



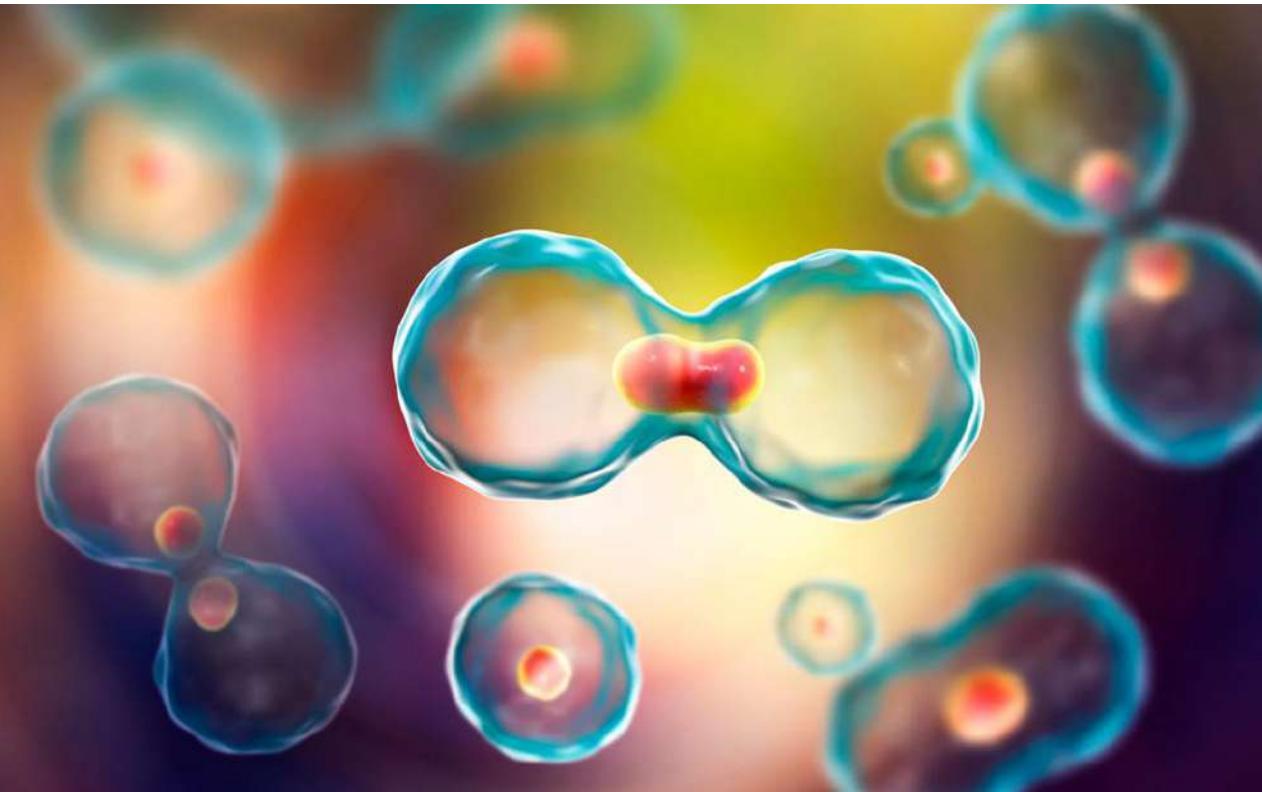
shrimpl.

Nutrição Sustentável: Menos Ração, Mais Biomassa

Marcelo Borba
Gerente Global de Produtos - Aqua
Prosol S.r.l

www.prosol.it

Natal, 2025



NUCLEOTÍDEOS

Blocos de Formação da Vida

Estrutura molecular
“Monômeros”



Cada nova célula
necessita de cerca de
1 BILHÃO de NUCLEOTÍDEOS
para se duplicar



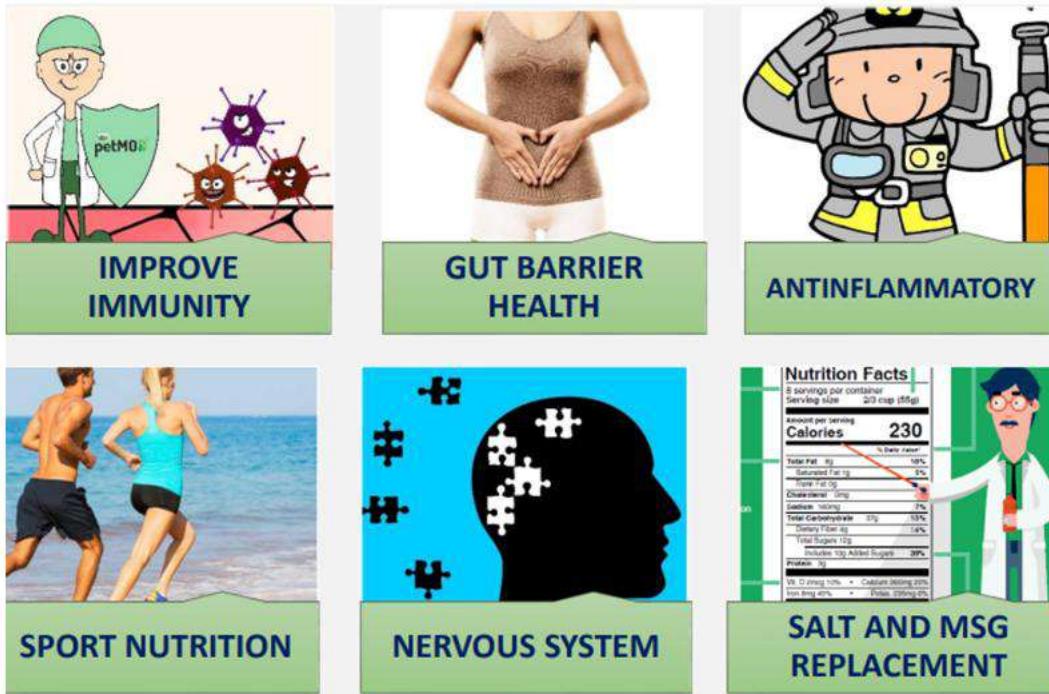
ÁCIDOS NUCLÉICOS

Decodificadores da Vida

Estrutura Helicoidal
“Polímeros”



