Aquaculture and Human Health

Aquaculture Science · Answer Key · 8 Questions

1. Which specific long-chain omega-3 fatty acid, primarily obtained through the consumption of farmed oily fish, is essential for the structural integrity of the human retina and cerebral cortex?

A) Eicosapentaenoic acid (EPA)
B) Docosahexaenoic acid (DHA)
C) Alpha-linolenic acid (ALA)
D) Stearidonic acid (SDA)

2. In aquaculture-raised tilapia, the lower ratio of omega-3 to omega-6 fatty acids compared to wild-caught salmon has raised human health concerns regarding which potential physiological response?

A) Increased systemic inflammation
B) Reduced insulin sensitivity
C) Excessive iron absorption
D) Inhibited vitamin D synthesis

3. Which heavy metal bioaccumulates more significantly in the tissue of predatory farmed carnivorous fish, posing a neurotoxic risk to developing human fetuses if consumed in excess?

A) Cadmium
B) Lead
C) Methylmercury
D) Arsenic

4. The high concentration of astaxanthin found in the muscle tissue of farmed Atlantic salmon provides which specific human health benefit?

A) Enhanced collagen production
B) Potent antioxidant activity
C) Increased hemoglobin synthesis
D) Improved nocturnal vision

5. Which mineral, often found in high concentrations in bivalves grown in aquaculture, is a critical cofactor for the enzyme superoxide dismutase, which protects human cells from oxidative stress?

A) Selenium
B) Zinc
C) Copper
D) Magnesium

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6. Excessive consumption of farmed fish raised in recirculating aquaculture systems (RAS) has been scrutinized for potential human exposure to which group of chemical additives used to control microbial populations?

A) Organophosphates
B) Formalin
C) Polybrominated diphenyl ethers
D) Phthalates

7. Iodine deficiency in human populations is effectively addressed by the consumption of seaweed (macroalgae) cultured in aquaculture; what is the primary physiological function of the thyroid hormones T3 and T4, which require iodine?

A) Regulation of metabolic rate
B) Synthesis of serotonin
C) Formation of erythrocyte cell walls
D) Absorption of dietary calcium

8. Which vitamin, found in significant concentrations in the liver oil of farmed cod, is essential for maintaining human bone density through the regulation of calcium and phosphate homeostasis?

A) Vitamin K2
B) Vitamin B12
C) Vitamin D3
D) Vitamin E