

ผู้นำเสนอ



ผศ.ดร.เอกพล วัังคะฮาต



หน่วยวิจัยสัตวศาสตร์และสัตว์น้ำประยุกต์

Applied Animal and Aquatic Sciences Research Unit

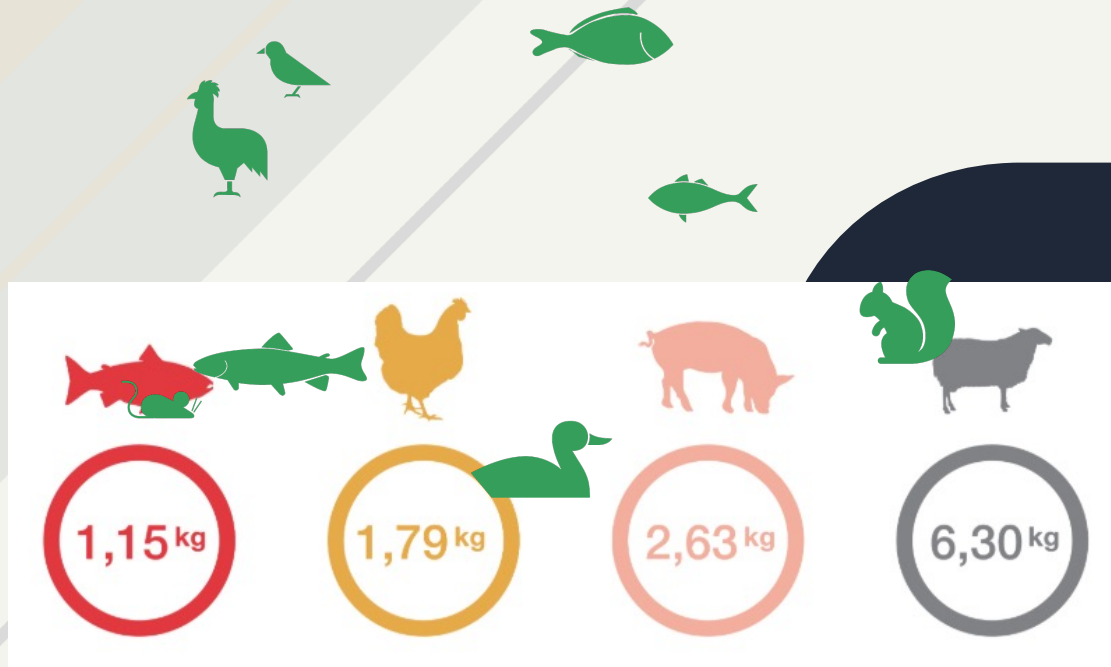


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หน่วยวิจัย



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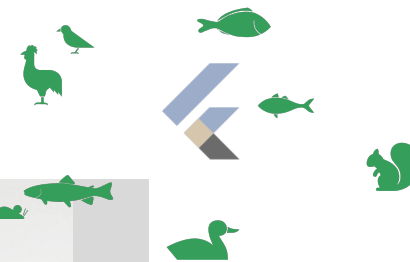
ความสำคัญของหน่วยวิจัย (Research Unit)



**ANIMAL
SCIENCE**
DOCTORAL PROGRAMME

- Animals are amongst the most efficient farm animals in converting feed nutrients into edible meat
- In a resource-constrained world, aquaculture is an attractive option for expanding animal protein supply

สมาชิกหน่วยวิจัย (Members)



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 h -index = 10



รศ.ดร.อาณัติ จันท์ธีระติกุล
 h -index = 11



รศ.ดร.นันทพร สุทธิ
 h -index = 5



ผศ.ดร.วิภาวี ไทเมืองพล
 h -index = 5



ผศ.ดร.ดวงนภา พรเมเกตู
 h -index = 2



อ.ดร.สุปราณี วิกัยบุรณ
 h -index = 1



ผศ.ชาญยุทธ แถมวัน
 h -index = -



อ.ดร.มานิสา สังข์แก้ว
 h -index = 1

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ผลการดำเนินงานของหน่วยวิจัยฯ ผลงานวิจัย/นวัตกรรม/อื่นๆ ในปีงบประมาณ 2565 ที่ผ่านมา

