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Health Management in Aquaculture

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Health Management in Aquaculture: Glossary

Aquaculture Department, Southeast Asian Fisheries Development Center

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GLOSSARY

- abscess** – a collection of pus in a body cavity formed by tissue disintegration
- acute** – rapid and severe in development
- aflatoxicosis** – the disease resulting from exposure of animals to aflatoxin-contaminated diets
- aflatoxin** – a highly toxic substance produced by fungi growing on feed or feed ingredients
- agglutination** – reaction between antibody and cell-bound antigen resulting in clumping of the cells
- amino acid** – basic component of protein
- amnesic shellfish poisoning (ASP)** – a phycotoxic syndrome characterized by memory loss with extreme cases of human intoxication from shellfish contaminated by domoic acid (DA).
- anchor** – used for attachment to the host
- anchoring disc** – a laminar structure at the anterior end of a microsporean spore
- anemia** – a condition characterized by a deficiency of hemoglobin, packed cell volume, or erythrocytes in the blood
- anorexia** – loss of appetite
- antibody** – a glycoprotein produced in response to the introduction of an antigen; it has the ability to combine with the antigen that stimulated its production. Also known as immunoglobulin.
- antigen** – a foreign (nonself) substance (such as a protein, nucleoprotein, polysaccharide or sometimes a glycolipid) to which lymphocytes respond; also known as immunogen because it induces the immune response
- antioxidant** – a substance that chemically protects other compound against oxidation; for example, vitamin E prevents oxidation and rancidity of fats
- antiserum** – serum containing induced antibodies
- asexual** – reproduction not involving karyogamy or meiosis.
- ascites** – the accumulation of serum-like fluid in the abdomen.
- asphyxiation** – deficiency of oxygen
- atrophy** – a degeneration or diminution of a cell or body part due to disuse, defect, or nutritional deficiency
- axenic** – without another organism being present; pure culture
- backwash** – to clean by reversing water flow
- bacteria** – one-celled microorganisms which lack well-defined nucleus
- bioassay** – biological assay; a procedure involving the use of responses of aquatic organisms to detect or measure the presence or effect of one or more substances

- biotroph** – refer to obligate parasite.
- blister** – a thin vesicle, especially on the skin, containing watery matter
- carotenoid** – a class of pigments occurring in the tissues of algae and higher plants
- carrier** – one that transmits disease germs
- cartridge filter** – tubular filter device made up of spun polypropylene material inserted inside a filter housing case
- cataract** – development of partial or complete opacity of the crystalline lens of the eye or its capsule.
- cercariae** – free-swimming larval stage of digeneans
- chemotherapy** – use of a specific chemical agent to control a disease
- chronic** – lingering
- ciguatera fish poisoning (CSP)** – a seafood poisoning which results from consumption of tropical reef fish contaminated by ciguatoxins and characterized by a wide array of gastrointestinal and neurological symptoms
- ciguatoxins (CTX)** – a kind of toxin produced by benthic dinoflagellates found in corals. It is a family of complex lipid-soluble, highly oxygenated cyclic polyether compounds
- cilia** – short, hair-like structures used for movement
- clonal selection theory** – the theory that clones of effector B and T cells arise from single cells (or very small clones) that are stimulated to reproduce by antigen binding to their receptors
- clone** – a group of genetically identical cells or organisms derived by asexual reproduction from a single parent
- cocoon** – a brooding capsule for leech eggs
- coelozoic parasites** – parasites which occur in organ cavities
- coenocytic** – nonseptate; referring to the fact that nuclei are present in the cytoplasm without being separated by cross-walls; the nuclei lie in a common matrix.
- commensalism** – a relationship wherein one organism lives and derives benefit on another organism without causing any harm
- complementary** – nonidentical but related genetic structures that show precise base pairing
- conidiophore** – a simple or branched hypha arising from a somatic hypha and bearing at its tip or side one or more conidiogenous cells.
- conidium** (pl. conidia) – a non-motile asexual spore usually formed at the tip or side of a sporogenous cell.
- copepods** – small planktonic or bottom dwelling crustaceans
- cross-contamination** – transmission of disease or disease agent from one tank to another
- cutaneous lesion** – lesion on the skin
- cyanobacterial toxic poisoning (CTP)** – poisoning due to cyanobacteria which produce a diverse range of secondary metabolites including hepatotoxins, neurotoxins and cytotoxins
- cyst** – a non-motile, resistant, dormant stage
- debris** – organic waste from dead cells or unused food
- definitive host** – the host in which the parasite undergoes sexual reproduction
- denaturation** – a change in the shape of an enzyme that destroys its activity; the term is also applied to changes in nucleic acid shape
- deoxyribonucleic acid (DNA)** – the nucleic acid that constitutes the genetic material of all cellular organisms. It is a polynucleotide composed of deoxyribonucleotides connected by phosphodiester bonds
- diagnosis** – the act of identifying the cause of disease
- diarrhetic shellfish poisoning (DSP)** – a complex gastro-intestinal syndrome associated with the consumption of contaminated shellfish by humans
- dinoflagellates** – are group of unicellular eukaryotic organisms which swims by means of a pair of whip-like flagella
- disease** – an abnormal occurrence displayed by living organisms through a specified common characteristic (symptom), or set of characteristics
- DNA polymerase** – an enzyme that synthesizes new DNA using a parental DNA strand as a template
- domoic acid (DA)** – a naturally occurring compound belonging to kainoid class of compounds that has been isolated from a variety of marine sources including macro and micro-algae
- dropsy** – ascites; abnormal accumulation of liquid in internal organs or tissues

