

SUPPLEMENTARY MATERIAL

Antioxidant Carboxymethyl Chitosan Carbon Dots with Calcium Doping Achieve Ultra-Low Calcium Concentration for Iron-induced Osteoporosis Treatment by Effectively Enhancing Calcium Bioavailability in Zebrafish

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Table S1 Primer sequences for Real-Time PCR

Genes	Primer sequences (5'-3')
efl α -F	CCTGGGAGTGAAACAGCTGATC
efl α -R	CCGATCTTCTTGATGTATGCGCTG
bmp2b-F	GGTGCCGTTGGACTCATT
bmp2b-R	ACCACTGCCGATTGCTT
runx2b-F	CATGAGGGTCACTGTGCCAA
runx2b-R	GGGAAGATTGAGCCTGTCTGT
ctsk-F	CTATAAAGAGATTCCCTCAGGGTAACGA
ctsk-R	ACACGGGTCCCACATTGG
acp5b-F	CGTCCACTGACCACAGGAAGA
acp5b-R	AAGGATCCTGACGTCTGATTGA

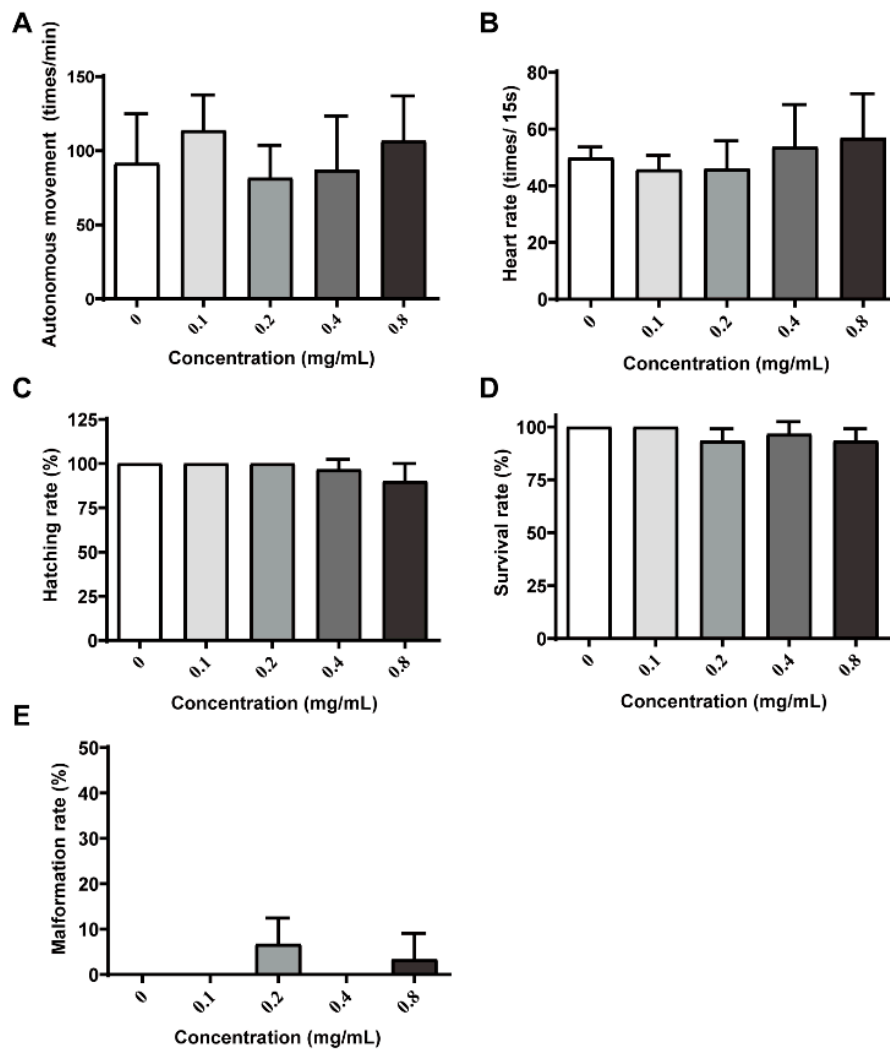


Figure S1 Biosafety detection of AOCDs. A. The frequency of autonomic movement at 24 hpf, B. Heart rate at 48hpf, C. Hatching rate at 54hpf, D. Survival rate at 96hpf, E. malformation rate at 96hpf, n=30, Three parallel groups.