แหล่งทุนวิจัยปี 2022

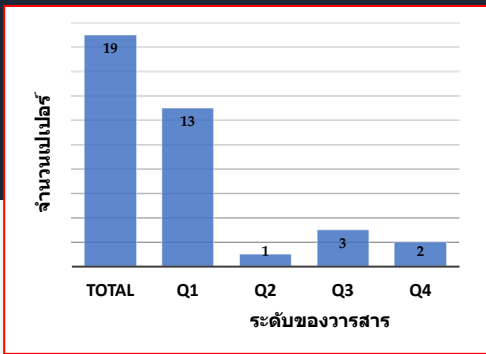


หน่วยวิจัยสัตวศาสตร์และสัตว์น้ำประยุกต์



ผลการดำเนินงานของหน่วยวิจัยฯ ผลงานวิจัย/นวัตกรรม/อื่นๆ ในปีงบประมาณ 2565 ที่ผ่านมา

ผลงานวิจัยตีพิมพ์ในปี 2022



Strategies to enhance tilapia immunity to improve their health in aquaculture

Bai Wang¹, Xin D. Thompson², Ekkawat Wangkham³, Ajayu Yankem⁴, Mada C. Bonde-Rasmussen⁵, Purnasa Tattiyong⁶, Alan Shi⁷, Wu Sunchoeng⁸

Abstract
Tilapia farming and rearing diseases, such as streptococcosis, koi herpes virus disease and bacterial disease of the head and neck, are the most significant diseases in the fish industry over the last decade. These diseases have resulted in high mortality and economic loss. Vaccination is one of the most effective ways to reduce the risk of disease in aquaculture. However, the development of effective vaccines for tilapia is still a challenge. In this study, we investigated the immunogenicity of a recombinant protein vaccine and evaluated the fish's growth, survival, and disease resistance. The results showed that the recombinant protein vaccine significantly improved the fish's health and disease resistance. This vaccine could be a potential alternative to antibiotics in aquaculture. Further studies are needed to evaluate the safety and efficacy of this vaccine in large-scale production.

(ISI Q1; IF=10.618)

Combining segments 9 and 10 in DNA and recombinant protein vaccines conferred superior protection against tilapia lake virus in hybrid red tilapia (*Oreochromis sp.*) compared to single segment vaccines

Mattha Chantana¹, Leelita Lawan², Na Tharn³, Suvaree Sring⁴, Nattakorn Anant⁵, Sapanat Wangkham⁶, Sun Huiyoo⁷, Nappasit Manthab⁸, and Samran Ungkum⁹

Abstract
Tilapia lake virus (TLV) is a highly contagious and lethal pathogen that causes significant economic losses in the tilapia industry. The development of effective vaccines is essential for disease control. In this study, we compared the protective efficacy of DNA and recombinant protein vaccines against TLV in hybrid red tilapia. The results showed that the combination of segments 9 and 10 in both DNA and recombinant protein vaccines provided superior protection compared to single segment vaccines. This study provides valuable insights into the development of effective vaccines against TLV.

(ISI Q1; IF=8.786)

Sterile alpha and TIR motif-containing protein 1 is a negative regulator in the anti-bacterial immune responses in Nile tilapia (*Oreochromis niloticus*)

Nigam Boi Thong^{1,2}, Tan-Phai Ngapan¹, Wan-Fai Hsueh³, Jun-Yun Liu⁴, Ekkawat Wangkham⁵, Alok Rai Fung Wang⁶, and Yu-Tsun Lin⁷

Abstract
The sterile alpha and TIR motif-containing protein 1 (SAT1) is a member of the TIRAP family and is involved in the signaling pathway of the Toll-like receptor (TLR). In this study, we investigated the role of SAT1 in the anti-bacterial immune responses of Nile tilapia. The results showed that SAT1 acts as a negative regulator in the anti-bacterial immune responses. Overexpression of SAT1 significantly reduced the expression of TLR2 and MyD88, and inhibited the production of pro-inflammatory cytokines. This study provides valuable insights into the regulation of the anti-bacterial immune responses in Nile tilapia.

