

APPENDIX A: ANESTHETIC AGENTS FOR USE IN FISH

Drug	Species	Dose / Concentration	Comments
Immersion			
MS-222 (Tricaine, Syncline) (Recommended)	Zebrafish Goldfish Rainbow Trout Various	75 - 200 mg/L 200-300 mg/L 40-100 mg/L 25 - 700 mg/L	Depending on desired depth of anesthesia Surgical; Effective dose depended on salinity Light to surgical anesthesia Consult veterinarian Note: must be buffered to neutral pH
Benzocaine	Zebrafish Various	25 - 100 mg/L 5 - 600 mg/L	Consult veterinarian
Lidocaine	Zebrafish Medaka	300-325 mg/L 700-800 mg/L	Sedation to surgery; high mortality at higher doses Effective dose varied with temperature; surgical
Lidocaine + Propofol	Zebrafish	150 mg/L lidocaine + 5 mg/L propofol	
Metomidate (Aquacalm)	Zebrafish Salmon	2-4 mg/L; 6-10 mg/L 1-5 mg/L	Light sedation; light anesthesia Light anesthesia
Etomidate	Zebrafish	2-4 mg/L	Sedation to light anesthesia
Alfaxalone	Zebrafish Goldfish Rainbow Trout	10 mg/L 6 mg/L 1-5 mg/L	
Clove Oil (eugenol/iso-eugenol, AQUI-S 20E)	Zebrafish Medaka Rainbow Trout Various	45-140 mg/L 125 mg/L 20-60 mg/L From powder: 10-100 mg/L AQUI-S 20E: 20-150 mg/L = 2-15 mg/L eugenol;	Light anesthesia to surgical Surgical Surgical Consult veterinarian For sedation, consult veterinarian
Gradual Cooling	Zebrafish	Reduce temperature slowly starting at 17°C until desired anesthetic plane achieved	For sedation or short surgical procedures
Parenteral			
Ketamine + Dexmedetomidine	Various	2 - 5 mg/kg + 0.025-0.05 mg/kg IM	Reverse with atipamezole, equal volume dexmedetomidine (2-10x the dose)