Supporting Information

Evanescent Wave Optical-Fiber Aptasensor for Rapid Detection of Zearalenone in Corn with Unprecedented Sensitivity

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Table S1. ZEN-binding aptamers used in the aptasensors

Aptamer name	Sequence (5'-3')	Length (nt)	Kd (nM)	Ref.
Z31N	ATGGTACATTACTATCTGTAATGTGATAT	29	11.77 ± 1.44	[1]
$8Z_{31}$	TCATCTATCTATGGTACATTACTATCTGTAATGTGATATG	40	41±5	[2]
ZEN-62	CTACCAGCTTTGAGGCTCGATCCAGCTTATTCAATTATACCAGCTTATTCAATTATACCAGC	62	15.2±3.4	[3]
ZEN-38	GATGGGGAAAGGGTCCCCCTGGGTTGGAGCATCGGACA	38	2200±400	[4]
Number46	GGAATTCTTGATGTTGCCTGGGATTGTTTGGGCCTTGTGTTTTCTTCCGTTCCAACTTAGTAGGATCCCGAA	72	50.5 ± 5.4	[5]
ZEN-80	AGCAGCACAGAGGTCAGATGTCATCTATCTATGGTACATTACTATCTGTAATGTGATATGCCTATGCGTGCTACCGTGAA	80	-	[6]
Z100	ATACCAGCTTATTCAATTCTACCAGCTTTGAGGCTCGATCCAGCTTATTCAATTATACCAGCTTATTCAATTATACCAGCACAATCGTAATCAGTTAG	98	15.2 ± 3.4	[7]

Note: The aptamer names shown in the Table are either the names used in the reported literatures or named according to the length of the aptamer.

Table S2. Literature reported aptasensors for the detection ZEN

No	Aptasensor	Aptamer probe	LOD (ng/mL)	Dynamic range (ng/mL)	Ref.
1	Colorimetric competitive ELAA	Biotin-$8Z_{31}$	0.7	1-10000	[8]
2	Colorimetric lateral flow assay	HS-$8Z_{31}$-T_{29}	20	5−200	[9]
3	Colorimetric	ZEN-98	4	4−128	[7]
4	Enhanced ELAA	HS–GAT-$8Z_{31}$-Biotin	0.08	0.1–160	[10]
5	Colorimetric-AuNP	ZEN-38	10	10–250	[11]
6	Colorimetric-aptamer walker, Exo III, and AuNPs	HS-ZEN-80	0.01	0.02−80	[12]
7	Fluorescence quenching	ZEN-80-FAM	0.5	0.5- 64	[6]
8	AIR-SE combined with SPR	HS–T_{10}-$8Z_{31}$	0.08	0.01–1000	[13]
9	Green ELAA	Biotin-$8Z_{31}$	0.377	-	[14]
10	Colorimetric-porous platinum nanotubes, p-PtNTs/AuNPs and thionine (Thi) labelled graphene oxide (GO)	HS-ZEN-98	1.7×10^{-4}	5×10^{-4} −500	[15]
11	Fluorescent sensing-Genefinder	$8Z_{31}$	0.1	0.1-200	[16]
12	Fluorescent sensing-mesoporous silica nanoparticle	$8Z_{31}$-FAM	0.012	0.005–150	[17]
13	SERS	HS-$8Z_{31}$	0.001	0.005 -500	[18]
14	Electrochemical	$8Z_{31}$	0.017	0.01-1000	[19]
15	Competitive electrochemical	ZEN-29	1.5×10^{-3}	0.001-100	[1]
16	Ratiometric fluorescent-CdTe quantum dots (QDs)	$8Z_{31}$ and NH_2-ZEN-80	2.4	10 -200	[20]
17	FRET- dual-color AuNCs	NH_2-$8Z_{31}$	5.3×10^{-4}	0.005−100	[21]
18	Optical fiber- localized SPR	HS-ZEN-80	0.102	1- 480	[22]
19	Nanofibers for dispersive solid phase extraction (dSPE)	HOOC-$8Z_{31}$	1.8×10^{-5}	6×10^{-5}–0.01	[23]

