

Supplementary Materials

Application of Amyloid-Based Hybrid Membranes in Drug Delivery

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Table S1. A listing of composition and key properties of whey protein isolate (WPI) used in this study.

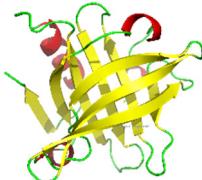
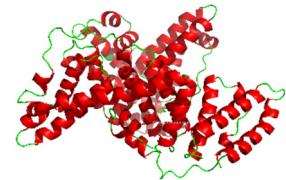
Protein	β -lactoglobulin (β -LG)	α -lactalbumin (α -LA)	Bovine serum albumin (BSA)
Composition	~48-58 %	~13-19 %	~6 %
PDB structure			
Number of residue	162	123	582
Molecular weight	~18.3 kDa	~14.2 kDa	~66.4 kDa
Number of thiol group and disulfide bond	1 free thiol group and 2 S-S bonds	4 S-S bonds	1 free thiol group and 17 S-S bonds
Isoelectric point (pI)	~5.2	~4.8	~4.7

Table S2. A summary of amyloid-based materials used for drug delivery.

Materials	Drug delivery vehicles	Fabrication techniques	Drug types	References
β -LG fibril	Fibrous aggregates	Fibrillization process	PdNP, AuNP, AgNP	[1]
β -LG fibril	Fibrous aggregates	Fibrillization process	Iron nanoparticle	[2]
GA/WPI-AF	Fibrous aggregates	Fibrillization process	Iron ions (Fe^{3+})	[3]
Lysozyme fibril	Microgel	Droplet microfluidics	ThT, RBBR, Penicillin V, Tetracycline	[4]
β -LG/BSA fibril	Hydrogel	Ca^{2+} -induced cold-set gelation	Riboflavin	[5]
Lysozyme fibril	Hydrogel	Heat-induced gelation	Beta-blockers	[6]
α S fibril	Hydrogel	Disulfide-exchange process	Rhodamine 6G	[7]
Lysozyme fibril	Injectable hydrogel	Physical gelation	Doxorubicin	[8]
MAX8 peptide fibril	Injectable hydrogel	Physical gelation	Curcumin	[9]
BSA fibril	Membrane	Electrospinning	Ampicillin	[10]
CMC/WPI-AF	Membrane	Chemical crosslink/Phase inversion	Methylene blue, Riboflavin	Present work

Abbreviations: WPI-AF – whey protein isolate amyloid fibril; CMC – carboxymethyl cellulose; β -LG – β -lactoglobulin; BSA – bovine serum albumin; α S – α -synuclein; GA – gum arabic; PdNP – palladium nanoparticle; AgNP – silver nanoparticle ; AuNP – gold nanoparticle; Beta-blockers – beta-adrenoceptor antagonists; ThT – thioflavin T; RBBR – remazol brilliant blue R.