Natal, 2025



- RNA Free Acid
- RNA Dissodium Salt

**ÁCIDOS
NUCLEICOS**

- RIBOCARE-AMP
- RIBOCARE-CMP
- RIBOCARE-UMP
- RIBOCARE-GMP
- RIBOCARE-IMP

**NUCLEOTÍDEOS
PUROS**

- **RIBODIET**
- **RIBOMIX**
- **IMPETUS**

**RNA
HIDROLIZADO**

Portfólio Food

A Prosol desenvolve ingredientes nutricionais para **FÓRMULAS INFANTIS, SUPLEMENTOS ALIMENTARES, NUTRIÇÃO CLÍNICA, REALÇADORES DE SABOR.**

PORTFOLIO FEED DA PROSOL

Soluções para
Sanidade,
Resistência,
Resiliência e
Desempenho

ÁCIDOS NUCLÉICOS

NUCLEOTÍDEOS

AquaCARE

NUCLEO Drink

RIBOFEED

LEVEDURA FUNCIONAL
HIDROLIZADA

I-CARE

LEVEDURA VIVA

MUCL™ 39885
Biosprint®



AquaCARE

CAMARÕES E PEIXES

AquaCARE é uma especialidade nobre, à base de leveduras e especialmente desenvolvido para Aqua.

O AquaCARE é indicado para estágios iniciais do ciclo de vida, estratégias de pré-engorda e/ou situações ambientais ou sanitárias adversas, promovendo melhor desempenho em peixes e camarões.

O produto fortalece a resistência às doenças, otimiza o equilíbrio da microbiota intestinal e potencializa a capacidade de neutralização dos radicais livres (ROSc) em camarões e peixes.

QUANDO E POR QUÊ?

CAMARÕES E
PEIXES FASES
INICIAIS E
PRÉ-ENGORDA

ESTRATÉGIAS
PRÉ &
PÓS-MANEJOS

CONDIÇÕES
AMBIENTAIS
DESAFIADORAS

RESISTÊNCIA
A DOENÇAS E
ESTRESSORES

DIETAS COM
BAIXA INCLUSÃO
DE FARINHA
DE PEIXE

CRESCIMENTO
APRIMORADO

RECUPERAÇÃO
MAIS
RÁPIDA

ALÍVIO
DO ESTRESSE
OXIDATIVO

RESPOSTA
IMUNE
APRIMORADA

MELHOR
ABSORÇÃO
DE NUTRIENTES
E MENORES
FCA's



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Natal, 2025



Validações Científicas

Kasetsart University
Laboratory of the Department of Aquaculture



Bangkok, Thailand

2022 ----- 2025
Pós-Larvas ----- Juvenis



Natal, 2025

AQUACULTURE BUSINESS RESEARCH CENTER

Faculty of Fisheries
Kasetsart University



Estudo com AquaCARE na fase de pós-larvas de *P. vannamei*. (2022)

Aquaculture Reports 27 (2022) 101352

Contents lists available at ScienceDirect

Aquaculture Reports

journal homepage: www.elsevier.com/locate/aqrep

Effects of dietary yeast-derived nucleotide and RNA on growth performance, survival, immune responses, and resistance to *Vibrio parahaemolyticus* infection in Pacific white shrimp (*Litopenaeus vannamei*)

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ARTICLE INFO

Keywords: Bacterial disease; Feed additive; *Litopenaeus vannamei*; Nucleotide; Rhonucleic acid

ABSTRACT

Nucleotides (NT) and RNA from yeast extracts are gaining interest as high-value feed additives. The present study intended to evaluate the influence of yeast-derived NT and RNA on the growth performance, survival, immune responses, and resistance to *Vibrio parahaemolyticus* infection in Pacific white shrimp. In Experiment 1, postlarvae were distributed into 7 groups, corresponding to 7 experimental diets: control, NT 0.25, NT 0.50, NT 0.75, RNA 0.25, RNA 0.50, and RNA 0.75 g/kg feed. They were fed the experimental diets for 45 days. Then, their body weights, survival rates, immune parameters, and *Vibrio* spp. counts in the hepatopancreas and intestines were determined. In Experiment 2, the shrimp from Experiment 1 were challenged by immersion with *V. parahaemolyticus* at 10^5 CFU/mL. Each group was fed the same diet for another 10 days to assess the disease resistance performance. The results revealed that the shrimp body weights of all groups were similar suggesting that neither NT nor RNA exert the growth-promoting effect. However, the average survival rates of the NT and RNA groups were in the range of 89–93 % significantly higher than that of the control (83 %). These increased survivals were in line with the reduction in the hepatopancreatic and intestinal *Vibrio* spp. counts and the elevated immune parameters in the NT and RNA-fed shrimp. At day 10 after the bacterial challenge, the highest survival rates were observed in the RNA 0.50 and 0.75 g/kg feed groups (81 % and 82 %, respectively), followed by the RNA 0.25 (70 %) and NT 0.75 g/kg feed (68 %), and significantly higher than the positive control (54 %). In short, both yeast-derived NT and RNA, especially the RNA at the dose of 0.50–0.75 g/kg feed groups, showed promising health benefits effects in the Pacific white shrimp, notably the improved immune function and disease resistance.

1. Introduction

Nucleotides (NT) are basic units of nucleic acids (RNA and DNA) and play a key role in several biochemical processes. NT consists of nitrogenous bases (i.e., purines and pyrimidines), pentose sugar (i.e., ribose and deoxyribose), and phosphate group(s). However, NT are traditionally not considered to be an essential nutrient because they can be produced endogenously under normal conditions via a salvage pathway in which the NT is synthesized from the nitrogenous bases and nucleosides formed during RNA and DNA degradation and *de novo* synthesis

from amino acids and other molecules (Carver and Waller, 1995; Grinelle and Westwood, 2001; Li and Guan, 2008). However, the production of NT may be insufficient to fulfill its demand in certain conditions such as infection, stress, or during rapid growth (Hess and Greenberg, 2012; Hessain et al., 2020). Thus, supplementation of exogenous NT can potentially be useful in these circumstances. The beneficial effects of dietary NT on human health regarding gastrointestinal growth and development, hepatic function, and immune system are documented (Carver and Waller, 1995; Hess and Greenberg, 2012). In addition, the advantages of using dietary NT in fish and shrimp

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<https://doi.org/10.1016/j.aqrep.2022.101352>
Received 19 June 2022; Received in revised form 27 September 2022; Accepted 28 September 2022
Available online 4 October 2022
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Estudo com AquaCARE na fase de juvenis de *P. vannamei*. (2025)



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Investigating the Impact of Yeast-Derived Nucleic Acids and Nucleotides (AquaCARE®) Supplementation on Growth Performance, Condition of Hepatopancreas, Immunity, the Total Number of *Vibrio* spp. in the Gut, Stress Test with Low Oxygen, and Challenged Test with *Vibrio parahaemolyticus* AHPND in Pacific White Shrimp (*Litopenaeus vannamei*)

Objectives

1. To evaluate the impact of yeast-derived nucleic acids and nucleotides (AquaCARE®) on growth performance, condition of hepatopancreas, immunity, the total number of *Vibrio* spp. in the gut of Pacific white shrimp (*Litopenaeus vannamei*).
2. To evaluate the impact of yeast-derived nucleic acids and nucleotides (AquaCARE®) on tolerance to low oxygen condition of Pacific white shrimp (*Litopenaeus vannamei*).
3. To evaluate the impact of yeast-derived nucleic acids and nucleotides (AquaCARE®) on resistance against *Vibrio parahaemolyticus* AHPND of Pacific white shrimp (*Litopenaeus vannamei*).

