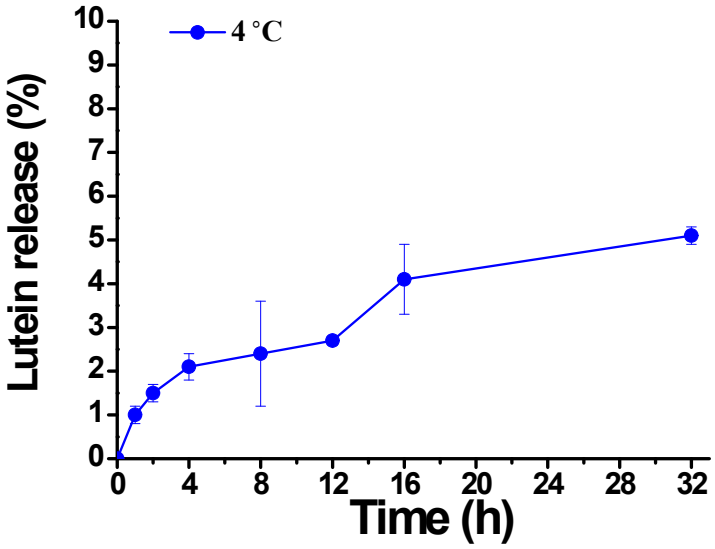

Fig. S3 Kinetics of lutein release from FCLs at different dialysis time.