

## Supporting Information

### **A Reagent-Free Binding Assay for Cholera Toxin Based on Sequestration Electrochemistry Using Lactose-Functionalized Magnetic Microbeads**

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**Table S1.** Comparison of representative cholera toxin detection methods reported in the literature and the proposed sequestration electrochemistry assay.

<b>Method</b>	<b>LOD</b>	<b>Assay time</b>	<b>Remarks</b>	<b>Ref.</b>
Latex agglutination assay	1–2 ng/mL	20–24 h	Commercially available; simple but time-consuming	33
Nanocoax-based electrochemical ELISA	2 ng/mL	2–3 h	High sensitivity; requires antibody immobilization and nanostructured electrodes	39
Magnetic frequency mixing immunoassay	0.2 ng/mL	>2 h	Sensitive magnetic immunoassay	41
Carbohydrate microarray with fluorescence detection	~2 ng/mL	<3 h	Fluorescence-based detection; microarray fabrication required	52
GM1-functionalized liposome assay	0.34 ng/mL	3.5 h	High sensitivity; liposome preparation required	53
Electrospun carbon nanofiber electrochemical immunosensor	1.25 pg/mL	~20 min	Extremely sensitive; complex electrode fabrication	40
Graphene-based electrochemical biosensor	~1 nM	~5 min	Rapid response; graphene surface modification required	47
Present work	58.8 ng/mL	<40 min	Reagent-free during measurement; no amplification or complex electrode fabrication	This work