Aquatic Animal Health: Ensuring Sustainability and Welfare in Aquatic Systems

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Editorial

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Introduction

Aquatic animal health is a vital field within veterinary and aquatic sciences that focuses on the prevention, diagnosis, and management of diseases affecting aquatic organisms such as fish, crustaceans, mollusks, and amphibians. With the rapid growth of aquaculture and the ecological importance of wild aquatic populations, maintaining the health of aquatic animals has become increasingly significant. Healthy aquatic animals are essential for food security, ecosystem balance, and economic sustainability, making aquatic animal health a global priority [1,2].

Discussion

Aquatic animals live in complex environments where water quality plays a central role in health and disease. Parameters such as temperature, dissolved oxygen, pH, salinity, and the presence of toxins directly influence immune function and stress levels. Poor water quality can predispose aquatic animals to infections and reduce growth and survival rates. Therefore, effective aquatic animal health management emphasizes environmental monitoring and water quality control as primary preventive measures [3].

Infectious diseases pose major challenges in both aquaculture and wild populations. Bacterial, viral, parasitic, and fungal pathogens can spread rapidly in aquatic systems, often leading to high mortality and economic losses. Diseases such as infectious pancreatic necrosis, white spot syndrome, and koi herpesvirus illustrate the potential impact of aquatic pathogens. Health management strategies include biosecurity, vaccination where available, selective breeding for disease resistance, and responsible use of therapeutics. Early diagnosis through clinical observation, laboratory testing, and molecular techniques is crucial for effective disease control [4].

Nutrition also plays a key role in aquatic animal health. Balanced diets support growth, immunity, and reproduction, while nutritional deficiencies or imbalances can increase susceptibility to disease. Sustainable feed development is increasingly important to reduce environmental impacts and support long-term aquaculture productivity. Additionally, aquatic animal health is closely linked to public and environmental health, as some aquatic diseases and contaminants can affect humans and ecosystems [5].

Conclusion

Aquatic animal health is essential for the sustainability of aquaculture, conservation of aquatic biodiversity, and protection of ecosystem services. By integrating disease prevention, environmental management, nutrition, and biosecurity, effective health programs can reduce losses and improve animal welfare. Continued research, technological advancement, and collaboration among scientists, veterinarians, and producers will strengthen aquatic animal health management and support the growing global reliance on aquatic resources.

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