Materials and Methods

Experiment 1: Effects of yeast-derived nucleic acids and nucleotides (AquaCARE®) on growth performance, survival, and hepatopancreatic and intestinal *Vibrio* spp. counts, and immune responses

Experimental animals

Specific Pathogen Free white shrimp (1–2 g) were used in this study. A total of 4,000 PL₁₂ from a hatchery were transported to the Aquaculture Business Research Center laboratory, Faculty of Fisheries, Kasetsart University. Shrimp were acclimated in fiberglass tanks for three days. A total of 24 500-liter tanks were used for rearing PL₁₂ with seawater of 25 ppt. Salinity was maintained at 25 ppt. Shrimp were stocked at 100 shrimp/m³ or 60 shrimp/tank density.

Experimental diets

The experimental diets were prepared by mixing the AquaCARE® with other feed ingredients of the basal diet. There were a total of 4 treatment groups corresponding to 4 experimental diets (each group was carried out with 4 replications) as follows:

- Diet 1: Control diet
Diet 2: Yeast-derived nucleic acids and nucleotides (AquaCARE®) at 250 ppm
Diet 3: Yeast-derived nucleic acids and nucleotides (AquaCARE®) at 500 ppm
Diet 4: Yeast-derived nucleic acids and nucleotides (AquaCARE®) at 750 ppm

Growth and Survival Study

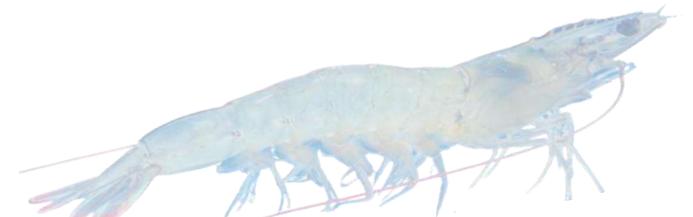
Shrimp were fed four times daily at the satiation rate. The feeding rate was adjusted according to shrimp weight throughout the 45 days experimental period. Water quality parameters such as pH, dissolved oxygen (DO), alkalinity, ammonia, and nitrite were maintained to optimal levels for rearing shrimp and analyzed weekly throughout the experiment. The survival rates were recorded every ten days. Shrimp were weighed at 30 days and 45 days. Feed conversion ratio (FCR) was determined at the end of the experiment.

Hepatopancreatic and intestinal *Vibrio* spp. counts

Five shrimp were sampled from each tank at the end of the growth trial. The total number of *Vibrio* spp. in the hepatopancreas and intestine of each shrimp were enumerated by the spreading

Investigating the Impact of Yeast-Derived Nucleic Acids and Nucleotides (AquaCARE®) Supplementation on Growth Performance, Condition of Hepatopancreas, Immunity, the Total Number of *Vibrio* spp. in the Gut, Stress Test with Low Oxygen, and Challenged Test with *Vibrio parahaemolyticus* AHPND in Pacific White Shrimp (*Litopenaeus vannamei*)

Aquaculture Business Research Center
Faculty of Fisheries
Kasetsart University



Publicação Prevista: Início 2026



AQUACULTURE BUSINESS RESEARCH CENTER
Faculty of Fisheries
Kasetsart University

**Estudo com AquaCARE na fase de
pós-larvas de *P. vannamei*.
(2022)**

**Estudo com AquaCARE na fase
de juvenis de *P. vannamei*.
(2025)**

Experimento 1: Estudo Nutricional de 45 dias para avaliar o efeito da suplementação de rações com níveis crescentes de AquaCARE sob o desempenho zootécnico, imunidade, status antioxidante e contagens de *Vibrio spp.* nos hepatopâncreas e intestinos do camarão *P. vannamei*.

Experimento 2: Avaliar os efeitos da suplementação da suplementação da ração com AquaCARE na resistência à infecção por *Vibrio parahaemolyticus*_(AHPND/EMS) no camarão *P. vannamei*.

Experimento 2: Avaliar os efeitos da suplementação da ração com AquaCARE na resistência à infecção por *Vibrio parahaemolyticus*_(AHPND/EMS) no camarão *P. vannamei*.

Experimento 3: Avaliar os efeitos da suplementação da ração com AquaCARE na tolerância ao estresse por baixo oxigênio (hipoxia) no camarão *P. vannamei*.



**Estudo com AquaCARE na fase de
pós-larvas de *P. vannamei*.
(2022)**

Ingredientes	Porcentagem (%)
Farinha de peixe 58%	3.00
Farinha de peixe 65%	19.00
Farinha de krill	2.33
Hidrolisado de peixe (50% MS)	4.50
Farinha de aves	6.00
Farinha de lula	1.86
Farinha de soja (46% PB)	23.80
Fermento de soja Bio-Pro 480	3.71
Farinha de trigo 33%	17.80
Semente de milho	6.00
Mistura de óleo de peixe/lecitina (1:3)	8.28
Premix vitamínico*	1.30
Carbonato de cálcio	0.09
Aglutinante para pellets	0.56
DL-metionina	0.80
Fosfato monossódico	1.00

30,69%

**Estudo com AquaCARE na fase
de juvenis de *P. vannamei*.
(2025)**

Ingredientes	Níveis de Inclusão (%)
Farinha de peixe 60% PB	8,70
Farinha de camarão e lula	11,91
Fígado de atum em pó	5,35
Farinha de aves 64% PB	9,04
Farelo de soja	15,65
Farinha de trigo	19,57
Farelo de arroz	1,57
Premix	2,48
Fosfato monocálcico	1,09
Vitamina C 35%	0,09
Carvão	1,52
Carbonato de cálcio	1,09
Solúveis de peixe e lula	4,35
Lecitina (Tailândia)	2,39
Ração de camarão reprocessada	13,04
Ração de peixe reprocessada	2,17