No	Aptasensor	Aptamer probe	LOD (ng/mL)	Dynamic range (ng/mL)	Ref.
20	Magnetic separation and time-resolved fluorescent Ln^{3+} inorganic nanoparticles.	Biotin-$8Z_{31}$	2.1×10^{-4}	0.001–10	24
21	Ratiometric fluorescence	$8Z_{31}$-NH_2	3.2×10^{-4}	3.2×10^{-4} -0.32	25
22	Electrochemical-DNA assembly	AAA-$8Z_{31}$-SH	5.1×10^{-7}	5.0×10^{-6}-50	26
23	Fluorescence-upconverting nanoparticles	$8Z_{31}$	0.007	0.05–100	27
24	AuNP-affinity monolithic column	$8Z_{31}$	0.05	0.16-60	28
25	Photoelectrochemical-ZnO-NGQDs	ZEN-72-NH_2	3.3×10^{-5}	1.0×10^{-4}–100	29
26	Fluorometric-lighting-up silver nanocluster	GGTCTATTAACGAAGGTCATTAAC-$8Z_{31}$	3.2×10^{-4}	1.3×10^{-3}-100	30
27	Competitive ELAA	ZEN-72	0.2	0.03−2.5	5
28	Fluorometric-gold nanorods and upconversion nanoparticles	$8Z_{31}$-AAATCATGTC	0.01	0.05–100	31
29	Dual-colored persistent luminescence	HS-$8Z_{31}$	2.2×10^{-4}	0.001−50	32
30	Electrochemical -CS@AB-MWCNTs	$8Z_{31}$-NH_2	3.64×10^{-6}	10^{-5} −1	33
31	Fluorometric-DNA tweezer nanomachine	$8Z_{31}$	0.037	0.05- 50	34
32	Fluorometric	$8Z_{31}$	0.25	0.1-1000	2
33	Fluorometric	Biotin-$8Z_{31}$	5.1×10^{-4}	0.001 - 100	35
34	Electrochemical-3D sakura-shaped Cu@L-Glu combined with palladium-platinum nanoparticle (Pd-PtNPs) to obtain Cu@L-Glu/Pd-PtNPs	NH_2-ZEN-80	4.5×10^{-7}	10^{-6} - 100	36
35	Fluorometric-dual-enzyme	Biotin-ZEN-62	2.13×10^{-4}	10^{-3}–1	3
36	Electrochemical-PEI-MoS2-MWCNTs	$8Z_{31}$-SH	1.7×10^{-4}	5×10^{-4} -50	37

No	Aptasensor	Aptamer probe	LOD (ng/mL)	Dynamic range (ng/mL)	Ref.
37	Colorimetric-metal-organic framework nano-container and trivalent DNAzyme	$8Z_{31}$	3.6×10^{-4}	0.01–100	[38]
38	SERS-Au@Ag core-shell nanoparticles and gold nanorods	HS-$8Z_{31}$	0.054	0.05 - 500	[39]
39	Electrochemical-AuNPs (rMoS2-Au)	HS-$8Z_{31}$	5×10^{-4}	1×10^{-3}–10	[40]
40	Electrochemical-CoSe2/AuNRs and 3D structured DNA-PtNi@Co-MOF	CCTCAGCCATATCACATTAGC TGA-$8Z_{31}$	1.37×10^{-6}	10^{-5}- 10	[41]
41	Pregnancy test strip-catalytic hairpin assembly	HS-$8Z_{31}$-TTGTTCTTCACATTACAGATAGTAATGTA	0.05	0.05–5,000	[42]

Note: ELAA: enzyme-linked aptamer assay; AIR-SE: attenuated internal reflection spectroscopic ellipsometry; SPR: surface plasmon resonance; SERS: surface-enhanced Raman scattering;

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