(ISI Q1; IF=8.786)

An Eco-Friendly Conversion of Aquaculture Suspended Solid Wastes Into High-Quality Fish Food by Improving Poly-β-Hydroxybutyrate Production

Goa Olan¹, Smita², Pooja³, Mithu⁴, Mithu⁵, Mithu⁶, Mithu⁷, Mithu⁸, Mithu⁹, Mithu¹⁰, Mithu¹¹, Mithu¹², Mithu¹³, Mithu¹⁴, Mithu¹⁵, Mithu¹⁶, Mithu¹⁷, Mithu¹⁸, Mithu¹⁹, Mithu²⁰

Abstract
The aquaculture industry produces a large amount of suspended solid waste (SSW) that is often discarded, causing environmental pollution. In this study, we investigated the conversion of SSW into high-quality fish food by improving poly-β-hydroxybutyrate (PHB) production. The results showed that the conversion of SSW into PHB significantly reduced the environmental impact and improved the quality of the fish food. This study provides a sustainable and eco-friendly approach to waste management in aquaculture.

(ISI Q1; IF=4.581)

Effect of beta-glucan, a feed additive containing free amino acid and fatty acid composition in Nile tilapia (*Oreochromis niloticus*)

Ekkawat Wangkham¹, Purnasa Tattiyong², Purnasa Tattiyong³, Purnasa Tattiyong⁴, Purnasa Tattiyong⁵, Purnasa Tattiyong⁶, Purnasa Tattiyong⁷, Purnasa Tattiyong⁸, Purnasa Tattiyong⁹, Purnasa Tattiyong¹⁰, Purnasa Tattiyong¹¹, Purnasa Tattiyong¹², Purnasa Tattiyong¹³, Purnasa Tattiyong¹⁴, Purnasa Tattiyong¹⁵, Purnasa Tattiyong¹⁶, Purnasa Tattiyong¹⁷, Purnasa Tattiyong¹⁸, Purnasa Tattiyong¹⁹, Purnasa Tattiyong²⁰

Abstract
Beta-glucan is a natural polysaccharide that has been shown to have immunomodulatory and growth-promoting effects in various aquatic species. In this study, we investigated the effect of beta-glucan as a feed additive in Nile tilapia. The results showed that beta-glucan significantly improved the growth and disease resistance of the fish. This study provides valuable insights into the use of beta-glucan as a feed additive in aquaculture.

(ISI Q1; IF=5.135)

Interactive effects of dietary lipid and nutritional immunifier supplementation on growth, chemical composition, immune response and lipid metabolism in juvenile Nile tilapia (*Oreochromis niloticus*)

Ekkawat Wangkham¹, Purnasa Tattiyong², Purnasa Tattiyong³, Purnasa Tattiyong⁴, Purnasa Tattiyong⁵, Purnasa Tattiyong⁶, Purnasa Tattiyong⁷, Purnasa Tattiyong⁸, Purnasa Tattiyong⁹, Purnasa Tattiyong¹⁰, Purnasa Tattiyong¹¹, Purnasa Tattiyong¹², Purnasa Tattiyong¹³, Purnasa Tattiyong¹⁴, Purnasa Tattiyong¹⁵, Purnasa Tattiyong¹⁶, Purnasa Tattiyong¹⁷, Purnasa Tattiyong¹⁸, Purnasa Tattiyong¹⁹, Purnasa Tattiyong²⁰

Abstract
Dietary lipid and nutritional immunifier supplementation are important factors for the growth and health of juvenile Nile tilapia. In this study, we investigated the interactive effects of dietary lipid and nutritional immunifier supplementation on growth, chemical composition, immune response, and lipid metabolism. The results showed that the combination of dietary lipid and nutritional immunifier supplementation significantly improved the growth and health of the fish. This study provides valuable insights into the optimization of dietary lipid and nutritional immunifier supplementation in aquaculture.