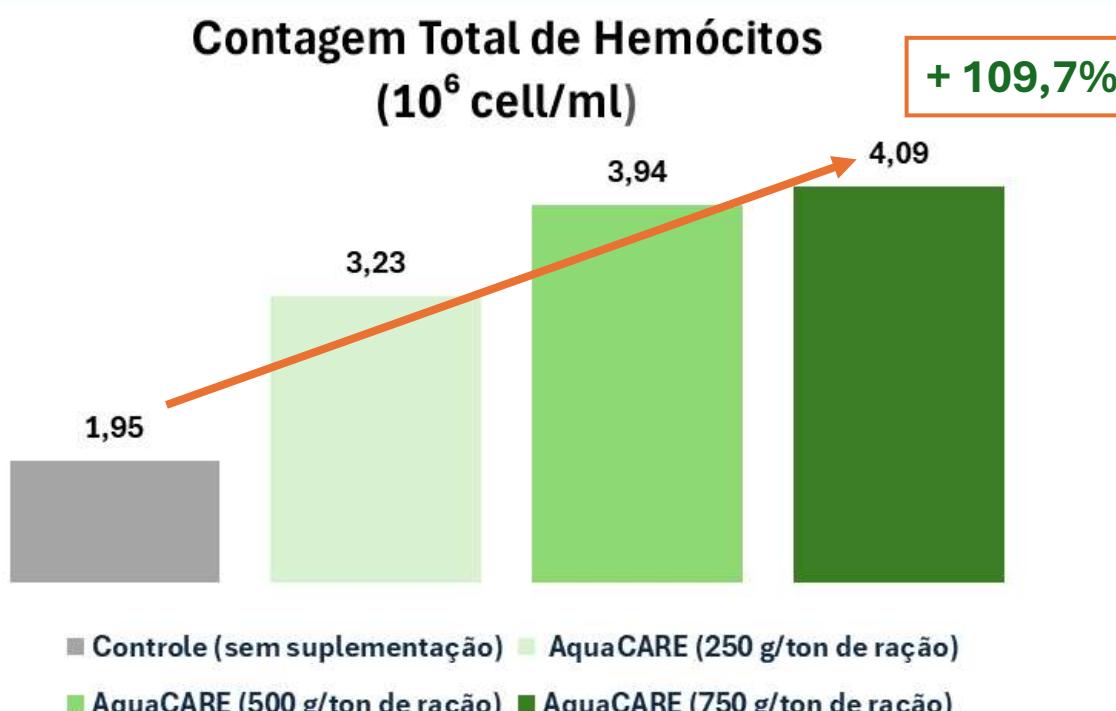
Total

100,00

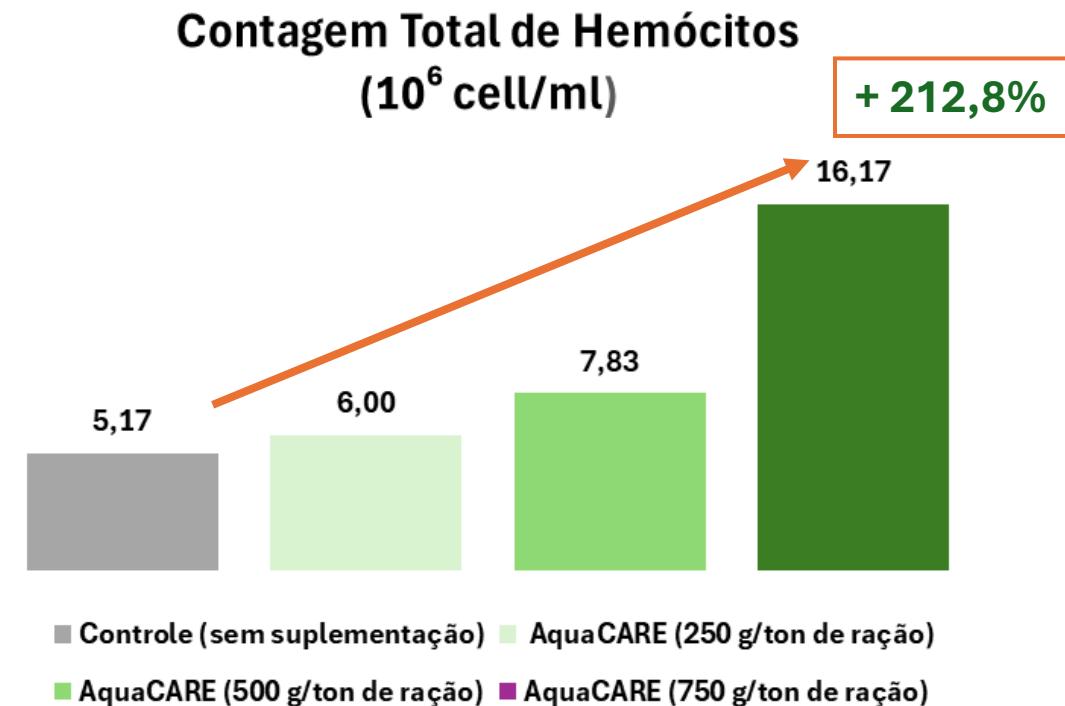
25,96%

Parâmetros Imunológicos

Kasetsart University (2022)
PL₁₂ a juvenis ~ 1,5 g

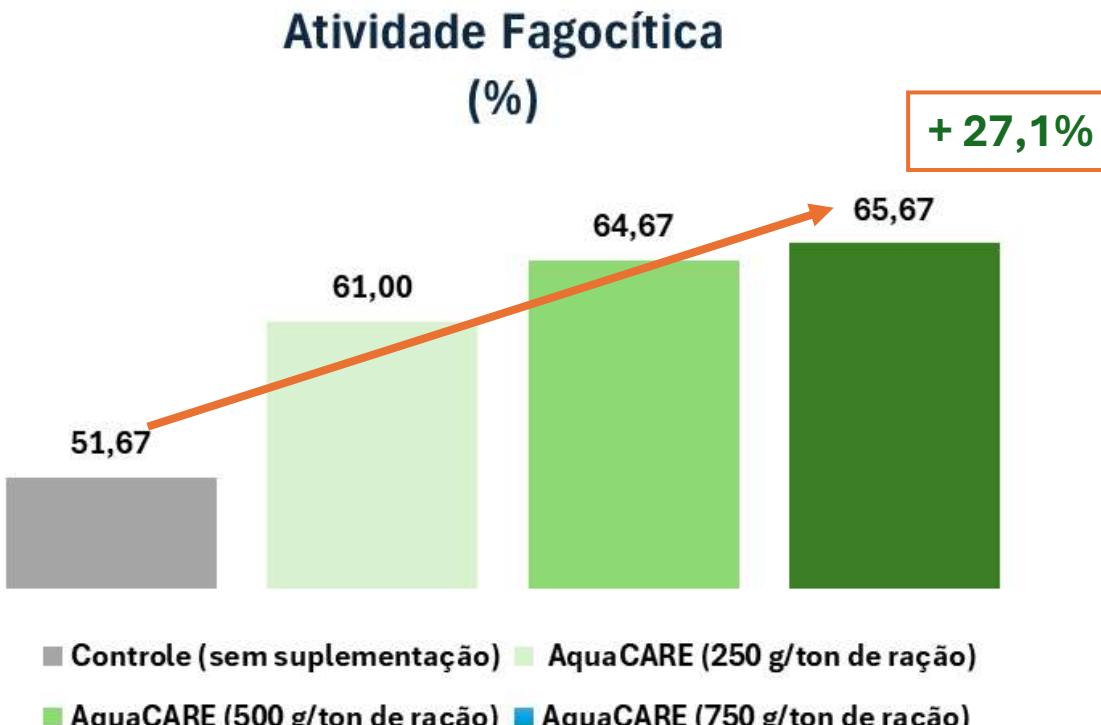


Kasetsart University (2025)
Juvenis *P. vannamei* > 1,0 g

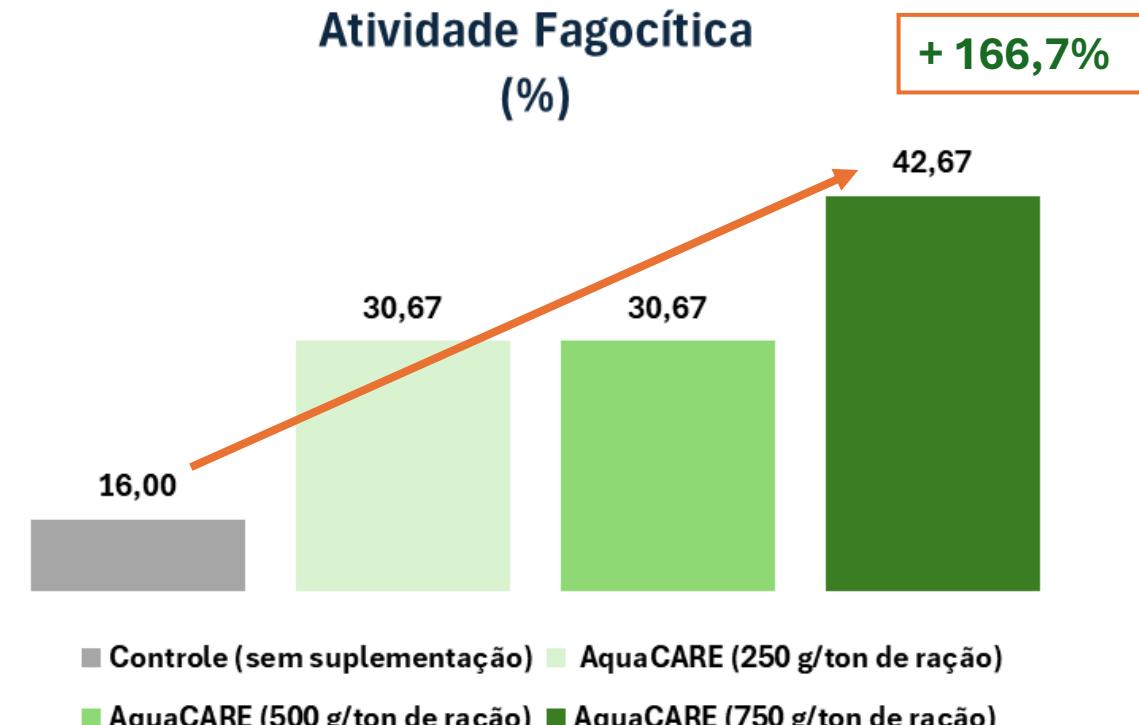


