

SOP 17. Disinfectants

A key element of disinfection is a choice of a suitable disinfecting agent. Disinfecting agents are selected according to the nature of target pathogen.

For disinfection purposes virus falls into three basic groups

Category A: These viruses contain a lipid envelope and are of intermediate to large size. These viruses are the easiest group to inactivate since the lipid envelope is sensitive to many lipophilic compounds.

Category B: These viruses are the most difficult to inactivate. They include small non lipid containing viruses and those protected within a protein matrix (occlusion).

Category C: These viruses are intermediate in their facility of inactivation by chemical agents. They do not contain lipids but are usually larger than viruses in category B.

Viruses	Disinfection category
1. White spot disease	A
2. Taura syndrome	B
3. Yellow head disease – Yellow head virus	B
4. Infectious hypodermal and hematopoietic necrosis	B
5. Infectious myonecrosis	
6. Monodon Baculovirus (MBV)	B
7. Gill-associated virus	A
8. Monodon slow growth syndrome	?

The disinfection in bacteria can be divided in four groups depending on the cell wall nature.

Gram positive vegetative bacteria: These tend to be most susceptible to disinfection.

Gram negative bacilli bacteria: Are most resistant to disinfectants agents than Gram negative cocci.

Mycobacteria: Tend to occupy an intermediate place between Gram-negative bacteria and bacterial spores.

Bacterial spores: Are most resistant to the action of disinfectants.

Reference table for water treatment and general disinfection

Chemical disinfection method	Active ingredients	Dosage of active ingredient	Contact time	Scope	Application	Elimination of residues
Chlorine	Calcium hypochlorite	30ppm	1 hour	WSSV eradication in water	Water disinfection for hatcheries and grow-out	Sun light, aeration
		15ppm	1 hour plus 120 hours retention time	Zooplankton eradication	Water disinfection for hatcheries and grow-out	Sun light, aeration
		200ppm	1 hour	Surface disinfection	Disinfection of tanks and equipment	Dry out
		30ppm	1 min	Surface disinfection	Vehicles	Dry out, sun light
Formalin	Formaldehyde	100 ppm	30 sec	eggs, nauplii, PLs	Baths	Natural breakdown
Copper Sulfate	Copper	0.5ppm	48 hours	Zooplankton eradication (particularly rotifers)	Water disinfection for grow-out	Natural breakdown (10 days)
ADMA approved crusticide	Trichlorfon	0.5ppm	N/A	Crustacean eradication Zooplankton eradication except rotifers	Water disinfection for grow-out	Natural breakdown (10 days)
Quaternary Ammonium	Quaternary Ammonium	350ppm	<5 min	WSSV eradication and general disinfection	Foot bath, vehicle disinfection and disinfection of equipment	Natural breakdown
Potassium Permanganate	Potassium Permanganate	350ppm	<5 min	WSSV eradication and general disinfection	Foot bath, vehicle disinfection and disinfection of equipment	Natural breakdown
Povidine	Iodine	100 ppm	<5 min	WSSV eradication and	Hands dip and disinfection of delicate tools	Natural breakdown
		25 ppm	30 sec	eggs disinfection	Baths	
		50 ppm	30 sec	nauplii disinfection	Baths	
		200 ppm	1 min	foot dip	baths	
Ozone	Ozone	>0.5 mg/L for 10 minutes	8min for ORP values of 600-700	Eradication of any living organisms	Primary water treatment after mechanical filtration.	12 hours by oxidation (Bromine must be <0.05ppm)
UV	UV light	Radiation 200-300 nm	Irradiation must reach >10 m/cm ² in the incoming water flow	Eradication of microorganisms bacteria and virus of category A	End of water treatment for hatcheries	N/A