

Bacterial diseases

Cell morphologies

1. Spherical (coccus)
2. Rod (bacillus)
3. Spiral (spirillum)

Disease producing types of bacteria

1. Obligate
 - *R. sal*
 - *Mycobacterium*
2. Non-obligate or facultative

Bacterial diseases

Infections

1. Bacteremia (w/o clinical infection)
2. Septicemia (w/ clinical infection)
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 - Inflammation, hemorrhage, and necrosis
3. Toxins
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 - Kill host cells
 - Make blood vessels more porous

Warmwater Bacterial diseases

Columnaris (*Flavobacterium columnare*)

Infects many species

- Ictalurids – severely affected
- Ornamental species
- Salmonids (migrating adults/smolts)

Clinical signs

- Generally begins as **external** infection (fins, skin, gills)
 - Skin lesions –
 - Gill lesions – white to brown necrotic areas

Warmwater Bacterial diseases

Columnaris (*Flavobacterium columnare*)

Internal (systemic)

- Little or no pathological changes in organs
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Diagnosis:

- Typical lesions (body, fin, gills)
- Long thin (gm -) rods in wet mounts
- “hay stacking” –
- Isolate on low nutrient agar

Warmwater Bacterial diseases

ESC

Enteric septicemia of catfish (*Edwardsiella ictaluri*)

“Hole in the head disease”

Number 1 catfish disease

- Channel catfish – most susceptible
- Temp. dependent 20-28C

Clinical signs

- Acute, subacute, and chronic disease
- Lethargic –
- Spiral swimming patterns, pale gills, exophthalmia, enlarged abdomens

Warmwater Bacterial diseases

Enteric septicemia of catfish (*Edwardsiella ictaluri*)

Clinical signs

- Depigmented lesions – 1-3mm on flanks and backs
- chronic - form open ulcers along skull “hole in head”
- Hemorrhage at base of fins, skin under jaw, and belly (paint brush hemorrhage)

Warmwater Bacterial diseases

Enteric septicemia of catfish (*Edwardsiella ictaluri*)

Diagnosis

- Growth on culture plates (BHI or TSA) also selective media
- FAT/ELISA

Characteristics

- Short gm neg. rod (.8 x 1-3um)
- Many biochemical tests to confirm

Warmwater Bacterial diseases

Edwardsiella tarda

Edwardsiellosis

May affect adult fish and many other species

- catfish, eels, (20 f/w species) – mostly warmwater
- 2 occasions (implicated in salmonid infections)
 1. Adult Chinook (Rouge river, OR)
 2. Adult Atlantic salmon -Nova Scotia, CA
- **Zoonotic** – transmittable to humans
- **Sources** – birds, snakes, etc.

Warmwater Bacterial diseases

Motile *Aeromonas* septicemia: (*A. hydrophila*, *sobria*, *caviae*)

MAS: 1927 – worldwide distribution

- warm, cool, coldwater species

- Mainly external –
- May not be primary problem – contamination from mucus
- May promote secondary infection by other bacteria, or protozoan parasites

Warmwater Bacterial diseases

Mycobacteriosis (*Mycobacteria sp.*)

Every fish species is susceptible – striped bass, tilapia, whitefish, etc

- Zoonotic
- Common in aquarium fish - chronic

Granuloma formation

Control:

Depopulate and disinfect

Warmwater Bacterial diseases

Streptococcal infections: *Streptococcus iniae* (recent problem)

Tilapia

- one of the most serious pathogens

(promoted by intensive rearing in closed systems)

- mortality may be up to 75%

1995-1996:

reports of human infections

- Wounds from cleaning farm-reared fish
- Major concern in commercial industry