Parâmetros Imunológicos

Kasetsart University (2022)
PL₁₂ a juvenis ~ 1,5 g



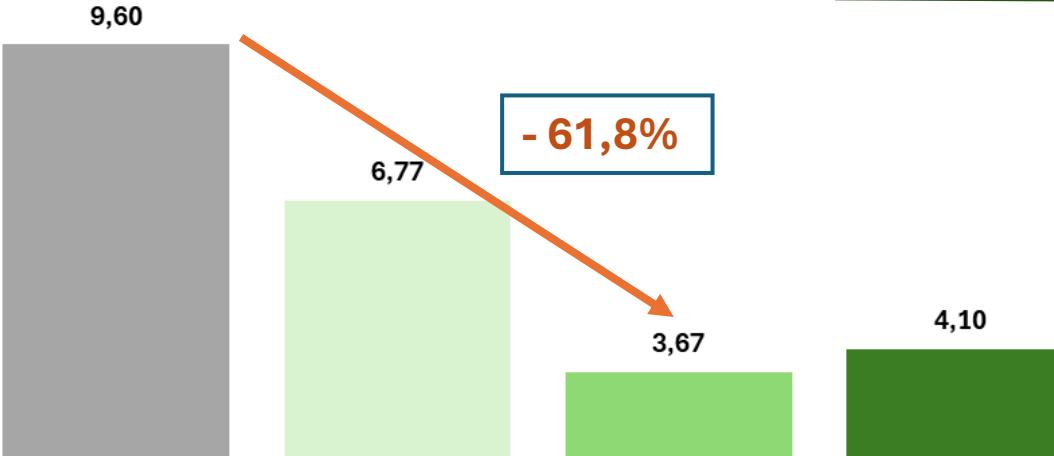
Kasetsart University (2025)
Juvenis *P. vannamei* > 1,0 g



Parâmetros Microbiológicos

Kasetsart University (2022)
 PL_{12} a juvenis ~ 1,5 g

Contagem Total de *Vibrio* spp. no
 Hepatopancreas ($\times 10^3$ UFC/g)

