

Supplementary Information

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Table S3 The fitted results by Weibull function and some statistics for binary mixture system

(OXA- CYA)

Ray	Time	α	β	RMSE	R	EC ₅₀ (moL/L)	pEC ₅₀
R1	12	2.16	0.85	0.059	0.8929	∞	0
	24	2.57	0.89	0.068	0.9020	∞	0
	48	5.11	1.338	0.115	0.9181	1.075E-4	3.97
	72	7.37	1.83	0.099	0.9597	5.921E-5	4.23
	96	11.98	2.89	0.082	0.9836	5.344E-5	4.27
R2	12	2.63	0.97	0.054	0.9135	∞	0
	24	3.06	1.02	0.069	0.9083	∞	0
	48	5.55	1.49	0.106	0.9290	1.070E-4	3.97
	72	7.60	1.88	0.090	0.9651	5.788E-5	4.24
	96	12.4	2.98	0.081	0.9840	5.199E-5	4.28
R3	12	2.72	0.96	0.052	0.9214	∞	0
	24	3.20	1.02	0.060	0.9264	∞	0
	48	5.82	1.52	0.094	0.9401	8.510E-5	4.07
	72	7.35	1.79	0.080	0.9680	4.888E-5	4.31
	96	9.10	2.17	0.066	0.9828	4.341E-5	4.36
R4	12	3.45	1.15	0.040	0.9446	∞	0
	24	3.85	1.19	0.056	0.9314	∞	0
	48	6.10	1.58	0.077	0.9512	8.077E-5	4.09
	72	6.84	1.66	0.057	0.9795	4.558E-5	4.34
	96	7.47	1.78	0.049	0.9876	3.958E-5	4.40
R5	12	4.33	1.30	0.027	0.9737	∞	0
	24	5.14	1.43	0.044	0.9549	∞	0
	48	6.10	1.51	0.036	0.9849	5.218E-5	4.28
	72	5.44	1.28	0.032	0.9900	2.908E-5	4.54
	96	5.76	1.32	0.038	0.9894	2.284E-4	4.64

Note: α and β refer to the position and shape parameters in the Weibull function, respectively. RMSE and

R refer to determination coefficient and root mean square error, respectively.

Table S4 The fitted results by Weibull function and some statistics for ternary mixture system

(OXA-PRO-CYA)

Ray	Time	α	β	RMSE	R	EC ₅₀	pEC ₅₀
R1	12	1.14	0.73	0.020	0.93379	∞	0
	24	3.78	1.18	0.049	0.9486	∞	0
	48	6.66	1.77	0.068	0.9648	1.072E-4	3.97
	72	8.90	2.24	0.067	0.9788	7.297E-5	4.14
	96	10.71	2.66	0.057	0.9880	6.853E-5	4.16
R2	12	0.68	0.62	0.027	0.8630	∞	0
	24	4.72	1.37	0.045	0.9596	∞	0
	48	9.93	2.46	0.066	0.9733	9.192E-5	4.04
	72	14.97	3.57	0.060	0.9876	6.408E-5	4.19
	96	14.16	3.46	0.072	0.9878	6.333E-5	4.20
R3	12	0.87	0.68	0.026	0.8733	∞	0
	24	4.66	1.34	0.046	0.9568	∞	0
	48	9.12	2.24	0.053	0.9796	8.483E-5	4.07
	72	8.28	2.05	0.056	0.9844	6.056E-5	4.22
	96	9.43	2.30	0.046	0.9912	5.504E-5	4.26
R4	12	0.72	0.67	0.021	0.9212	∞	0
	24	3.43	1.09	0.061	0.9345	∞	0
	48	6.62	1.74	0.094	0.9523	9.655E-5	4.02
	72	10.07	2.49	0.098	0.9707	6.436E-5	4.19
	96	14.63	3.54	0.086	0.9855	5.804E-5	4.24
R5	12	0.81	0.64	0.025	0.8820	∞	0
	24	4.55	1.27	0.037	0.9729	∞	0
	48	9.77	2.38	0.050	0.9831	7.852E-5	4.11
	72	14.17	3.36	0.047	0.9907	6.064E-5	4.22
	96	12.36	3.05	0.065	0.9874	6.720E-5	4.17

Note: α and β refer to the position and shape parameters in the Weibull function, respectively. RMSE and

R refer to determination coefficient and root mean square error, respectively.

