

## Organ-specific toxicity evaluation of stearamidopropyl dimethylamine (SAPDMA) surfactant using zebrafish embryos

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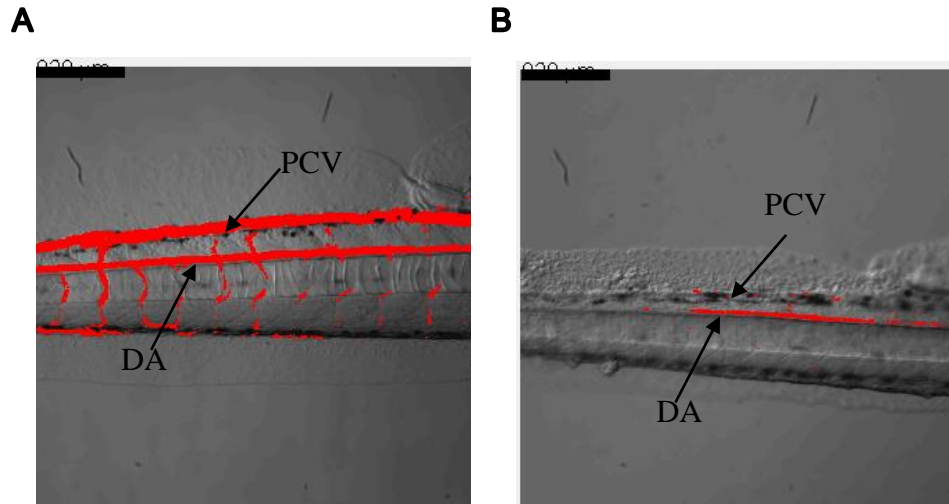
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## Supplementary Materials



**Figure S1.** Blood flow and vessel diameter of the DA and PCV of **(A)** Negative control (NC) and **(B)** 0.8 mg/L SAPDMA using MicroZebraLab software (version 3.4.4, Lyon, France). Embryos treated with 0.8 mg/L SAPDMA showed constricted blood vessels and reduced blood flow in the PCV and DA compared to the negative control.

**Table S1.** Somite measurements at 96 hpf.

Concentration	Embryo	Total Number of somites	Significance	Distance between each somite (mm)	Length of 3 somites (mm)	Significance
0.1 mg/L SAPDMA	1	24	NS	11.3	34.6	NS
	2	23		11.9	38.1	
	3	23		12.0	36.7	
	4	26		10.9	34.1	
	5	28		10.1	32.8	
	6	25		11.4	35.5	
	7	26		12.4	37.9	
	8	25		9.8	33.3	
	9	25		11.7	33.5	
	10	24		11.6	34.1	
	Average	24.9		11.3	35.1	
0.5 mg/L SAPDMA	1	24	$*p < 0.05$	11.4	33.6	NS
	2	24		10.6	35.8	
	3	26		12.7	37.1	

	4	23		11.8	37.1	
	5	25		11.4	36.5	
	6	26		11.3	33.9	
	7	23		9.8	33.2	
	8	24		10.1	32.4	
	9	25		11.4	34.4	
	10	25		10.6	34.2	
	Average	24.5		11.1	34.8	
0.8 mg/L SAPDMA	1	24	*** $p < 0.001$	11.7	34.9	*** $p < 0.001$
	2	21		10.6	31.0	
	3	26		10.8	34.0	
	4	20		9.0	33.1	
	5	22		11.5	31.8	
	6	23		9.3	25.1	
	7	21		9.5	30.7	
	8	23		10.3	33.1	
	9	23		11.1	35.5	
	10	23		11.1	33.6	
	Average	22.6		10.5	32.3	
NC	1	25	-	9.8	31.0	-
	2	24		11.6	35.6	
	3	28		11.7	39.9	
	4	30		12.0	33.7	
	5	26		12.4	37.9	
	6	27		12.3	34.9	
	7	25		13.1	37.4	
	8	30		13.1	38.2	
	9	24		12.7	40.2	
	10	29		11.3	35.3	
	Average	26.8		12.0	36.4	
PC (1.5 mg/L ZnO)	1	26	* $p < 0.05$	10.9	34.7	NS
	2	26		11.3	34.6	
	3	29		12.1	36.9	
	4	21		11.6	36.2	
	5	23		12.4	36.7	
	6	24		11.6	35.6	
	7	23		11.1	34.9	
	8	27		11.7	36.8	
	9	22		10.1	35.0	
	10	23		10.9	36.7	
	Average	24		11.4	35.8	

**Table S2.** Acute Toxicity Rating Scale by the U.S. Fish and Wildlife Service (USFWS) (El-Harbawi, 2014).

Relative Toxicity	Aquatic LC <sub>50</sub> (mg/L)
Super Toxic	0.01-0.1
Highly Toxic	0.1-1
Moderately Toxic	1-10
Slightly Toxic	10-100
Practically Nontoxic	100-1000
Relatively Harmless	>1000