(ISI Q1; IF=5.135)

Molecular characterization of the evolutionary conserved signaling intermediate in Toll pathway (ICE2) of Asian mudfish (*Cara Kuhlioides*)

Zhen Q¹, Xiang H¹, Yang H¹, Qian H¹, Ekkawat Wangkham², Fanka Meng³

Abstract
The evolutionary conserved signaling intermediate in Toll pathway (ICE2) is a key component of the Toll-like receptor (TLR) signaling pathway. In this study, we characterized the molecular structure of ICE2 in Asian mudfish. The results showed that ICE2 in Asian mudfish is highly conserved and shares a common structure with other species. This study provides valuable insights into the evolution and function of ICE2 in fish.

(ISI Q1; IF=4.622)

A C11a domain-containing protein in *Platyfish* contributes to the innate immune response and elimination of the pathogen

Ang Wang¹, Weyang Wang², Xiang Chen³, Cuiyong Li⁴, Xiangyong Cui⁵, Mingyong Zhu⁶, Xiang Chen⁷, Shi Wang⁸, Zhongxing Wang⁹

Abstract
The C11a domain-containing protein is a member of the C11a domain-containing protein family and is involved in the innate immune response. In this study, we investigated the role of the C11a domain-containing protein in the innate immune response and elimination of the pathogen in *Platyfish*. The results showed that the C11a domain-containing protein significantly improved the innate immune response and eliminated the pathogen. This study provides valuable insights into the function of the C11a domain-containing protein in fish.

(ISI Q1; IF=4.622)

The immune response of fat fish against *Streptococcus albidus* against bacterial fish disease by *in vivo* transpore analysis

Weyang Wang¹, Lanxin Sun², Ekkawat Wangkham³, Mingyong Zhu⁴, Xiang Chen⁵, Shi Wang⁶, Zhongxing Wang⁷

Abstract
The immune response of fat fish against *Streptococcus albidus* is a complex process involving multiple components. In this study, we investigated the immune response of fat fish against *Streptococcus albidus* using *in vivo* transpore analysis. The results showed that the immune response of fat fish against *Streptococcus albidus* is significantly improved by *in vivo* transpore analysis. This study provides valuable insights into the immune response of fat fish against bacterial fish disease.

(ISI Q1; IF=4.622)

Optimum dietary sources and levels of selenium improve growth, antioxidant status, and disease resistance: re-evaluation in a farmed fish species, Nile tilapia (*Oreochromis niloticus*)

Ekkawat Wangkham¹, Purnasa Tattiyong², Purnasa Tattiyong³, Purnasa Tattiyong⁴, Purnasa Tattiyong⁵, Purnasa Tattiyong⁶, Purnasa Tattiyong⁷, Purnasa Tattiyong⁸, Purnasa Tattiyong⁹, Purnasa Tattiyong¹⁰, Purnasa Tattiyong¹¹, Purnasa Tattiyong¹², Purnasa Tattiyong¹³, Purnasa Tattiyong¹⁴, Purnasa Tattiyong¹⁵, Purnasa Tattiyong¹⁶, Purnasa Tattiyong¹⁷, Purnasa Tattiyong¹⁸, Purnasa Tattiyong¹⁹, Purnasa Tattiyong²⁰

Abstract
Selenium is an essential trace element that plays a role in antioxidant defense and disease resistance. In this study, we investigated the optimum dietary sources and levels of selenium for Nile tilapia. The results showed that the optimum dietary sources and levels of selenium significantly improved the growth, antioxidant status, and disease resistance of the fish. This study provides valuable insights into the optimization of selenium supplementation in aquaculture.