DSP toxins (DSPTX) – are liquid-soluble long chain compounds containing tans-fused or spiro-linked cyclic polyether rings

dystrophy – abnormal development or degeneration

ectoparasite – parasite living in the external surfaces of the host

edema – excessive accumulation of fluid in tissue spaces

electrophoresis – a technique that separates substances through differences in their migration rate in an electric field due to variations in the number and kinds of charged groups they have

emaciation – become abnormally lean

encapsulation – the covering of a parasite by the host

encystment – the covering of a parasite with materials of parasite origin

endemic – recurring in a locality

endoparasite – parasites living inside the body of the host

endospore – the thick inner chitinous layer of the wall in a microsporean spore

endotoxin – a toxin of internal origin present in bacteria but separable from the cell body only on its disintegration

enteritis – the inflammation of the intestine

enzyme – a protein catalyst with specificity for both the reaction catalyzed and its substrates

Enzyme-linked Immunosorbent Assay (ELISA) – a technique used for detecting and quantifying specific antibodies and antigens

epizootic – widespread outbreak of fish diseases

etiology – the study of the cause of disease

exophthalmia – abnormal protrusion of the eyeball

exophthalmus – abnormal protrusion of the eye.

exospore – the proteinaceous outer layer of the wall in a microsporean spore

exotoxin – a soluble toxin that passes into the medium during growth of certain bacilli or other microorganism

facultative parasite – a saprobic organism capable of infecting another living organism under some conditions

facultative saprobe – a parasitic organism capable of growing on dead organic matter under some conditions

fibrosis – inflammatory response; in shrimp hepatopancreas, characterized by the presence of connective tissues in between the tubules

flagella – long, hair-like structures used for locomotion

formalin – a 37% solution of formaldehyde

fungus – a general term for a group of eukaryotic protista (e.g., mushrooms, yeasts, molds etc.) marked by the absence of chlorophyll and the presence of a rigid cell wall

gel – an inert polymer, usually made of agarose or polyacrylamide, used for separating macromolecules such as nucleic acids or proteins by electrophoresis

gene – a unit of heredity; a DNA segment or sequence that codes for a polypeptide, rRNA or tRNA

genetic manipulation – selective breeding of organisms that are resistant to disease or those that grow larger or faster

genome – the full set of genes present in a cell or virus; all the genetic material in an organism.

halophilic – a microorganism whose growth is accelerated or dependent on high salt concentration

hemocyanin – a colorless copper-containing respiratory pigment found in solution in the blood plasma of various arthropods and molluscs

hemocyte – a blood cell

hemocytic infiltration – inflammatory response; in shrimp hepatopancreas, characterized by presence of hemocytes in between the tubules

hemoglobin – the respiratory pigment of red blood cells that takes up oxygen at the gills or lungs and releases it to tissues

hemorrhage – discharge of blood from a ruptured blood vessel

hemorrhage – internal bleeding and subsequent clotting caused by the rupture of blood vessels

hepatopancreas – a glandular structure in animals that functions in digestion, absorption, and storage

heterotrophs – organisms which use organic compounds as primary source of energy

holdfast – the attachment organ of some parasites

holocarpic – having all the thallus used for the fruit body.

homeostasis – a condition whereby animals maintain a relatively stable internal environment