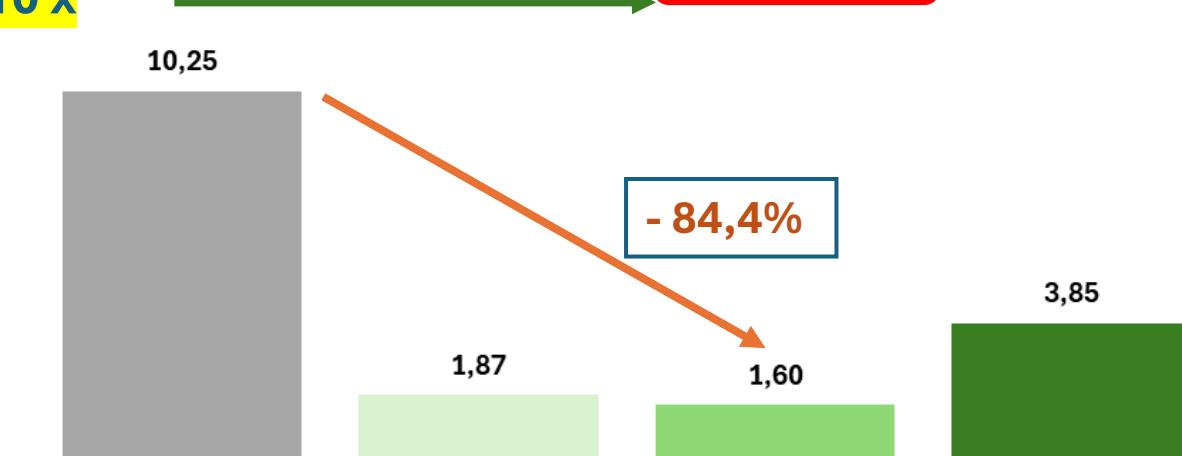


- 61,8%

Kasetsart University (2025)
 $Juvenis P. vannamei > 1,0 g$

Contagem Total de *Vibrio* spp. no
 Hepatopancreas ($\times 10^4$ UFC/g)

10 x



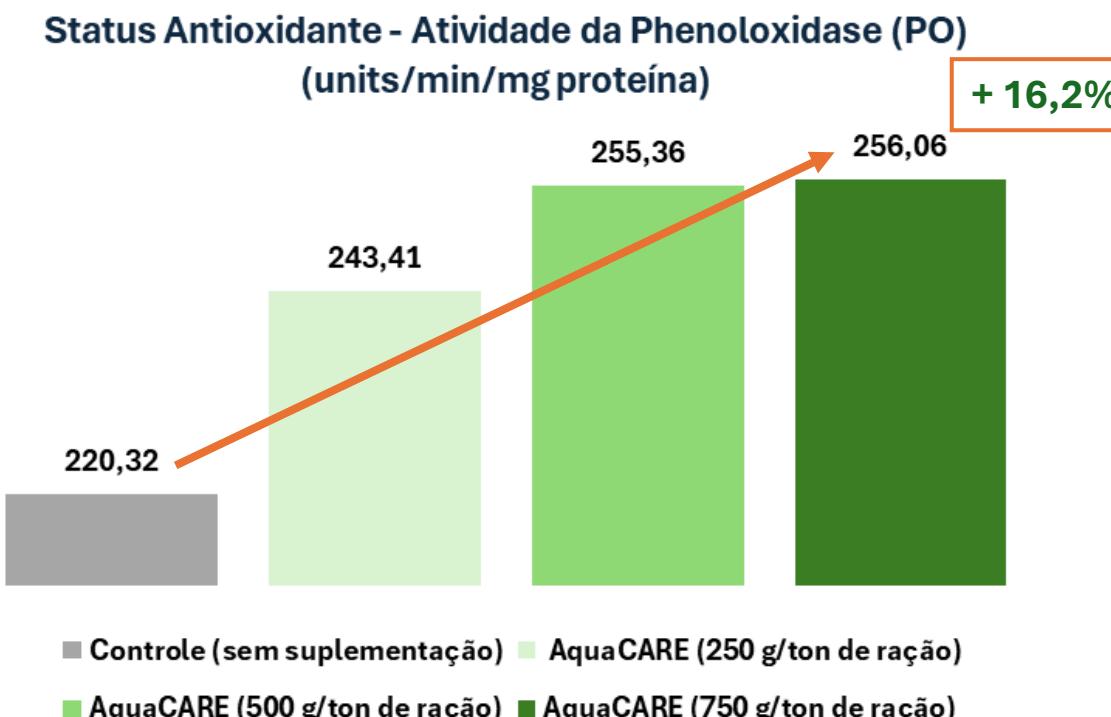
- 84,4%

■ Controle (sem suplementação)
 ■ AquaCARE (250 g/ton de ração)
 ■ AquaCARE (500 g/ton de ração)

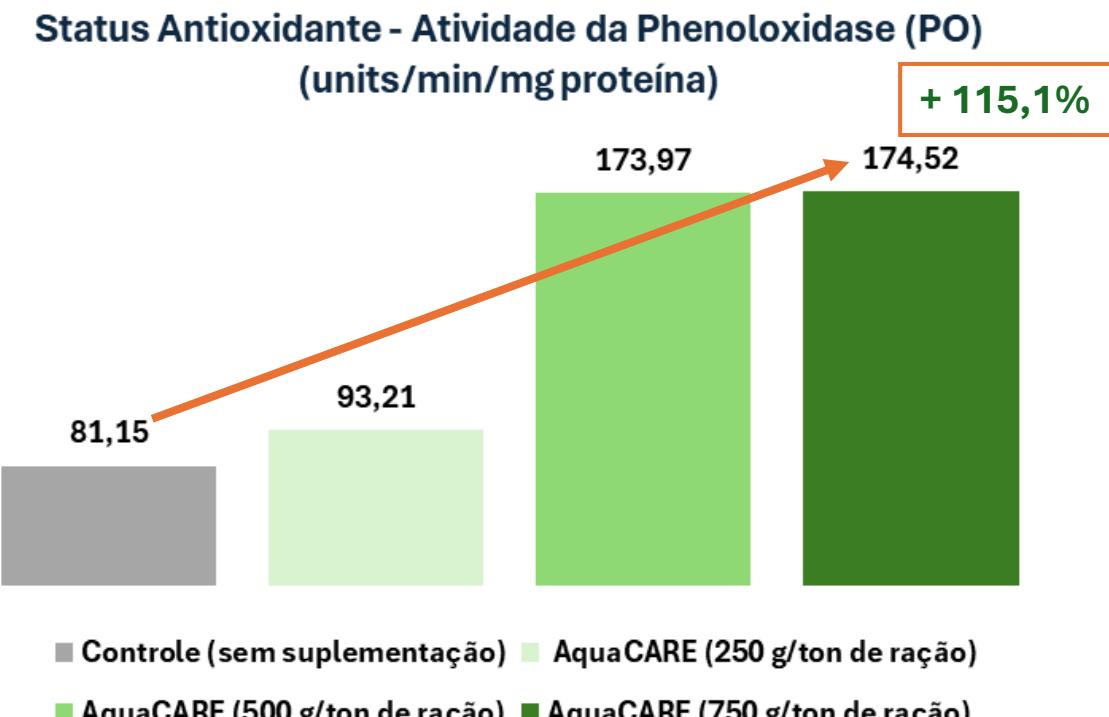
■ Controle (sem suplementação)
 ■ AquaCARE (250 g/ton de ração)
 ■ AquaCARE (500 g/ton de ração)