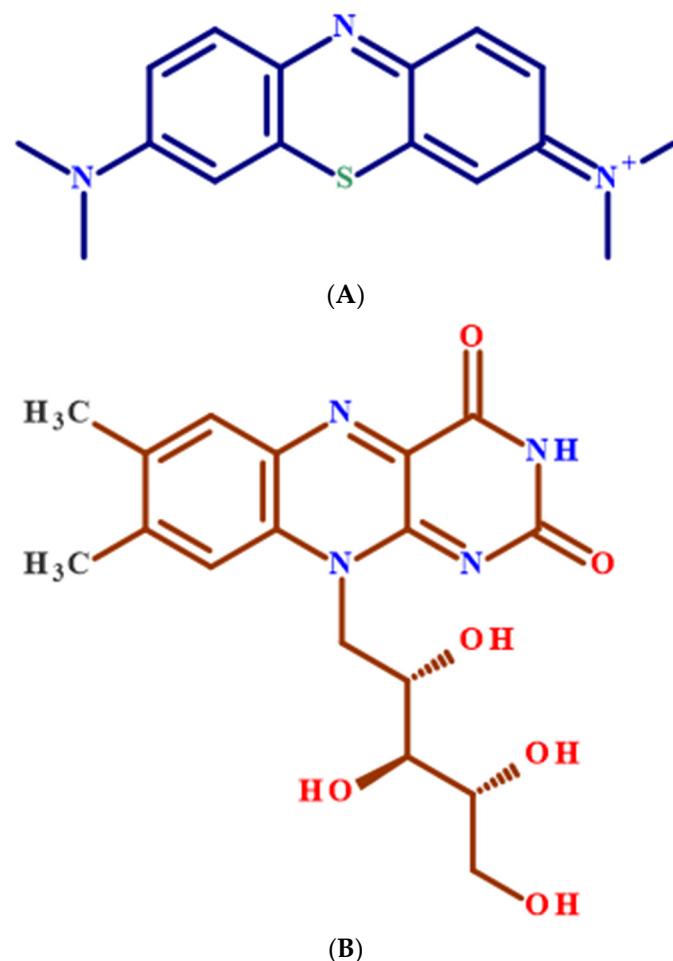
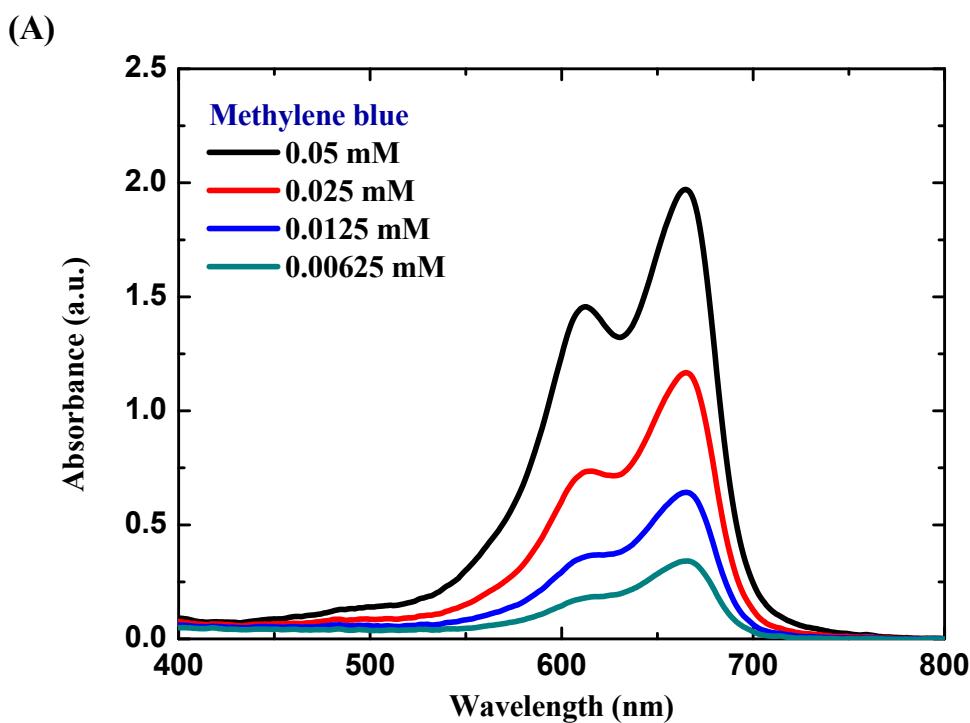
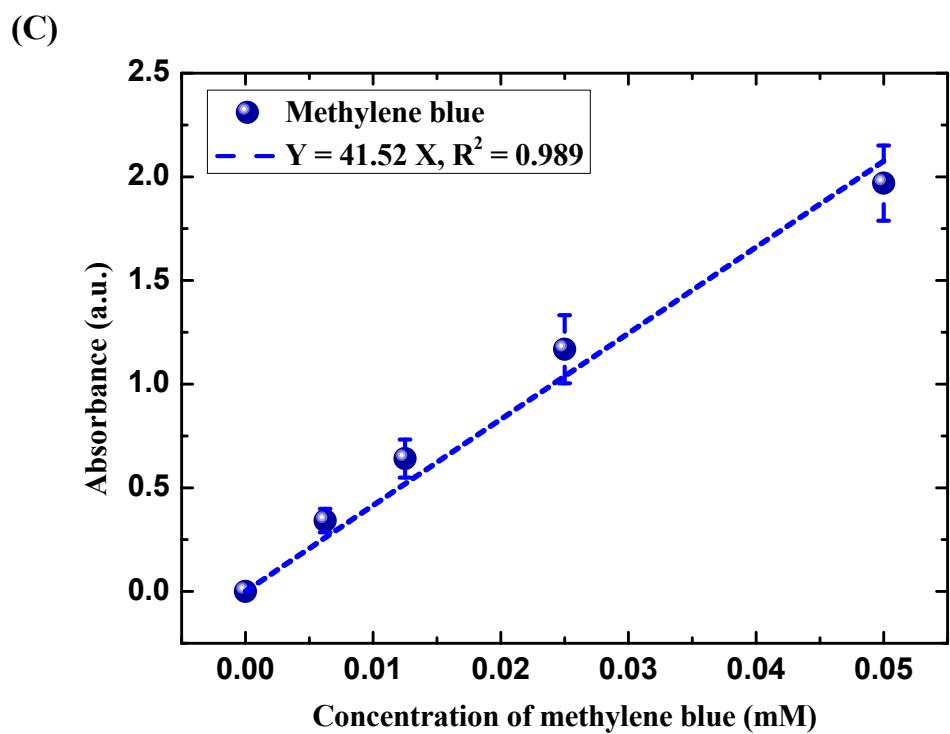
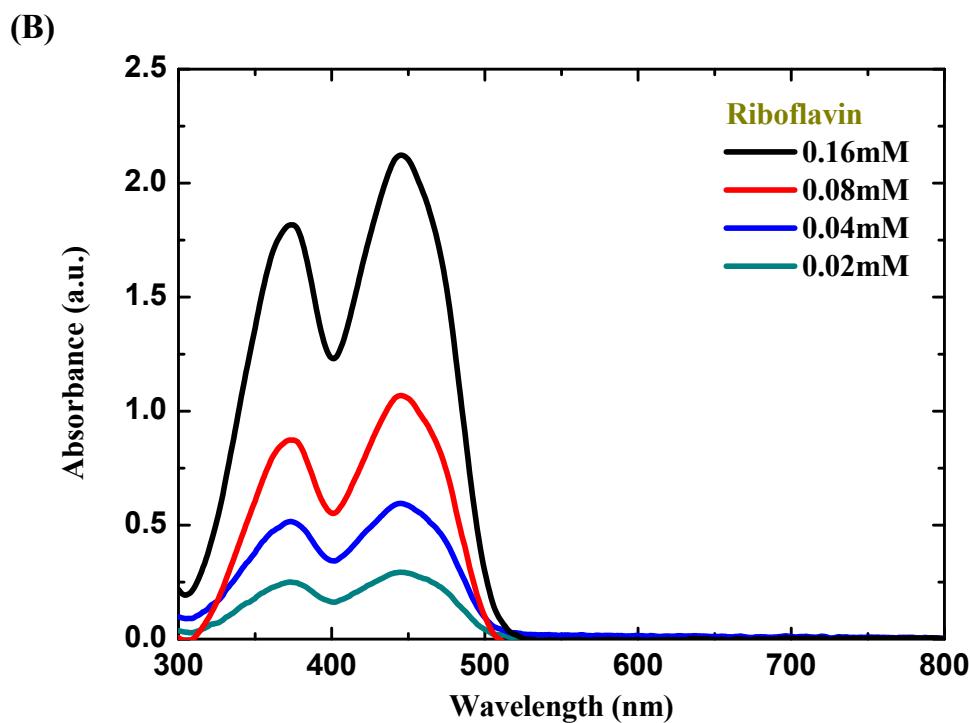