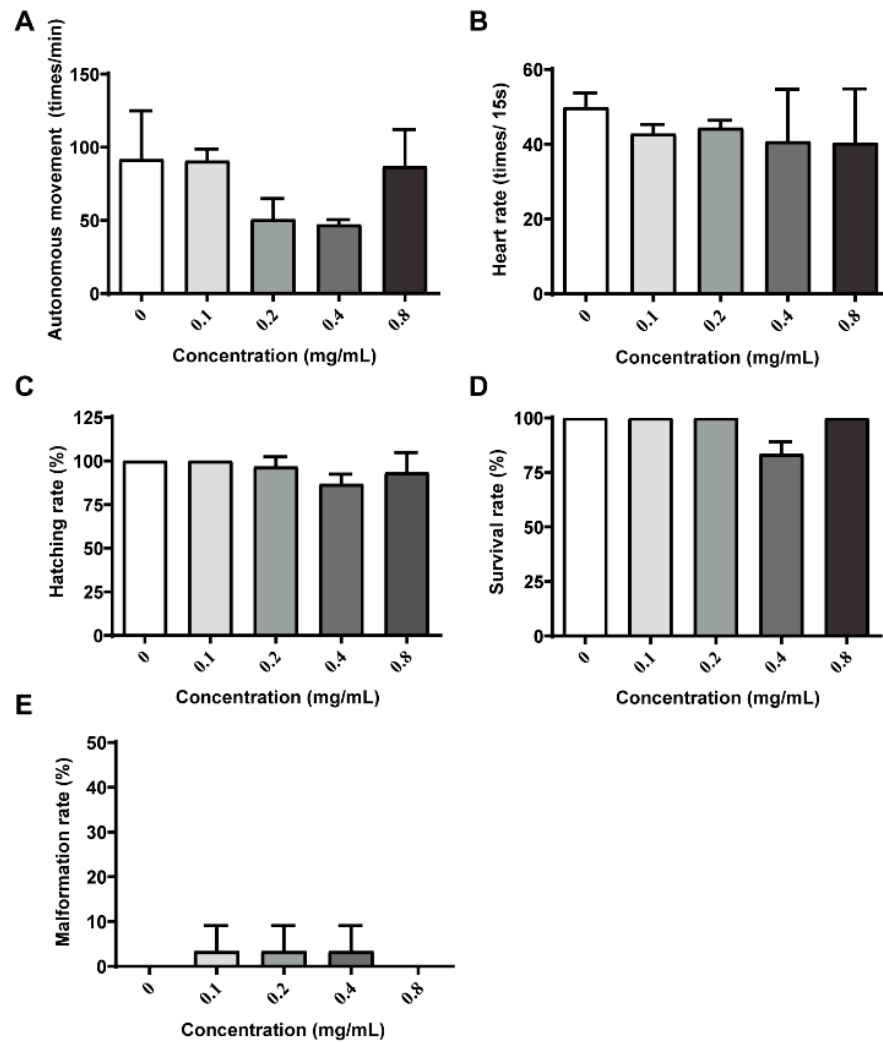


Figure S2 Biosafety detection of AOCDs:Ca. A. The frequency of autonomic movement at 24 hpf, B. Heart rate at 48hpf, C. Hatching rate at 54hpf, D. Survival rate at 96hpf, E. malformation rate at 96hpf, n=30, Three parallel groups.

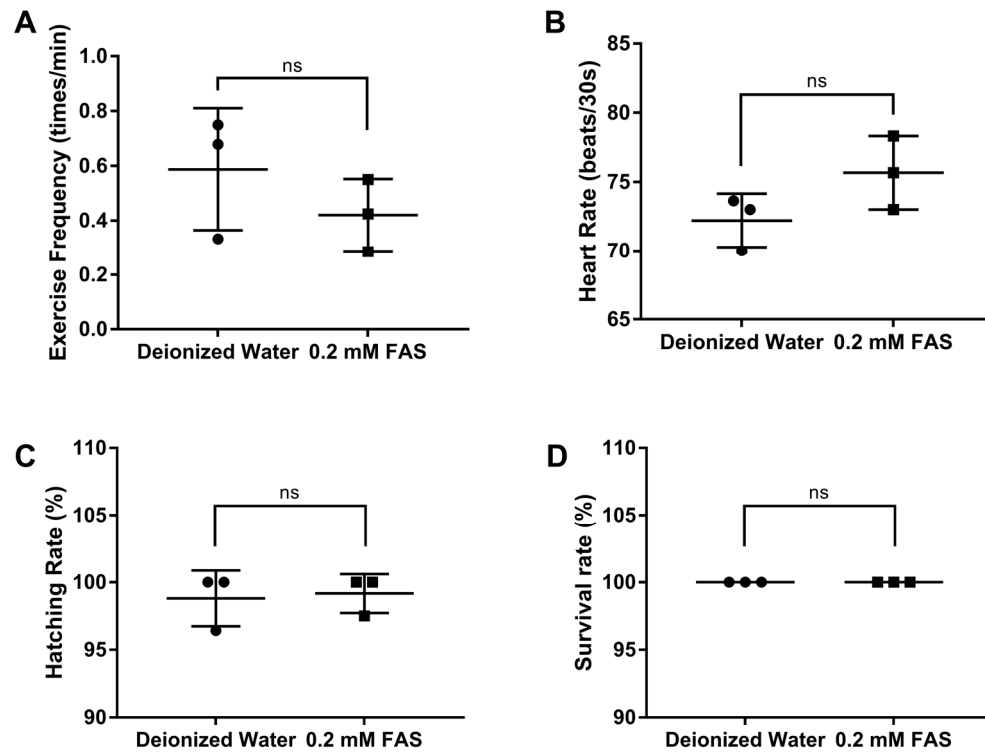


Figure S3. Effect of FAS on zebrafish embryonic development. A. 24 hpf exercise frequency, B. 48 hpf heart rate, C. 72 hpf hatching rate, D. 96 hpf survival rate (t-test, $n=30$, repeated 3 times, $*P<0.05$, $**P<0.01$, $***P<0.001$).