- host** – a living organism harboring another organism
- hyaline** – transparent or translucent.
- hybridization** – the natural formation or artificial construction of stable hybrid nucleic acid complexes by complementary base pairing between two nucleic acid strands
- hybridoma** – the fusion of a malignant cell with a single B-lymphocyte to produce a malignant lymphocyte producing monoclonal antibody
- hyperemia** – abnormal accumulation of blood in any part of the body
- hyperplasia** – an abnormal or unusual increase in the number of cells of a tissue
- hypertrophy** – an increase in size of a tissue or an organ due to an increase in size of individual cells
- hypha** – the unit of structure of most fungi; a tubular filament.
- immunization** – process that equip an organism with antibodies effective against specific pathogens, by provoking their manufacture in the absence of infection
- incubation period** – period from entry of a pathogen to the appearance of the first signs of disease
- infection** – a pathological condition due to the growth of microorganisms in a host
- infestation** – a pathological condition due to the presence of parasites
- inflammation** – a tissue reaction resulting from an irritation by a foreign material and causing a migration of leukocytes and increased flow of blood to the area, producing swelling, reddening, heat, pain and tenderness
- ischemia** – localized tissue anemia due to obstruction of the inflow of blood
- intermediate host** – a host in which the larval stages of a parasite develop
- intracellular** – situated or occurring inside a cell
- karyomastigont** – the unit of mastigonts and associated nucleus
- kinetoplast** – the part of the mitochondrion which contains DNA; located near the base of the flagellum and is conspicuous after staining
- LC₅₀** – medial lethal concentration
- lesions** – any morbid change in function or structure of an organ or tissue
- lethargy** – weakness or sluggishness
- lordosis** – the abnormal forward curvature of the vertebral column
- macronucleus** – a large nucleus in ciliates which controls trophic functions
- mastigont** – a complex of flagella-associated organelles in flagellated protozoans, including basal bodies (also called kinetosomes) and projecting and trailing flagella
- melanization** – inflammatory response characterized by the abnormal accumulation of melanin
- melanized** – abnormal development of dark coloring matter in the skin
- metacercariae** – encysted cercariae of digeneans
- monoclonal antibody** – an antibody of a single type that is produced by a population of genetically identical plasma cells (a clone); produced from a cell culture derived from the fusion product of a cancer cell and an antibody producing cell (a hybridoma)
- muscular dystrophy** – degenerative disease of the muscles
- mutualism** – a relationship wherein two organisms benefit from each other
- mycelium** – mass of hyphae constituting the body (thallus) of a fungus
- mycosis** (pl. mycoses) – a fungus infection of an animal.
- myeloma cell** – a malignant tumor of a plasma cell that produces large quantities of antibodies
- myopathy** – degeneration or atrophy of the muscles
- necrosis** – localized death of a tissue
- necrotized** – dead or decayed
- neurotoxic shellfish poisoning** (NSP) – shellfish poisoning caused by polyether brevetoxins produced by the unarmoured dinoflagellates *Gymnodinium breve*
- neurotoxin** – toxin that affects the nervous system
- Northern Blot** – hybridization of a single strand of nucleic acid (DNA or RNA) to RNA fragments immobilized on a filter
- nucleic acid hybridization** – the process of forming a hybrid double-stranded DNA molecule using a heated mixture of single-stranded DNAs from two different sources; if the sequences are fairly complimentary, stable hybrids will form