(ISI Q1; IF=5.135)

Impacts of *Artibeus* marmoset fruit extract as a medicinal herb on growth performance, antioxidant and immune responses, digestive enzymes, and disease resistance against *Streptococcus albidus* in Nile tilapia (*Oreochromis niloticus*)

Ekkawat Wangkham¹, Purnasa Tattiyong², Purnasa Tattiyong³, Purnasa Tattiyong⁴, Purnasa Tattiyong⁵, Purnasa Tattiyong⁶, Purnasa Tattiyong⁷, Purnasa Tattiyong⁸, Purnasa Tattiyong⁹, Purnasa Tattiyong¹⁰, Purnasa Tattiyong¹¹, Purnasa Tattiyong¹², Purnasa Tattiyong¹³, Purnasa Tattiyong¹⁴, Purnasa Tattiyong¹⁵, Purnasa Tattiyong¹⁶, Purnasa Tattiyong¹⁷, Purnasa Tattiyong¹⁸, Purnasa Tattiyong¹⁹, Purnasa Tattiyong²⁰

Abstract
The *Artibeus* marmoset fruit extract is a natural product that has been shown to have immunomodulatory and growth-promoting effects. In this study, we investigated the impacts of *Artibeus* marmoset fruit extract on growth performance, antioxidant status, immune responses, digestive enzymes, and disease resistance against *Streptococcus albidus* in Nile tilapia. The results showed that the *Artibeus* marmoset fruit extract significantly improved the growth performance, antioxidant status, immune responses, digestive enzymes, and disease resistance of the fish. This study provides valuable insights into the use of *Artibeus* marmoset fruit extract as a medicinal herb in aquaculture.

(ISI Q1; IF=5.135)

A multi-epitope chimeric protein elicited a strong antibody response and partial protection against *Edwardsiella ictaluri* in Nile tilapia

Vandana Machibhotla¹, Natapong Pornpattanasri², Saengchan Saeuaj³, Ekkawat Wangkham⁴, Purnasa Tattiyong⁵, Pongkai Khumrat⁶, Thani Ektarungroj⁷

Abstract
The multi-epitope chimeric protein is a novel vaccine candidate that elicits a strong antibody response and provides partial protection against *Edwardsiella ictaluri* in Nile tilapia. In this study, we investigated the effects of the multi-epitope chimeric protein on the immune response and protection against *Edwardsiella ictaluri*. The results showed that the multi-epitope chimeric protein significantly elicited a strong antibody response and provided partial protection against *Edwardsiella ictaluri*. This study provides valuable insights into the development of a multi-epitope chimeric protein vaccine for Nile tilapia.

(ISI Q1; IF=4.622)

Molecular Characterization and Expression Analysis of Novel Interleukin-1 Family Member (nIL-1F) Gene in Nile Tilapia (*Oreochromis niloticus*)

Ekkawat Wangkham¹, Purnasa Tattiyong², Purnasa Tattiyong³, Purnasa Tattiyong⁴, Purnasa Tattiyong⁵, Purnasa Tattiyong⁶, Purnasa Tattiyong⁷, Purnasa Tattiyong⁸, Purnasa Tattiyong⁹, Purnasa Tattiyong¹⁰, Purnasa Tattiyong¹¹, Purnasa Tattiyong¹², Purnasa Tattiyong¹³, Purnasa Tattiyong¹⁴, Purnasa Tattiyong¹⁵, Purnasa Tattiyong¹⁶, Purnasa Tattiyong¹⁷, Purnasa Tattiyong¹⁸, Purnasa Tattiyong¹⁹, Purnasa Tattiyong²⁰

Abstract
The novel Interleukin-1 Family Member (nIL-1F) gene is a member of the Interleukin-1 family and is involved in the innate immune response. In this study, we characterized the molecular structure and expression analysis of the nIL-1F gene in Nile tilapia. The results showed that the nIL-1F gene is highly conserved and shares a common structure with other species. This study provides valuable insights into the evolution and function of the nIL-1F gene in fish.