Status Antioxidante

Kasetsart University (2022)
PL₁₂ a juvenis ~ 1,5 g

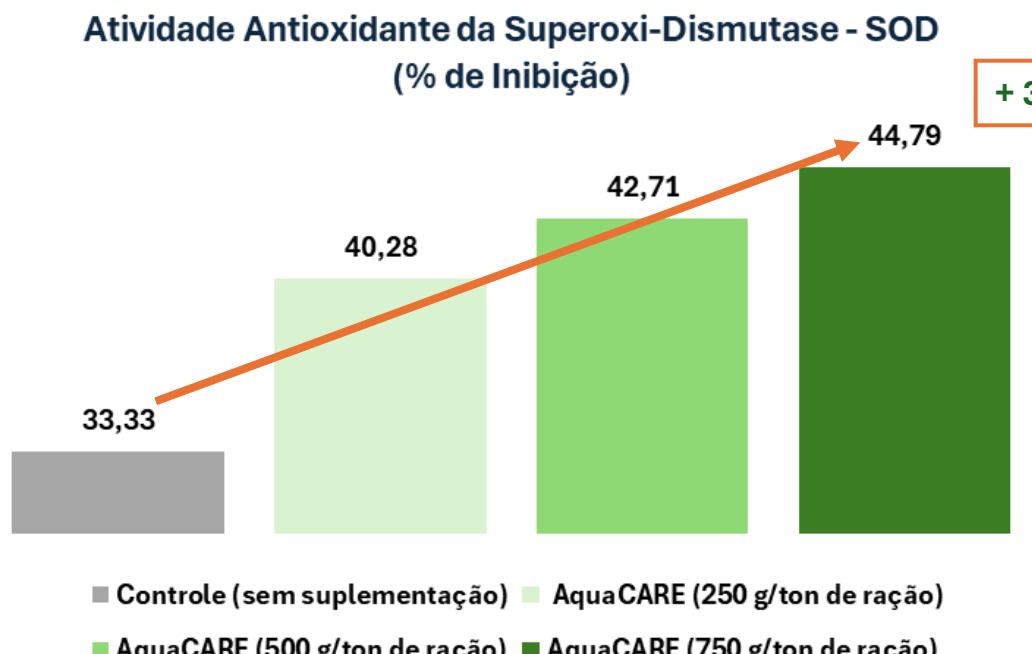


Kasetsart University (2025)
Juvenis *P. vannamei* > 1,0 g

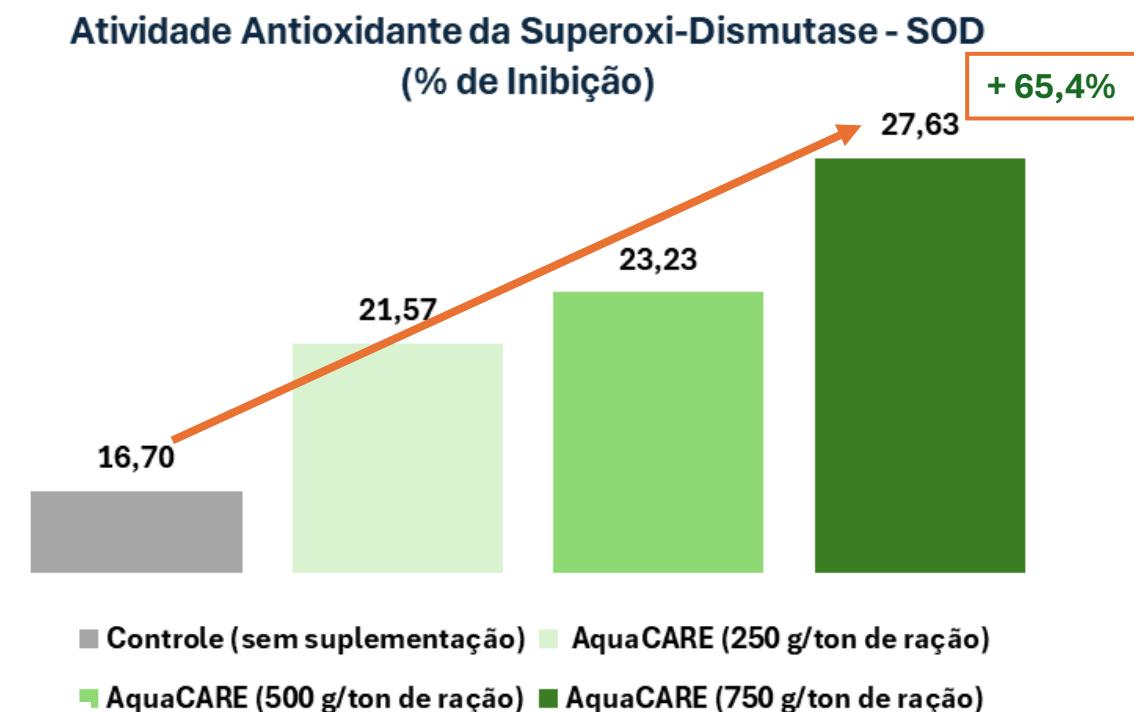


Status Antioxidante

Kasetsart University (2022)
PL₁₂ a juvenis ~ 1,5 g



Kasetsart University (2025)
Juvenis *P. vannamei* > 1,0 g

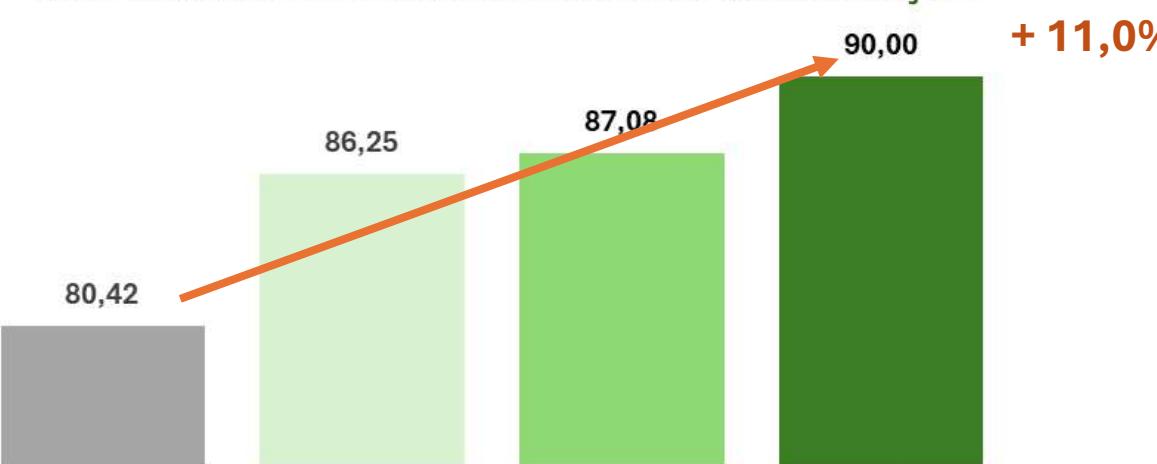


Sobrevivências Pré-Desafios (%)