Table S5 The fitted results by Weibull function and some statistics for four-component mixture

system (OXA-DIP-PRO-CYA)

Ray	Time	α	β	RMSE	R	EC ₅₀	pEC ₅₀
R1	12	2.42	1.23	0.035	0.9179	∞	0
	24	2.70	1.11	0.023	0.9806	∞	0
	48	5.26	1.61	0.044	0.9811	3.201E-4	3.50
	72	6.94	2.01	0.045	0.9870	2.317E-4	3.64
	96	7.66	2.18	0.042	0.9901	2.080E-4	3.68
R2	12	0.89	0.84	0.022	0.9353	∞	0
	24	1.65	0.87	0.022	0.9745	∞	0
	48	4.73	1.54	0.056	0.9720	4.904E-4	3.31
	72	6.97	2.11	0.060	0.9807	3.334E-4	3.48
	96	8.10	2.41	0.055	0.9855	3.068E-4	3.51
R3	12	0.64	0.74	0.015	0.9495	∞	0
	24	2.29	0.97	0.034	0.9545	∞	0
	48	5.25	1.51	0.069	0.9624	1.907E-4	3.72
	72	7.39	1.99	0.061	0.9813	1.265E-4	3.90
	96	10.79	2.87	0.057	0.9886	1.296E-4	3.89
R4	12	1.80	1.06	0.027	0.9424	∞	0
	24	2.41	1.02	0.047	0.9438	∞	0
	48	4.27	1.31	0.056	0.9714	2.889E-4	3.54
	72	7.59	2.18	0.077	0.9744	2.240E-4	3.65
	96	13.67	3.85	0.074	0.9878	2.260E-4	3.65
R5	12	1.52	0.89	0.021	0.9660	∞	0
	24	2.50	0.99	0.034	0.9675	∞	0
	48	5.11	1.51	0.058	0.9748	2.361E-4	3.63
	72	7.42	2.10	0.056	0.9838	1.959E-4	3.71
	96	10.92	3.06	0.059	0.9877	2.049E-4	3.69

Note: α and β refer to the position and shape parameters in the Weibull function, respectively. RMSE and

R refer to determination coefficient and root mean square error, respectively.

