Supplementary Material

Probe-mediated fluorescent biosensor for MC-LR detection using exonuclease III as a signal amplifier

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**Table S1** Sequences of Oligonucleotides Used in the Experiments.

Name	Sequence (from 5′ to 3′)
Aptamer	GGC GCC AAA CAG GAC CAC CAT GAC AAT TAC CCA TAC CAC CTC ATT ATG CCC CAT CTC CGC TTT TTT
Blocker	GCG GAG ATG GGG CAT TTT TTT (21nt)
	GCG GAG ATG GGG CAT AAT TTT TT (23nt)
	GCG GAG ATG GGG CAT AAT GTT TTT T (25nt)
	GCG GAG ATG GGG CAT AAT GAG TTT TTT (27nt)
Hairpin probe	FAM-AGA CTA GAC CGG AAC GAC GGT CTA GTC T(BHQ1)-ATG CCC CAT CTC CGC

PAGE procedure

Natural polyacrylamide gel electrophoresis was performed by electrophoresis (15% PAGE). 3.8 mL of ultrapure water, 5 mL of 30% Acr-bis (29:1), 1 mL of 10 × TBE buffer, 100 μL of APS (10%), and 4 μL of TEMED were mixed and polymerized at 37 °C for 1 h. In addition, the loading sample was prepared by mixing 10 μL the resulting solution, 2 μL 100 × SYBR Green solution, and 2 μL 6 × loading buffer. Then, the electrophoresis experiment was carried out at 45 V for 30 min and turned to 90 V for 90 min in 1× TBE buffer (pH=8.0). Finally, the PAGE gel was scanned by the gel image analysis system (Bio-Rad, USA).
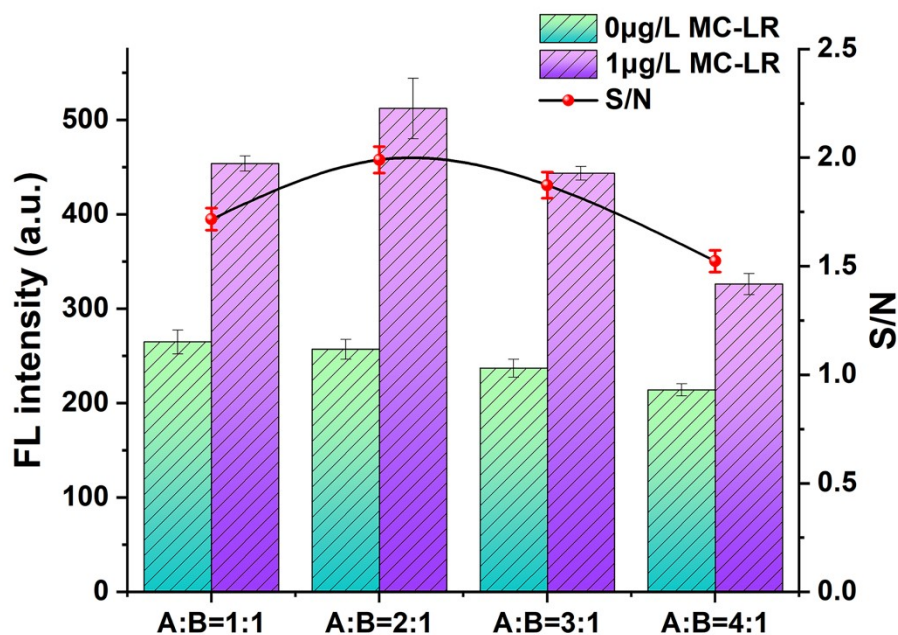
Fig. **S1** Effect of A: B ratio on fluorescence of sensor. Fix the concentration of B at 100 nM. Error bars = ± SD, n = 3.
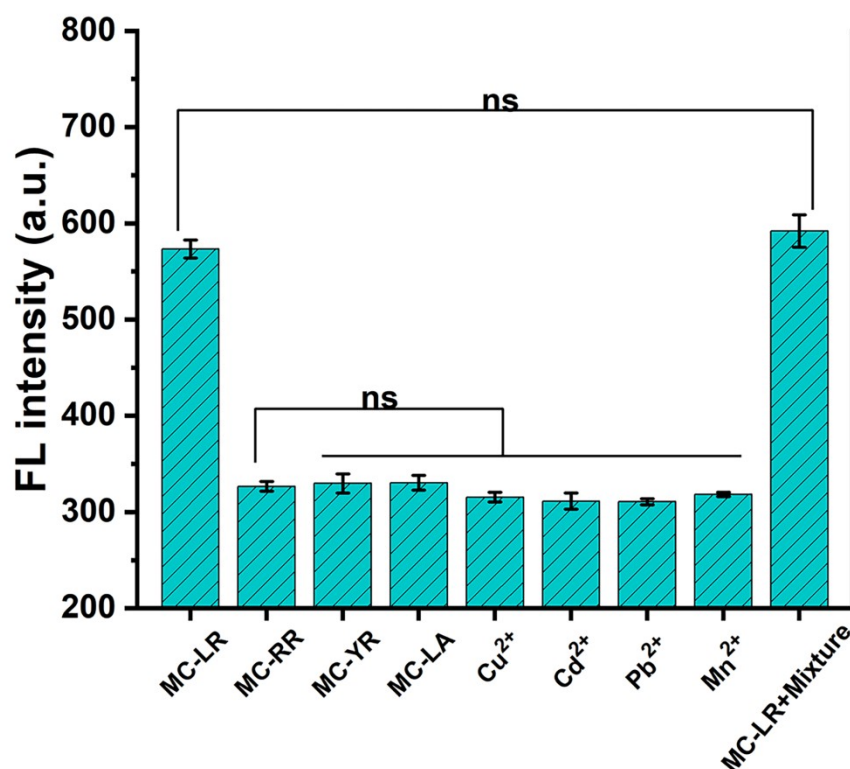
Fig. **S2** Fluorescence methods. The mixture was composed of MC-LR, MC-RR, MC-YR, MC-LA, Cu^{2+}, Cd^{2+}, Pb^{2+}, and Mn^{2+}. Ns: no significance. Error bars = ± SD, n = 3.

Table S2 Comparison of detection sensitivity between our MC-LR detection aptasensor and some previously reported methods.

Method	Dynamic range (µg/L)	LOD (ng/L)	Reference
Surface-enhanced Raman spectroscopy (SERS) -based sensor	1.56 - 50	290	1
Electrochemical aptamer-based sensor	3×10^{-2} - 1	9.2	2
Copper nanoclusters-based fluorescent probes	1×10^{-2} - 1×10^{3}	4.8	3
A silane carbon dots based fluorescent enzyme-linked immunoassay	1×10^{-3} - 3.20	0.6	4
Dual-modal split-type immunosensor	5×10^{-5} - 5	0.03	5
SERS-based aptasensor	1×10^{-2} - 2×10^{2}	2	6
Signal-off ECL sensing model	1×10^{-3} - 2×10^{2}	0.2	7
$Au/CeO_2/g\text{-}C_3N_4$-based photoelectrochemical sensors	5×10^{-5} - 1×10^{2}	0.01	8
Raman spectroscopic dual-modal aptasensor	0.1 - 50	0.5	9
Exonuclease III-assisted amplification fluorescent aptasensor	1×10^{-3} - 10	0.37	This work

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