Development of DNA vaccine against Red Sea Bream Iridovirus with cytomegalovirus(CMV) promoter system

So-Jin Park, Hyo-Jin Seo[1], Ki-Hong Kim[2], Yoon-Kwon Nam[3], and Sung-Koo Kim

Department of Biotechnology and Bioengineering, PuKyong National University
[1]Interdisciplinary Program of Marine Biotechnology, PuKyong National University
[2]Department of Aquatic Life Medicine, PuKyong National University
[3]Department of Aquaculture, PuKyong National University

The family *Iridoviridae* containing a diverse array of iridoviruses is a family of viruses (130-300 nanometers in size) that have DNA as their genetic material and have an icosahedral (20-sided) capsid. Iridoviruses have been detected in a wide variety of fish, including both freshwater and saltwater species. Some iridoviruses have been associated with serious diseases (e.g., viral erythrocytic necrosis of salmonids) while others have only been found in apparently healthy animals (e.g., goldfish iridovirus). One iridovirus causes a disease called lymphocystis which unsightly causes skin lesions on infected fish, but otherwise is of little consequence.

Cytomegalovirus, or CMV, is universally found throughout all geographic locations and socioeconomic groups, and infects between 50% and 85% of adults in the United States by 40 years of age. CMV is also the virus most frequently transmitted to a developing child before birth. CMV infection is more widespread in developing countries and in areas of lower socioeconomic conditions.

Major capsid protein(MCP) of iridovirus and cytomegalovirus immediate-early (CMV) promoter of pcDNA3.1(+) vector was used in this study. The cloned MCP was inserted in pcDNA3.1(+) vector and then transformed to *E. coli* (*E. coli* DH5α /pcDNA-mcp).

Hundred μg/fish of pcDNA-mcp was injected into the rock bream muscle tissues and PBS(negative control) was injected into the fish for two groups. After 14 days, booshoting test was carried out in one group. And after 28 days, challenge test was carried out.

References

1. Harriet L. Robinson and Celia A. t. Torres.(1997). DNA vaccines. Seminars in *Immunology*. 9; 271-283
2. Lorenzen. N. (1999). Recombinant vaccines : experimental and applied aspets. *Fish & shellfish Immunology*. 9; 361-365.