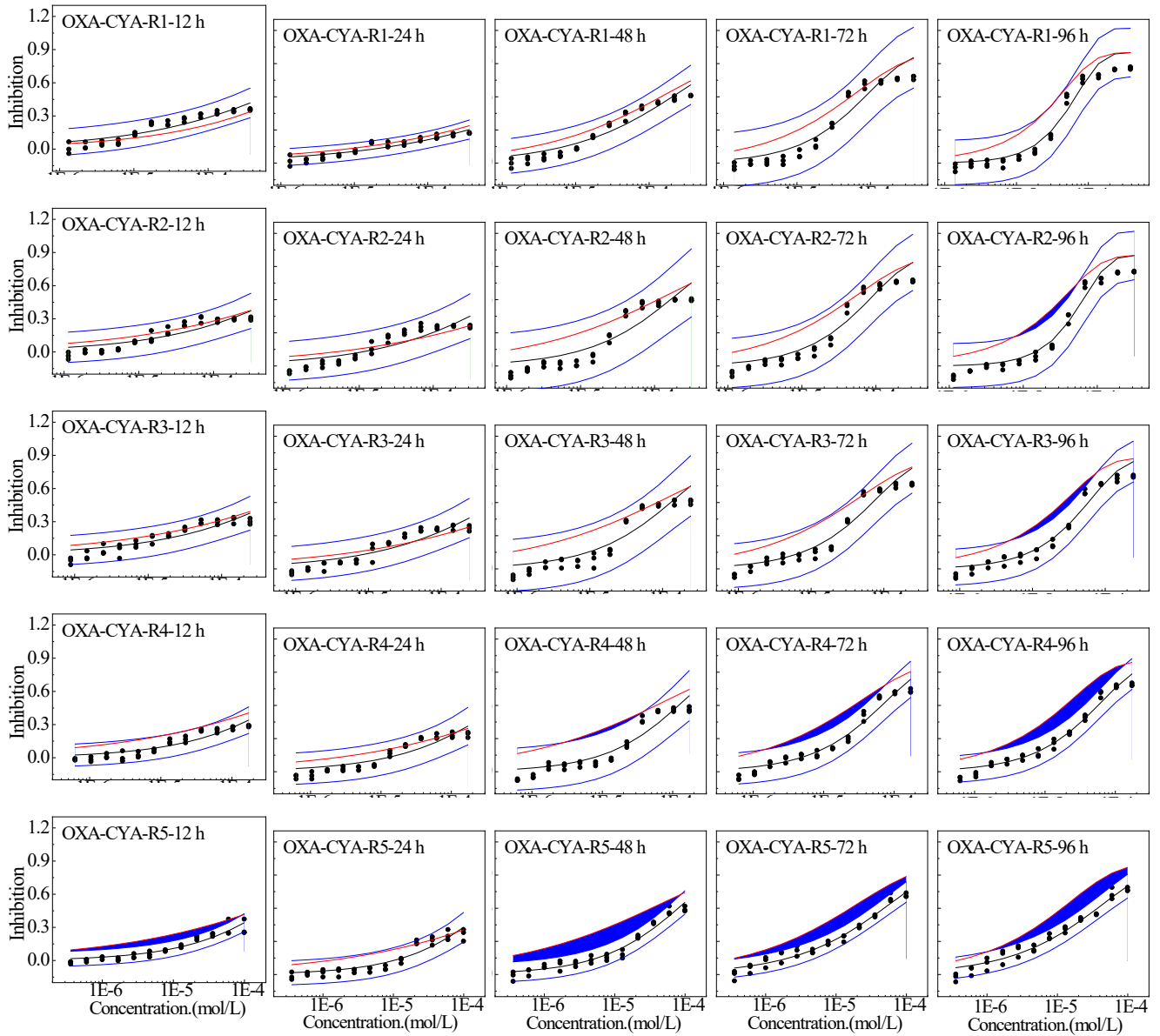
Table S6 The fitted results by Weibull function and some statistics for five-component mixture

system (OXA-DIP-DIQ- CYA-PRO)

