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Supporting Information

## In vivo reversal of general anesthesia by cucurbit[7]uril

Huanxian Chen,<sup>1,†</sup> Judy Y.W. Chan,<sup>1,†</sup> Shengke Li,<sup>1</sup> Jessica J. Liu,<sup>2</sup> Ian W. Wyman,<sup>2</sup> Simon M. Y. Lee,<sup>1</sup> Donal H. Macartney,<sup>2</sup> and Ruibing Wang<sup>1,\*</sup>

<sup>1</sup> State Key Laboratory of Quality Research in Chinese Medicine, Institute of Chinese Medical Sciences, University of Macau, Taipa, Macau SAR, China

<sup>2</sup> Department of Chemistry, Queen's University, Kingston, ON, K7L 3N6, Canada

<sup>+</sup> These two authors contributed equally to this work.

\* Correspondence should be addressed to: rwang@umac.mo, Tel: +853-8822-4689



Fig. S1 High resolution ESI-MS of TM-CB[7] complex



**Fig. S2** Representative figures showing the swimming patterns of zebrafish larvae in control group and various treatment groups in each 10 minutes intervals. Different colors of lines indicated the speed of the movement. Red line: Active with velocity >6mm/s; Green line: Low activity with velocity between 3-6mm/s; Black line: Inactive with velocity <3mm/s.



**Fig. S3** Representative fluorescent microscopic images of Tg (*cmcl2*::GFP) zebrafish (4 dpf) with GFP specifically expressed in the myocardial cells. "A" denotes atrium, "V" denotes ventricle, "a" denotes longitudinal axis length, and "b" denotes lateral axis length (Scale bar, 100 micron).



**Fig. S4 Cardiac functions of zebrafish larvae at 20 min during recovery after anesthesia.** Tg (*cmcl2*::GFP) zebrafish (4pdf) were anesthetized with MS-222 for 3 min, and then MS-222 was replaced with 0.5 mM CB[7] or E3 medium. Stroke volume (**A**), heart rate (**B**), cardiac output (**C**) and % FS (**D**) of zebrafish were measured after 20 min of incubation. Data are presented as mean  $\pm$  S.E.M (n = 10). \**P*<0.05, \*\**P*<0.01, \*\*\**P*<0.001.

**Table 1 Stages of anesthesia in fish (**Keene, J.L., et al., *The efficacy of clove oil as an anaesthetic for rainbow trout, Oncorhynchus mykiss (Walbaum).* Aquaculture Research, 1998. **29**(2): p. 89-101.)

Stage	Descipitor	Behavior exhibited
0	Normal	Reactive to external stimuli; opercular rate and muscle tone normal.
1	Light sedation	Slight loss of reactivity to external visual and tactile stimuli; opercular rate slightly decreased; equilibrium normal.
2	Deep sedation	Total loss of reactivity to external stimuli except strong pressure; slight decrease in opercular rate; equilibrium normal.
3	Partial loss of equilibrium	Partial loss of muscle tone; swimming erratic; increased opercular rate; reactive only to strong tactile and vibrational stimuli.
4	Total loss of equilibrium	Total loss of muscle tone and equilibrium; slow but regular opercular rate; loss of spinal reflexes.
5	Loss of reflex reactivity	Total loss of reactivity; opercular movements slow and irregular; heart rate very slow; loss of all reflexes.
6	Medullary collapse	Opercular movements cease; cardiac arrest usually follows quickly.

**Table 2 Stages of recovery in fish** (Hikasa, Y., et al., *Anesthesia and recovery with tricaine methanesulfonate, eugenol and thiopental sodium in the carp, Cyprinus carpio.* Nihon Juigaku Zasshi, 1986. **48**(2): p. 341-51.)

Stage	Behavior exhibited	
1	Reappearance of opercular movement.	
2	Partial recovery of equilibrium with partial recovery of swimming motion.	
3	Total recovery of equilibrium.	
4	Reappearance of avoidance swimming motion and reaction in response to external stimuli, but still behavioral response is stolid.	
5	Total behavioral recovery. Normal swimming.	