(ISI Q1; IF=4.622)

Automatic Milk Quantity Recording System for Small-Scale Dairy Farms Based on Internet of Things

Suresh Kumar¹, Apurva Anand², and Anu Chatterjee³

Abstract
The automatic milk quantity recording system is a novel system that records the milk quantity of dairy cows in real-time using the Internet of Things (IoT). In this study, we investigated the performance of the automatic milk quantity recording system. The results showed that the automatic milk quantity recording system significantly improved the accuracy and efficiency of milk quantity recording. This study provides valuable insights into the development of an automatic milk quantity recording system for small-scale dairy farms.

(ISI Q1; IF=4.622)

AQUAFED

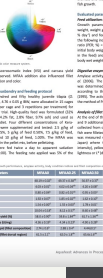
Advances in processing & formulation

FEED ADDITIVES FOR TILAPIA

**Corn fermented protein
Extraction technology
Micro-ingredients**

A mix of 17 free amino acids enhances performance of Nile tilapia

Abstract
The mix of 17 free amino acids significantly enhances the performance of Nile tilapia. In this study, we investigated the effects of the mix of 17 free amino acids on the growth, survival, and disease resistance of Nile tilapia. The results showed that the mix of 17 free amino acids significantly improved the growth, survival, and disease resistance of the fish. This study provides valuable insights into the use of a mix of 17 free amino acids as a feed additive in aquaculture.



หน่วยวิจัยสัตวศาสตร์และสัตว์น้ำประยุกต์



ผลการดำเนินงานของหน่วยวิจัยฯ ผลงานวิจัย/นวัตกรรม/อื่นๆ ในปีงบประมาณ 2565 ที่ผ่านมา

รางวัลผลงานวิจัยปี 2022



นักวิจัยมหาวิทยาลัยมหาสารคาม ที่มีผลงานตีพิมพ์ต่อปีสูงสุดในฐานข้อมูล Scopus ปี 2022 (อ้างอิงจาก <https://www.scopus.com>) ข้อมูล ณ วันที่ 3 มกราคม 2566



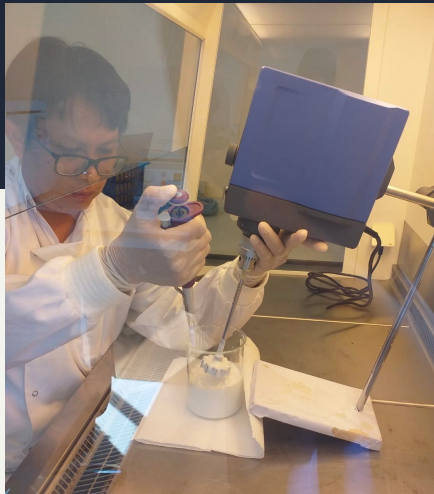
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|---|--|--|
| 1 รศ.ดร.ชวลิต บุญปก Publications = 23 Citations = 169 H-index = 7 | 2 ผศ.ดร.โอฬาริก สุรินทร์ Publications = 17 Citations = 382 H-index = 10 | 3 รศ.ดร.สุรพล แสนสุข Publications = 17 Citations = 340 H-index = 9 |
| 4 ผศ.ดร.เอกพล วงศ์ชาติ Publications = 15 Citations = 291 H-index = 10 | 5 รศ.ดร.ปิยะพร แสนสุข Publications = 14 Citations = 253 H-index = 8 | 6 รศ.ดร.วีระชัย สายจันทา Publications = 13 Citations = 1,018 H-index = 17 |
| 7 ผศ.ดร.โชคชัย วิริยะพงษ์ Publications = 13 Citations = 68 H-index = 5 | 8 รศ.ดร.จิตลดา วิษาพงษ์ Publications = 10 Citations = 639 H-index = 17 | 9 ผศ.ดร.บรรลือ สังข์ทอง Publications = 10 Citations = 245 H-index = 9 |
| 10 รศ.ดร.ธีรพงศ์ เหล่าสุวรรณ Publications = 10 Citations = 223 H-index = 7 | | |