Ray	Time	α	β	RMSE	R	EC ₅₀	pEC ₅₀
R1	12	0.83	1.00	0.012	0.9220	∞	0
	24	3.83	1.32	0.031	0.9820	∞	0
	48	6.42	1.84	0.064	0.9729	2.050E-4	3.69
	72	7.36	2.02	0.051	0.9863	1.496E-4	3.83
	96	7.65	2.06	0.049	0.9884	1.284E-4	3.89
R2	12	1.46	1.32	0.017	0.8796	∞	0
	24	3.95	1.44	0.046	0.9671	∞	0
	48	6.86	2.07	0.087	0.9636	3.228E-4	3.49
	72	8.47	2.45	0.070	0.9802	2.473E-4	3.61
	96	9.97	2.84	0.064	0.9869	2.293E-4	3.64
R3	12	0.45	0.86	0.012	0.9284	∞	0
	24	4.14	1.43	0.056	0.9558	∞	0
	48	6.82	1.97	0.090	0.9612	2.249E-4	3.65
	72	8.58	2.35	0.071	0.9812	1.559E-4	3.81
	96	10.36	2.78	0.058	0.9903	1.385E-4	3.86
R4	12	0.01	0.82	0.007	0.9483	∞	0
	24	3.75	1.39	0.046	0.9638	∞	0
	48	6.42	1.93	0.087	0.9605	3.046E-4	3.52
	72	8.30	2.38	0.076	0.9762	2.284E-4	3.64
	96	10.50	2.98	0.069	0.9845	2.257E-4	3.65
R5	12	0.01	0.68	0.010	0.9138	∞	0
	24	3.08	0.98	0.033	0.9806	∞	0
	48	5.72	1.53	0.054	0.9800	1.052E-4	3.98
	72	6.67	1.72	0.056	0.9827	8.110E-5	4.09
	96	6.64	1.65	0.054	0.9856	5.671E-5	4.25
R6	12	0.09	0.72	0.011	0.9445	∞	0
	24	2.95	1.02	0.039	0.9755	∞	0
	48	5.74	1.66	0.0633	0.9760	2.096E-4	3.68
	72	7.35	2.06	0.058	0.9843	1.795E-4	3.75
	96	7.86	2.17	0.049	0.9899	1.618E-4	3.79
R7	12	0.83	0.93	0.017	0.8923	∞	0
	24	3.37	1.08	0.032	0.9836	∞	0
	48	6.10	1.65	0.059	0.9790	1.205E-4	3.92
	72	7.10	1.84	0.051	0.9875	8.752E-5	4.06
	96	7.12	1.79	0.047	0.9898	6.570E-5	4.18
R8	12	2.20	1.57	0.016	0.8963	∞	0
	24	3.18	1.11	0.053	0.9619	∞	0
	48	6.59	1.92	0.092	0.9613	2.381E-4	3.62
	72	10.49	2.93	0.086	0.9798	1.971E-4	3.71
	96	13.53	3.74	0.065	0.9906	1.925E-4	3.72
R9	12	0.58	0.89	0.013	0.9314	∞	0
	24	3.15	1.04	0.034	0.9807	∞	0
	48	6.17	1.72	0.062	0.9781	1.584E-4	3.80
	72	7.50	2.04	0.053	0.9876	1.393E-4	3.86
	96	6.83	1.79	0.041	0.9923	9.541E-5	4.02

Note: α and β refer to the position and shape parameters in the Weibull function, respectively. RMSE and

R refer to determination coefficient and root mean square error, respectively.



(●: Experimental data; —: Fitted curve; —: CA prediction line; —: Confidence interval; ■:Antagonistic region)

Fig.S1 The predicted lines by CA and observed CRCs for binary mixture system (OXA- CYA) on *C. pytenoidosa*

