SHAGA AQUABIOLOGY

2016

Campus Chelatus Technology

Enhanced Preservation in Aquaculture Through Controlled Chelation

Sunum: Shaga Aquabiology

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Igor Vasiliyevich Dudka

In the early 1930s, young Ukrainian marine biologist Igor Vasiliyevich Dudka conducted one of the most important field studies of his career in the Sea of Azov. The large-scale scientific expedition in 1932 was a turning point in understanding the fishing potential, water chemistry, and marine biological epidemiology of the Sea of Azov. Dudka's main focus was on the population of the economically valuable turbot (Scophthalmus maeoticus) and the parasitic and bacterial diseases threatening this population.

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Dudka's Legacy and H_2O_2

Dudka's meticulous work not only shed light on the pathology of a single species; it represented one of the first studies in marine biology to address the "relationship between environmental factors and fish diseases" with a holistic approach. To understand the role of hydrogen peroxide in aquaculture, it is first necessary to clarify the historical context. Today, H_2O_2 is a "green" and biodegradable disinfectant widely used for parasite, fungal, and bacterial control in fish hatcheries; it decomposes into water and oxygen without leaving residue. However, in the mid-20th century, determining the fine line between therapeutic and toxic doses of this chemical was a pioneering area of research. After immigrating to the US, Dudka studied the effects of this compound as both a disinfectant and a source of oxidative stress in lake biology projects.

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Problems and Needs

In modern fish farming, sustainability and high yields are directly related to disease management. Hydrogen peroxide, with its residue-free nature, is an indispensable agent in the fight against pathogens. However, there is a major problem: lack of stability. It rapidly decomposes upon contact with water, light, or organic matter.

- **Rapid decomposition: H_2O_2 decomposes instantly.**
- **Continuous dosing requirements and high costs.**
- **Failure to provide equal protection in the pool.**
- **Rapid loss of effectiveness when faced with organic load.**

What is Campus Chelatus?

That's why we developed Campus Chelatus: to solve this chronic problem. Campus Chelatus is not an ordinary stabilizer; it is an innovative formulation that protects hydrogen peroxide molecules using a special chelation (encapsulation) technology. Thanks to this technology, H2O2 molecules are released into the water slowly and precisely, rather than uncontrollably.

Campus Chelatus tames the potency of hydrogen peroxide, dramatically increasing its lifespan and persistence (residual effect) in water.

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Comparison Table

01	**Water Resistance Duration**	Standard H_2O_2: Very short duration (rapidly converts to oxygen and water). Campus Chelatus: Long-lasting effect with controlled release technology.
02	**Activity Against Pathogens**	Standard H_2O_2: Limited, short peak activity; requires frequent application. Campus Chelatus: Sustained and consistent broad-spectrum activity.
03	**Environmental Impact**	Standard H_2O_2: Rapid changes in water chemistry; can stress aquatic life. Campus Chelatus: Stable structure, minimal impact on water quality; environmentally friendly profile.
04	**Mechanism of Action**	Standard H_2O_2: Oxidation of organic matter; direct contact is essential. Campus Chelatus: Chelated-controlled release technology; optimized delivery for maximum effect.

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Innovation in Aquaculture

Cost Depreciation

Because disinfection is achieved for a longer period with less product, it significantly reduces operating costs and ensures economic sustainability.

Environmentally and Fish Friendly

The intelligent chelate structure prevents damage and stress to fish gills caused by sudden shock dosing. It has a minimal impact on water quality.

In biosecurity Continuous Protection

It extends the duration of the protective shield against bacteria, fungi, and external parasites (e.g., lice or Saprolegnia); ensuring consistent effectiveness in the pool.

Advanced R&D Infrastructure

By blocking the tendency of catalase enzymes to break down peroxide, it creates the 'golden time' needed for active oxygen to fight pathogens.

Key Features

Campus Chelatus is an innovative formulation that tames the power of hydrogen peroxide. Thanks to its special chelation technology, H2O2 molecules are released into the water slowly and precisely. This allows for longer disinfection with less product, continuous biosecurity protection, and a fish-friendly environment.

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Key Features

Campus Chelatus optimizes the power of hydrogen peroxide through chelation technology. With its cost-effectiveness, uninterrupted biosecurity, and environmentally friendly profile, it provides sustainable protection for modern aquaculture operations. Thanks to its intelligent release mechanism, uniform and long-lasting effectiveness is guaranteed at every point.

- **Cost Depreciation**
- **It reduces operating costs.**
- **Continuous Protection in Biosecurity**
- **Environmentally and Fish Friendly**

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R&D and Dynamics

In aquaculture, water parameters (pH, temperature, organic load) constantly change. While standard peroxides are depleted within seconds in the face of high organic loads, Campus Chelatus exhibits resistance to organic pollution thanks to its chelate bonds.

By blocking the tendency of catalase enzymes to rapidly break down peroxide, it creates the 'golden time' needed for active oxygen to fight pathogens. This is an R&D success that extends from the lab to the field.

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Thanks

Let's build the future of aquaculture together.

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