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ผลงานวิจัยภายใต้ทุนวิจัยปี 2022

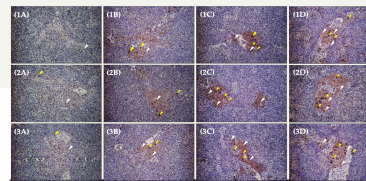
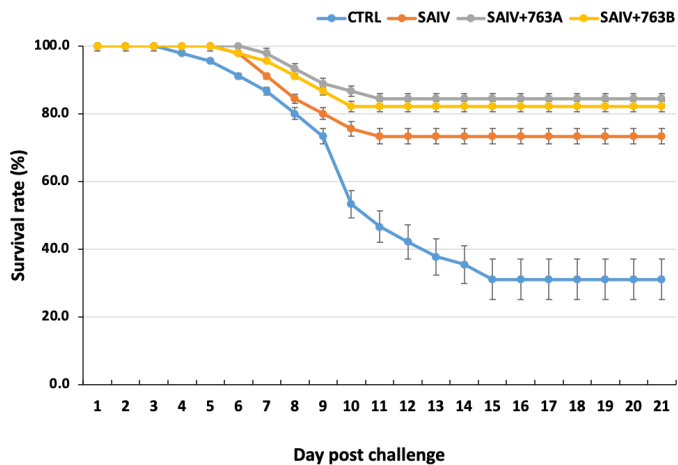


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| | | | | | | | | |
|---|-----------------|--|----------------------|--------------|--------------|--------------------|--------------|--------|
| View Submission View Decision Letter | FSIM-D-22-01394 | Comparative study of the effects of Montanide™ ISA 763A VG and ISA 763B VG adjuvants on the immune response against <i>Streptococcus agalactiae</i> in Nile tilapia (<i>Oreochromis niloticus</i>) | Corresponding Author | Dec 06, 2022 | Jan 20, 2023 | Completed - Accept | Jan 20, 2023 | Accept |
|---|-----------------|--|----------------------|--------------|--------------|--------------------|--------------|--------|

Fig.5



| Group | Mortality | % Mortality | RPS |
|-----------|-----------|-------------|--------------------|
| CTRL | 31 | 68.89 | - |
| SAIV | 12 | 26.67 | 61.29 ^b |
| SAIV+763A | 7 | 15.56 | 77.42 ^a |
| SAIV+763B | 8 | 17.78 | 74.19 ^a |

| Group | SAIV | SAIV+763A | SAIV+763B |
|-----------|------------|------------|------------|
| CTRL | P < 0.0001 | P < 0.0001 | P < 0.0001 |
| SAIV | | P < 0.0001 | P < 0.0001 |
| SAIV+763A | | | P = 0.076 |

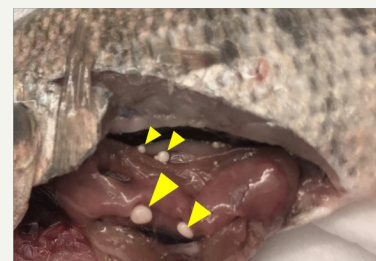
(A) CTRL



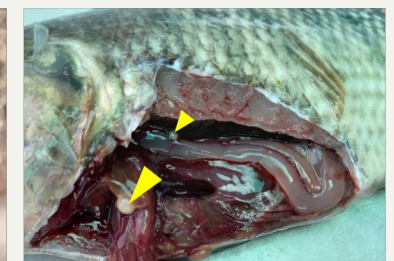
(B) SAIV



(C) SAIV+763A



(D) SAIV+763B



หน่วยวิจัยสัตวศาสตร์และสัตว์น้ำประยุกต์



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กิจกรรมของหน่วยวิจัยในปีที่ผ่านมาและกิจกรรมของปี 2022



THE SCIENCE OF EXPERIENCE:
Rearing Immunocompetent Animals Through Cellular Nutrition
REGISTER
Aug. 19, 2020 | 4:00 to 5:00 PM PHT

More resources are allotted to disease-preventive management, hence we should be more critical in programming and evaluating these tools. Next to bio-security, advancement in research has proven cellular nutrition as an effective measure in maintaining equilibrium between immunocompetence and optimum nutrient absorption.