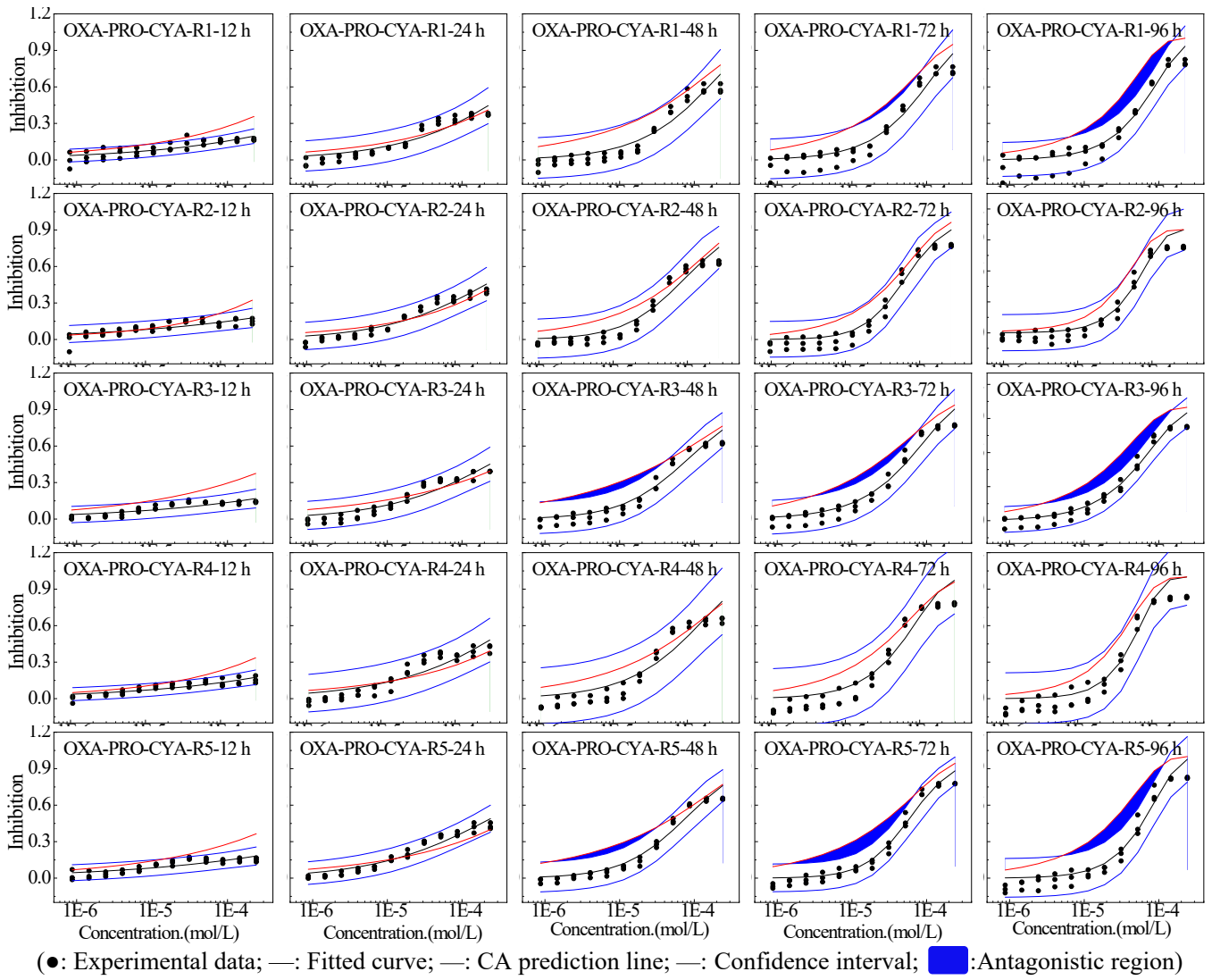


Fig.S2 The predicted lines by CA and observed CRCs for ternary mixture system (OXA-PRO-CYA) on *C. pytenoidosa*

