

# Study on the Immunity and Disease Resistance of *Macrobrachium rosenbergii* fed with *Cinnamomum osmophloeum* Leaf Extract feed

1. Title of Research : Study on the Immunity and Disease Resistance of *Macrobrachium rosenbergii* fed with *Cinnamomum osmophloeum* Leaf Extract feed

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## 2. Cross-School Research and

### Development Team Members

Department	Name	Position
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## 3. Content of Cross-School Research and

### Development

*Cinnamomum osmophloeum* leaves contain active components that regulate inflammatory responses, aiding in the alleviation of inflammation symptoms. Additionally, the antioxidants present in these leaves are capable of scavenging free radicals, thereby protecting cells from oxidative damage. Currently, there is a lack of research exploring the application of active substances from *Cinnamomum osmophloeum* leaves in the aquaculture industry. This study aims to investigate the potential of Taiwan cinnamon leaves in enhancing the disease resistance of *Macrobrachium rosenbergii*. By injecting extracts of *Cinnamomum osmophloeum* leaves into these prawns, the study analyzes the impact on their immune and disease resistance capabilities. The intent is to apply the findings in feed development,

subsequently promoting the advancement of the shrimp aquaculture industry. This research will conduct analyses of disease resistance and immune mechanisms on the 1st, 3rd, and 7th days post-injection, exploring how the pharmacological properties of *Cinnamomum osmophloeum* leaves can prevent aquaculture diseases to enhance food safety and the development of the aquaculture industry. This interdisciplinary study focuses not only on food safety but also aims to foster the growth of the ecological industry.

#### 4. Description of Industrial Needs and

##### Research Result Applications

Due to the susceptibility of freshwater giant prawns (*Macrobrachium rosenbergii*) to various aquaculture diseases, which often leads to a decrease in production, this study explores the use of *Cinnamomum osmophloeum* extracts as immunostimulants. These extracts potentially aid in reducing disease incidence and infection, thereby enhancing the yield and quality of aquaculture products. The aquaculture industry frequently resorts to chemical drugs for disease prevention and treatment, which can lead to environmental pollution and food safety concerns. The natural antimicrobial properties of *Cinnamomum osmophloeum* leaves offer a safer, more environmentally friendly alternative, helping to reduce the reliance on chemical drugs. The

application of *Cinnamomum osmophloeum* leaves extracts in aquaculture not only contributes to the sustainable development of the industry but also promotes the growth of eco-friendly practices. The outcomes of this research are anticipated to significantly impact the efficiency of aquaculture production, food safety standards, and environmental protection.

#### 5. Performance of Cross-School Research

##### and Development

The study findings confirmed that upon the injection of 3 µg/prawn of *Cinnamomum osmophloeum* leaves extract into freshwater giant prawns (*Macrobrachium rosenbergii*), there was a significant increase in various immune parameters, including total hemocyte count, differential hemocyte count, phenoloxidase activity, and respiratory bursts activity. Additionally, the prawns demonstrated a higher survival rate in *Lactococcus garvieae* infection trials when injected with 3 and 5 µg/prawn of the *Cinnamomum osmophloeum* leaves extract. These results validate the potential of *Cinnamomum osmophloeum* leaves in developing as an immunostimulant for aquaculture use. Future experiments can further explore this potential, aiming to commercialize the research findings into aquaculture technology feeds.