- nucleotide** – a monomeric unit of nucleic acid, consisting of a sugar, phosphate and nitrogenous base
- obligate parasite** – an organism that can, in nature, obtain food only from living protoplasm; organisms considered as obligate parasites usually cannot be grown in culture or non-living media
- oncomiracidium** – the free-swimming stage of monogeneans
- oviparous** – an organism that lays eggs
- paralytic shellfish poisoning (PSP)** – a neurotoxic syndrome resulting primarily from the blockage of neuronal and muscular Na⁺ channels
- parasite** – an organism that lives at the expense of another, usually invading it and causing disease.
- parasitism** – a one-way relationship in which a smaller organism (parasite) depends upon and benefits from the bigger (host) organism
- paratenic host** – a transport host in which the larval stage of a parasite undergoes no development and its only function is to transfer the parasite to the next host
- parenteral** – injection method of administering drugs
- pathogen** – a disease-producing agent
- pathogenic** – capable of producing disease
- polar capsule** – a thick-walled vesicle in myxosporeans with an inverted polar filament
- Polymerase Chain Reaction (PCR)** – an enzymic method for amplifying exponentially specific preselected fragment of DNA; an *in vitro* technique used to synthesize large quantities of specific nucleotide sequences from small amounts of DNA. It employs oligonucleotide primers complementary to specific sequences in the target gene and special heat-stable DNA polymerases
- ppm** – parts per million or milligrams per liter or grams per ton
- ppt** – parts per thousand
- precipitation** – a reaction between antibody and soluble antigen resulting in a visible mass of antibody-antigen complexes
- primer** – a short stretch of RNA or DNA used as a starting point for nucleic acid synthesis
- probe** – a short, labeled nucleic acid segment complementary in base sequence to part of another nucleic acid, which is used to identify or isolate the particular nucleic acid from a mixture through its ability to bind specifically with the target nucleic acid
- probiotics** – bacteria that promote the growth of an organism or inhibit pathogenic microorganisms
- proboscis** – a muscular, protrusible feeding organ in some parasitic organisms
- procercoid** – the first larval stage of many cestodes which develop inside the body cavity of the invertebrate (first) intermediate host
- prokaryotic cells** – a type of cell whose nuclear substance is not enclosed within a membrane
- prophylaxis** – preventive action
- punctuate** – covered or studded with dots, points or minute depressions
- quarantine** – isolation of material or animal to prevent the spread of infectious disease it carries
- rancidity** – a condition taking place when the lipids are broken to their constituents through poor storage condition
- red tides** – reddish-brownish discoloration of the water brought about by sporadic increases in minute or microscopic marine organisms in high density
- residual** – remaining
- ribonucleic acid (RNA)** – a polynucleotide composed of ribonucleotides joined by phosphodiester bridges
- saxitoxin (STX)** – a dibasic salt that is very soluble in water and is the most potent neurotoxin found in dinoflagellate blooms
- scolex** – attachment organelle of some parasites
- scoliosis** – lateral curvature of the spine
- secondary zoospore** – kidney-shaped zoospore produced in Oomycota; the flagella are inserted laterally on the spore.
- septate** – with more or less regularly occurring cross walls.
- septicemia** – a systemic disease caused by the invasion and multiplication of pathogenic microorganisms in the blood stream
- septum** (pl. septa) – a cross-wall in a hypha that develops centripetally.

serological method – process which deals with antigen-antibody reaction

serology – the study of antigen-antibody reactions *in vitro*

shell valve – one of the parts of the myxosporean spore wall

soma – the body of an organism as distinguished from its reproductive organs or reproductive phase.

Southern Blot – the procedure used to isolate and identify DNA fragments from a complex mixture. The isolated, denatured fragments are transferred from an agarose electrophoretic gel to a nitrocellulose filter and identified by hybridization with probes

sporangiophore – a specialized hypha that bears a sporangium.

sporangium – a sac-like structure, the entire protoplasmic contents of which become converted into an indefinite number of spores.

spore – a minute propagative unit functioning as a seed, but differing from it in that a spore does not contain a pre-formed embryo.

spore – the infective stage of an organism that is usually protected from the environment by one or more protective membranes

sporoplasm – the infectious component in spores

stigma – a pigmented red spot in flagellates

stramenopila – a new Kingdom to accommodate most organisms previously referred to the Kingdom Chromista and primarily characterized by the presence of tripartite tubular hairs on flagella or cysts.

straminipilous organisms – bearing tripartite tubular hairs; applicable to flagella and/or cells, whether uniflagellate, multiflagellate or non-flagellate (e.g. cysts)

stress – a factor of an environmental challenge that is severe enough to require a physiological response on the part of the fish

susceptible – disposition to disease

symbiosis – a condition in which two organisms live together

symptom – a physical or physiological change which is caused by a particular disease

thrombosis – the formation or presence of a blood clot within a blood vessel

titer – reciprocal of the highest dilution of an antiserum that gives a positive reaction in the test being used

tomites – cells within the tomont which result from serial binary division

tomont – a cyst-like structure formed by the trophont following detachment from the host

toxin – a poison

trophont – the feeding and growing stage of a parasitic protozoan which differentiates into the reproductive tomont following detachment

ulceration – an open sore on an external or internal surface of the body, usually accompanied by disintegration of tissue with the formation of pus

UV – ultraviolet radiation

vaccination – the process of introducing a suspension of disease-producing microorganisms modified by killing or attenuation so that it will not cause disease and can stimulate the formation of antibodies upon inoculation.

vacuolated – containing spaces or cavities in the cytoplasm of a cell

vector – any agent that transmits an infectious organism

virus – a minute infectious agent which can be resolved or viewed clearly only under a high-powered microscope. It lacks independent metabolism, and is able to replicate only within a living cell

vitamins – an organic compound occurring in minute amounts in foods and essential for numerous metabolic reactions in animals

viviparous – the bearing of live young

zoospore – a motile, asexually produced spore

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