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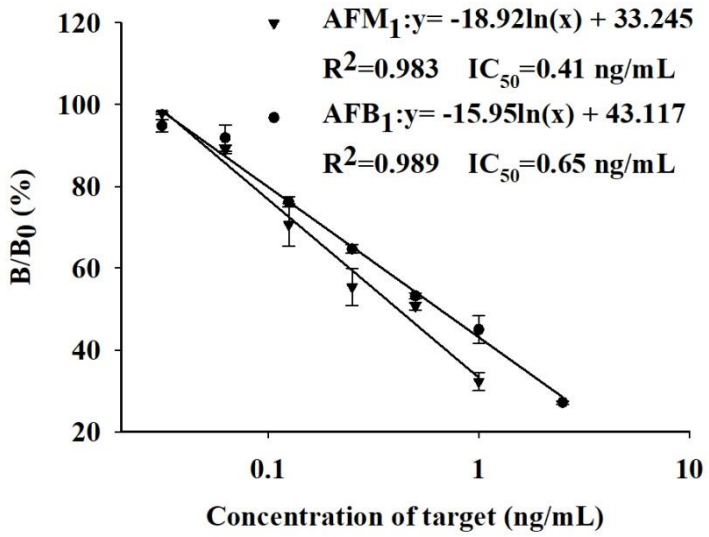
Supplemental Figure S1. HRP-based conventional ELISA for AFM_1 and AFB_1 detection; 96-well polystyrene plates were coated with 100 µL of BSA@AFM_1 (3 µg/mL) in PBS at 4 °C overnight. After washing the plates three times with PBST (PBS, pH 7.4, 0.01 M, containing 0.05% Tween 20), the plates were blocked with blocking buffer (10 mg/mL of BSA in PBS) for 2 h at 37 °C. After washed three times with PBST, 50 µL per well of diluted anti-AFM_1 antibody solution and 50 µL of AFM_1 or AFB_1 standard solution were added. After incubation at 37 °C for 1 h, the unbound content was discarded by washing with PBST for three times. Then, 100 µL of diluted goat anti-mouse antibody labeled HRP was added and incubated at 37 °C for 1 h. The unbounded enzymes were removed by washing with PBST for three times. Subsequently, 100 µL of TMB solution was added. After incubation for 15 min at room temperature, the reaction was terminated with 50 µL of 2 M H_2SO_4, and the absorbance was measured at 450 nm using a microplate reader.



Supplemental Figure S1. Competitive inhibition curves of conventional ELISA for detection AFM_1 and AFB_1, respectively.

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Supplemental Table S1. Checkerboard method for anti-AFM_1 mAbs and QB@BSA@AFB_1-1:50. The highlighted number was selected as the optimal experimental condition.

Concentration of QB@BSA@AFB_1-1:50	Concentration of antibody (μg/mL)			
	3	1.5	0.75	0.32
120	2.465	2.168	1.563	1.232
60	2.031	1.364	1.225	0.7582
30	1.365	1.226	**1.023**	0.6521
15	0.8854	0.6254	0.8423	0.09244

Supplemental Table S2. Checkerboard method for anti-AFM_1 mAbs and QB@BSA@AFB_1-1:20. The highlighted number was selected as the optimal experimental condition.

Concentration of QB@BSA@AFB_1-1:20	Concentration of antibody (μg/mL)			
	3	1.5	0.75	0.32
120	2.365	2.015	1.620	1.032
60	1.852	1.263	1.558	0.6633
30	1.566	1.355	**0.9636**	0.3327
15	1.332	0.9954	0.8252	0.06364

Supplemental Table S3. Checkerboard method for anti-AFM_1 mAbs and QB@BSA@AFB_1-1:10. The highlighted number was selected as the optimal experimental condition.

Concentration of QB@BSA@AFB_1-1:10	Concentration of antibody (μg/mL)			
	3	1.5	0.75	0.32
120	2.351	2.036	1.662	1.236
60	1.952	1.369	1.452	0.9637
30	1.356	1.125	**0.9324**	0.6634
15	1.036	0.8524	0.5548	0.4258

Supplemental Table S4. Checkerboard method for anti-AFM_1 mAbs and QB@BSA@AFB_1-1:5. The highlighted number was selected as the optimal experimental condition.

Concentration of QB@BSA@AFB_1-1:5	Concentration of antibody (μg/mL)			
	3	1.5	0.75	0.32
120	2.187	1.751	1.452	1.063
60	1.845	1.556	1.365	0.8821
30	1.652	0.9345	**0.8752**	0.4241
15	1.024	0.9954	0.6248	0.2096

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Supplemental Table S5. Checkerboard method for anti-AFM_1 mAbs and QB@BSA@AFB_1-1:1. The highlighted number was selected as the optimal experimental condition.

Concentration of QB@BSA@AFB_1-1:1	Concentration of antibody (μg/mL)			
	3	1.5	0.75	0.32
120	2.135	1.645	1.456	0.9452
60	1.986	1.425	1.462	0.6624
30	1.766	1.152	**0.8154**	0.4732
15	1.223	0.8952	0.5452	0.3364

Supplemental Table S6. Checkerboard method for anti-AFM_1 mAbs and QB@BSA@AFB_1-2:1. The highlighted number was selected as the optimal experimental condition.

Concentration of QB@BSA@AFB_1-2:1	Concentration of antibody (μg/mL)			
	3	1.5	0.75	0.32
120	2.031	1.684	1.153	0.4421
60	1.766	1.226	0.9954	0.1021
30	1.631	0.8647	**0.8756**	0.09562
15	1.035	0.6571	0.1124	0.03256

Supplemental Table S7. Checkerboard method for anti-AFM_1 mAbs and QB@BSA@AFB_1-5:1. The highlighted number was selected as the optimal experimental condition.

Concentration of QB@BSA@AFB_1-5:1	Concentration of antibody (μg/mL)			
	3	1.5	0.75	0.32
120	2.214	1.483	0.8244	0.1754
60	1.874	1.247	0.6173	0.08754
30	1.658	**1.017**	0.2214	0.07241
15	0.7687	0.4827	0.1246	0.01624

Supplemental Table S8. Checkerboard method for anti-AFM_1 mAbs and QB@BSA@AFB_1-20:1.

Concentration of QB@BSA@AFB_1-20:1 (μg/mL)	Concentration of antibody (μg/mL)			
	3	1.5	0.75	0.32
120	0.072	0.043	0.055	0.046
60	0.067	0.029	0.043	0.038
30	0.044	0.044	0.037	0.021
15	0.043	0.030	0.066	0.065