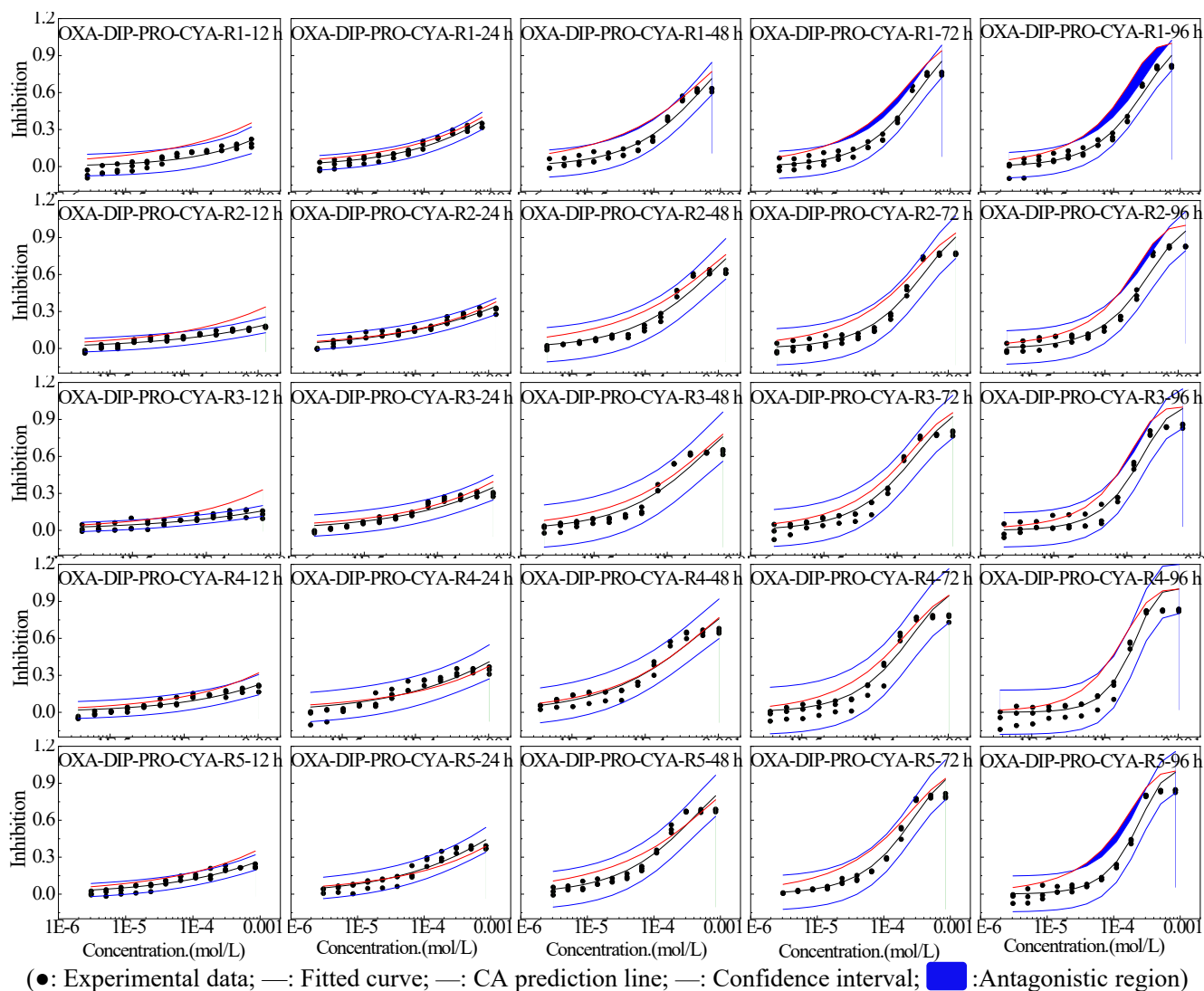
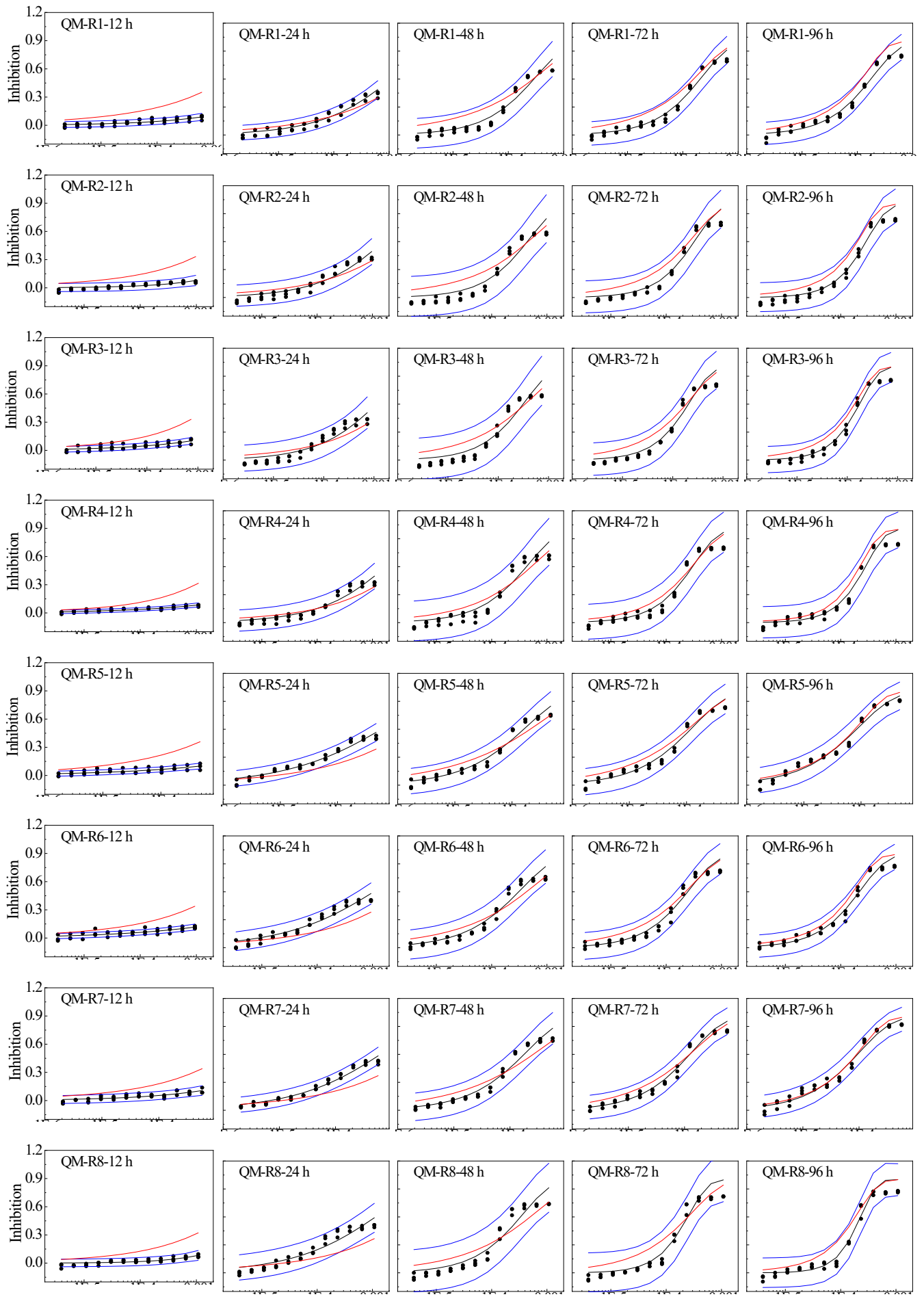
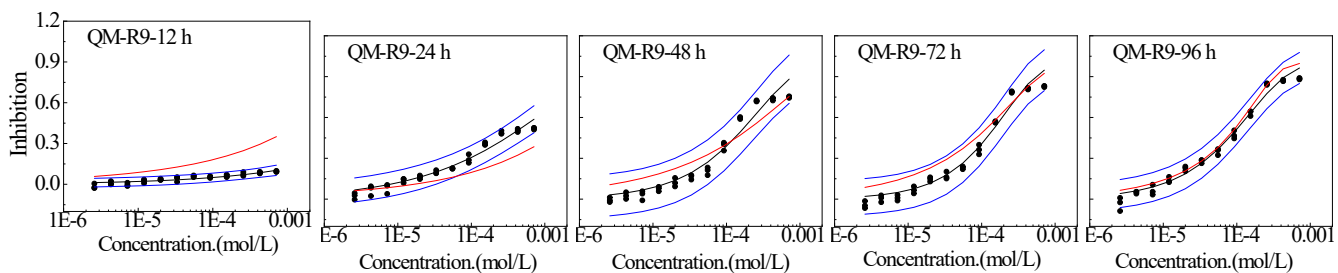


