

**PENGEMBANGAN VAKSIN BERBASIS PEPTIDA YANG
TEREKSPRESI PADA RESEPTOR IKAN KERAPU TIKUS YANG
MENGENALI ANTIGEN SEBAGAI TRANSGENIK ANTIBODI
DALAM UPAYA PENYIAPAN BIBIT UNGGUL**

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ABSTRAK

Pencapaian produk target penelitian ini yakni berupa teknologi yang memfokuskan pada pengembangan pembuatan vaksin peptida untuk upaya pembuatan benih komoditi budidaya ikan kerapu yang tahan penyakit, dengan kegiatan penelitian adalah pengembangan vaksin berbasis peptida dari reseptor ikan kerapu yang general terhadap antigen untuk transgenik antibodi guna pembuatan benih ikan kerapu budidaya yang tahan penyakit (*Vibrio* spp dan Virus VNN) dan untuk penanggulangan penyakit pada ikan kerapu budidaya. Penelitian ini merupakan penelitian lanjutan yang dilandasi oleh permasalahan penelitian bahwa penanggulangan penyakit khususnya budidaya kerapu guna penyiapan bibit unggul belum mendapatkan hasil hingga saat ini. Masalah utama dalam industri budidaya kerapu sekarang adalah kematian ikan yang berakibat terhadap terbatasnya ketersediaan benih hal ini disebabkan oleh penyakit baik bakteri khususnya *Vibrio* spp (*V. alginolyticus*, *V. anguillarum*, *V. parahaemolyticus* dan *V. harveyi*) maupun virus Viral Nervous Necrotic/VNN) dan menyebabkan kematian hingga 100 % pada tingkat benih, oleh karenanya masalah penyakit ini harus diupayakan pemecahannya baik teknologi dan metodologi yang digunakan maupun luaran penelitian yang dihasilkan. **Tujuan penelitian ini adalah** mendapatkan bahan vaksin dari molekul MHC (Major Histocompatibility Complex (MHC)) antibodi yang tereksresi pada reseptor ikan kerapu, guna mendapatkan vaksin peptida sebagai transgenik antibodi untuk rekayasa pembuatan dan pengembangan starter benih unggul ikan kerapu tikus *C. altivelis* dalam rangka penanggulangan penyakit ikan. Manfaat penelitian adalah dihasilkan metodologi dan teknologi pembuatan vaksin peptida, produksi vaksin peptida dari reseptor untuk penanggulangan dan pencegahan penyakit utama pada ikan kerapu sebagai ikan ekonomis penting, serta teknologi penyiapan penyediaan benih ikan kerapu tahan penyakit *Vibrio* spp dan VNN. **Penelitian ini meliputi tiga tahap, tahap I** telah dilakukan identifikasi reseptor berdasarkan ekspresi protein dan peptida dari ikan kerapu tikus normal, dan terinfeksi (*Vibrio* spp. dan virus/VNN), diharapkan penelitian ini dapat menghasilkan karakter reseptor yakni berdasar ekspresi gen spesifik guna informasi formulasi bahan vaksin peptida untuk penyiapan starter bibit unggul tahan penyakit. **Pada penelitian tahap II**, telah dilakukan analisa reseptor spesifik yang mengenali antigen (bakteri *vibrio* spp. dan viral /VNN), dalam perannya sebagai indukser molekul MHC dari Immunoglobulin (Ig) antibodi ikan kerapu untuk bahan rekombinant yang diperoleh merupakan target urutan gen yang telah terinsersi sebagai bahan vaksin peptida DNA. **Pada penelitian tahap III** diproduksi bahan vaksin peptida melalui produksi cDNA gen MHC, untuk pengembangan dan pengujian vaksin lebih lanjut, melalui tahapan pengujian bahan vaksin secara invitro, dan uji respon bahan vaksin peptida dideteksi melalui metode southern ataupun northern insitu hibridisasi, dot blotting ataupun western blotting sebagai respon protektif terhadap *Vibrio* spp. Dan virus VNN.

Kata-kata kunci : Immunoglobulin, MHC, Kerapu tikus, Reseptor, *Vibrio* spp, VNN

The Development of Peptida-based Vaccines Expressed on Receptor of Humpback grouper that Recognize Antigen as Transgenic Antibody In Effort to Prepare a Superior Seed

ABSTRACT

Achievement of the target product of this research in the form of technology that focuses on the development of peptide vaccine for the efforts of seed production of grouper aquaculture commodity-resistant disease, with research activities is the development of peptide-based vaccine from the general receptor grouper to antigens for antibody to transgenic fish seed production grouper cultivation of resistant disease (*Vibrio* spp and VNN virus) and for the prevention of disease in cultured grouper. This research is based on advanced research problems that the prevention of disease especially for preparation of cultured grouper seeds do not get the results until today. The main problem in grouper culture industry now is the death of fish that affect its limited seed availability caused by either disease, especially *Vibrio* spp (*V. alginolyticus*, *V. anguillarum*, *V. parahaemolyticus* and *V. harveyi*) and viruses (Viral Nervous necrotic / VNN) and caused death to 100% in seed rate. therefore the problem of this disease should be sought to solve both the technology and methodology used and the outcome of the research project. The purpose of this research is to get the vaccine material from MHC molecules (major histocompatibility complex (MHC)) antibody receptors expressed on grouper, in order to get the vaccine peptides as transgenic engineering of antibodies for the manufacture and development of improved seed starter *C. altivelis* in order to control fish disease. Benefits of research methodology and technology is resulting peptide vaccine manufacture, products of the receptor peptide vaccine for the control and prevention of major diseases in grouper as an economically important fish, as well as provision of technological preparation of humpback grouper disease resistant *Vibrio* spp and VNN. This study includes three phases, phase I has been identified based on expression of receptor proteins and peptides from normal mouse grouper, and infected (*Vibrio* spp. and virus / VNN), is expected to produce a character study based on gene expression of the receptor that is specific to the formulation of information peptide vaccine materials for starter preparation of disease-resistant seeds. In the phase II study, it conducted an analysis specific receptor that recognizes antigen (*Vibrio* spp. and viral / VNN), in his role as inducer MHC molecules of immunoglobulin (Ig) antibody for grouper recombinant material obtained is the target gene sequence that has inserted as raw DNA peptide vaccine. In the research phase III vaccines produced material cDNA gene peptides through the production of MHC, for development and testing of the vaccine further, through the stages of in vitro testing of vaccines, and test the response of the peptide vaccine was detected by in situ methods southern or northern hybridization, dot blotting or western blotting as a protective response against *Vibrio* spp. and VNN.

Key words: immunoglobulin, MHC, Kerapu mice, receptors, *Vibrio* spp, VNN,

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