In this webinar, we will cover the basics on anti-oxidative apparatus of the animals, the limiting factor that determines the degree of balancing oxidative status, and its applications on aqua, poultry and swine.

Joining us as speakers are:

EAKAPOL WANGKAHART, PhD
Assistant Professor
Mahasarakham University

BRECHT BRUNEL, MSc
Central Technical Manager
ORFA Additives BV

CAMDEN
TRADING GROUP

ORFA





แผนการดำเนินงาน เป้าหมาย ผลที่คาดว่าจะได้รับ ปีงบประมาณ 2566

แผนการดำเนินงาน

- มีการประชุมสมาชิกหน่วยวิจัยหรือติดต่อผ่านสื่ออิเล็กทรอนิกส์
- เผยแพร่ข้อมูลข่าวสารงานวิจัยแก่สมาชิกทุกคน
- สร้างเครือข่ายกับภาคอุตสาหกรรมและทำความร่วมมือแบบ

long-term partnership

- สนับสนุนนิสิตระดับบัณฑิตศึกษาปัจจุบันในการนำเสนอผลงาน

วิชาการ

- รับนิสิตระดับบัณฑิตศึกษาเข้าศึกษาต่อภายใต้อาจารย์ที่ปรึกษา

ของหน่วยวิจัย

- ร่วมเป็น Editorial board ของวารสารระดับชาติและนานาชาติ

2023





แผนการดำเนินงาน เป้าหมาย ผลที่คาดว่าจะได้รับ ปีงบประมาณ 2566

เป้าหมาย

- สมาชิกหน่วยวิจัยมีทุนวิจัยครบทุกคน
- สมาชิกมีผลงานตีพิมพ์ระดับนานาชาติครบทุกคน
- สนับสนุนให้สมาชิกสร้างผลงานวิจัยและนำไปสู่การขอตำแหน่งทางวิชาการในระดับที่สูงขึ้น
- สมาชิกและนิสิตเข้าร่วมประชุมวิชาการเพื่อเพิ่มพูนความรู้เพื่อให้มีเครือข่ายวิจัยเพิ่มมากขึ้น
- มีความร่วมมือกับภาคอุตสาหกรรมและร่วมทำวิจัยที่สร้างสรรค์อย่างน้อย 2 โครงการ/ปี
- มีนิสิตใหม่ระดับบัณฑิตศึกษาเพิ่มขึ้นอย่างน้อย 2 คน



2023



แผนการดำเนินงาน เป้าหมาย ผลที่คาดว่าจะได้รับ ปีงบประมาณ 2566

ผลที่คาดว่าจะได้รับ

การขับเคลื่อนหน่วยวิจัย

- ทุนวิจัยรวมและงานตีพิมพ์ภายใต้การทำงานของสมาชิกทุกคน
- ความร่วมมือกับหน่วยงานทั้งในและต่างประเทศ

เป้าหมายของความสำเร็จภายใน 1 ปี

- ทุนวิจัยจากภายนอก อย่างน้อย 2,000,000 บาท
- ผลงานตีพิมพ์ ISI Q1 อย่างน้อย 5 เรื่อง +...
- International conference อย่างน้อย 2 เรื่อง

2023

ปัญหาและอุปสรรค



แนวทางแก้ไข



หน่วยวิจัยสัตวศาสตร์และสัตว์น้ำประยุกต์



Applied Animal and Aquatic Sciences Research Unit



THANK
YOU

Any Question?