Fig.S3 The predicted lines by CA and observed CRCs for four-component mixture system (OXA-DIP-PRO-CYA) on *C. pytenoidosa*





(●: Experimental data; —: Fitted curve; —: CA prediction line; —: Confidence interval; ■: Antagonistic region)

Fig.S4 The predicted lines by CA and observed CRCs for quinary mixture (QM) system (OXA-DIP-DIQ- CYA-PRO) on *C. pyrenoidosa*

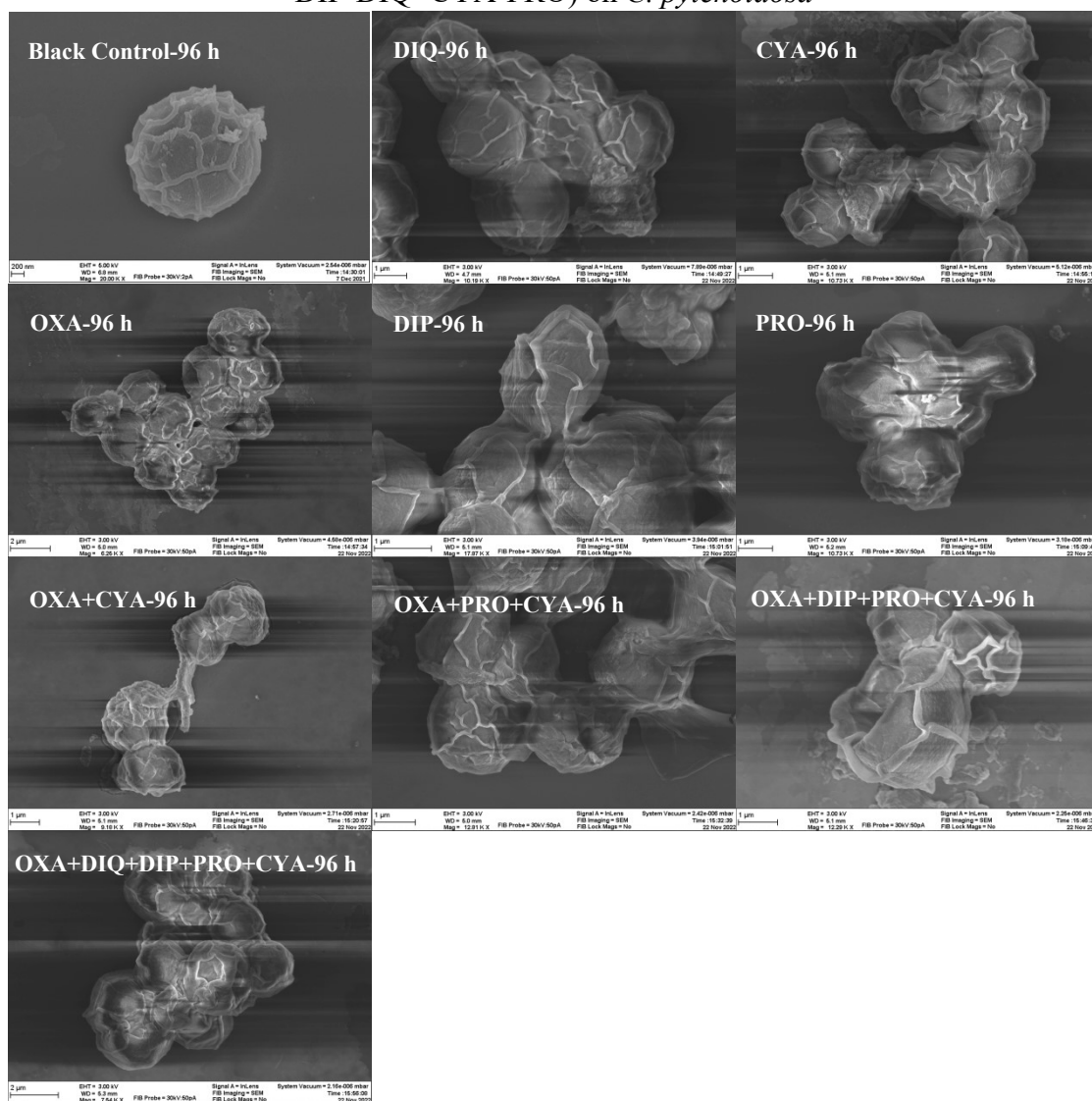


Fig.S5 Cell morphology of *C. pyrenoidosa* before and after exposure to pesticides and their mixtures