Figure S1. The chemical structure of (A) methylene blue and (B) riboflavin.





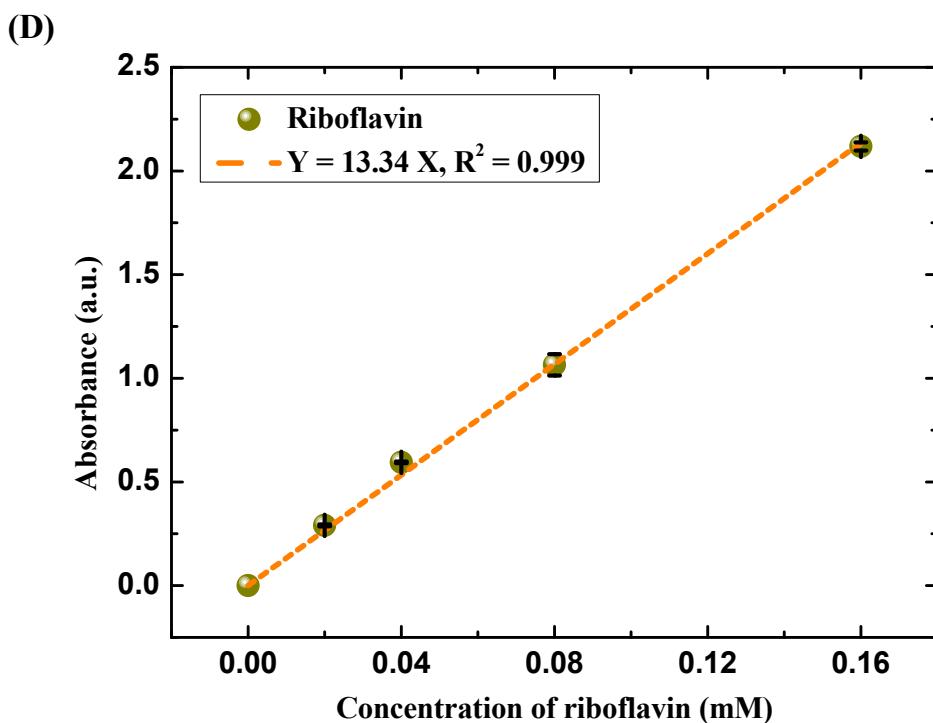


Figure S2. (A) The UV-Vis spectra of methylene blue with different concentrations. (B) The UV-Vis spectra of riboflavin with different concentrations. (C) The calibration curve of methylene blue. (D) The calibration curve of riboflavin. The absorbance of methylene blue and riboflavin was measured at the wavelength of 665 nm and 445 nm, respectively.

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