Kasetsart University (2022)
PL₁₂ a juvenis ~ 1,5 g

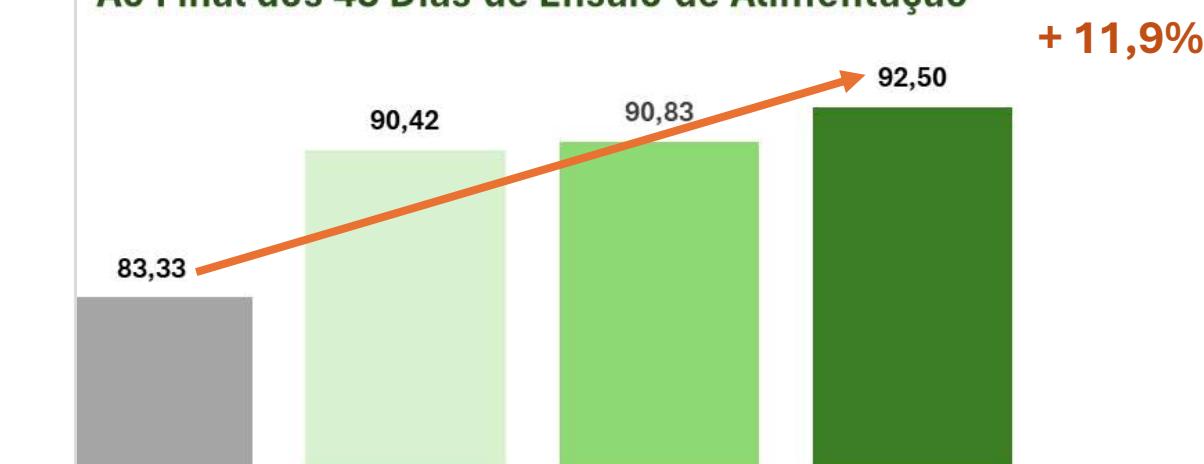
Kasetsart University (2025)
Juvenis *P. vannamei* > 1,0 g

Sobrevivência (%)
Ao Final dos 45 Dias de Ensaio de Alimentação



- Controle (sem suplementação)
- AquaCARE (250 g/kg de ração)
- AquaCARE (500 g/kg de ração)
- AquaCARE (750 g/kg de ração)

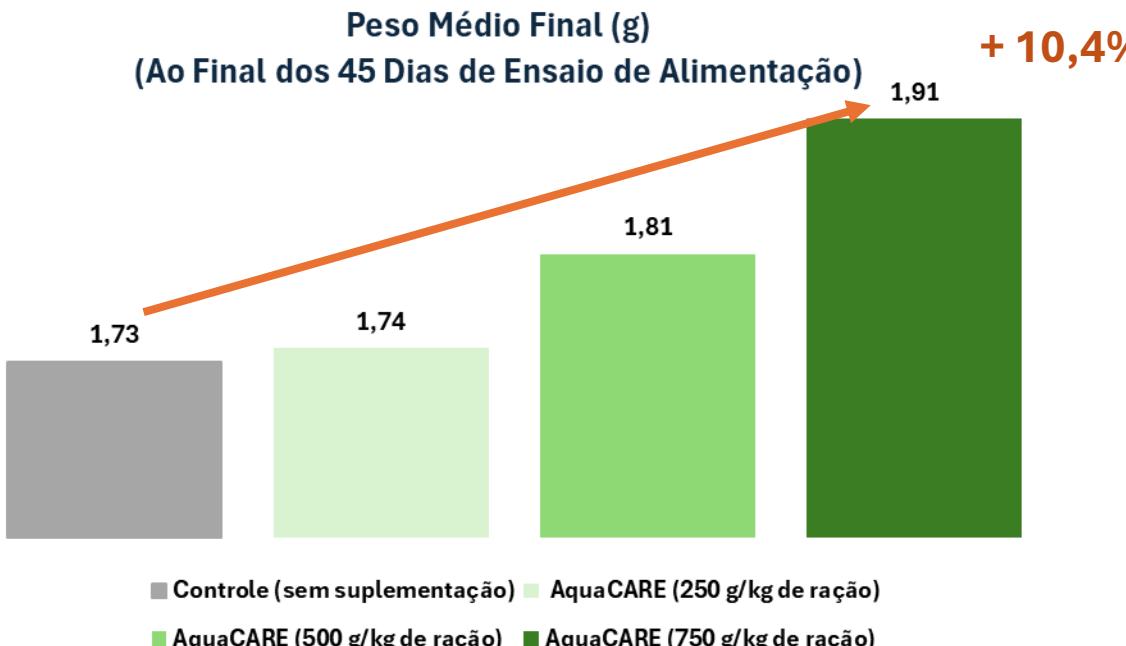
Sobrevivência (%)
Ao Final dos 45 Dias de Ensaio de Alimentação



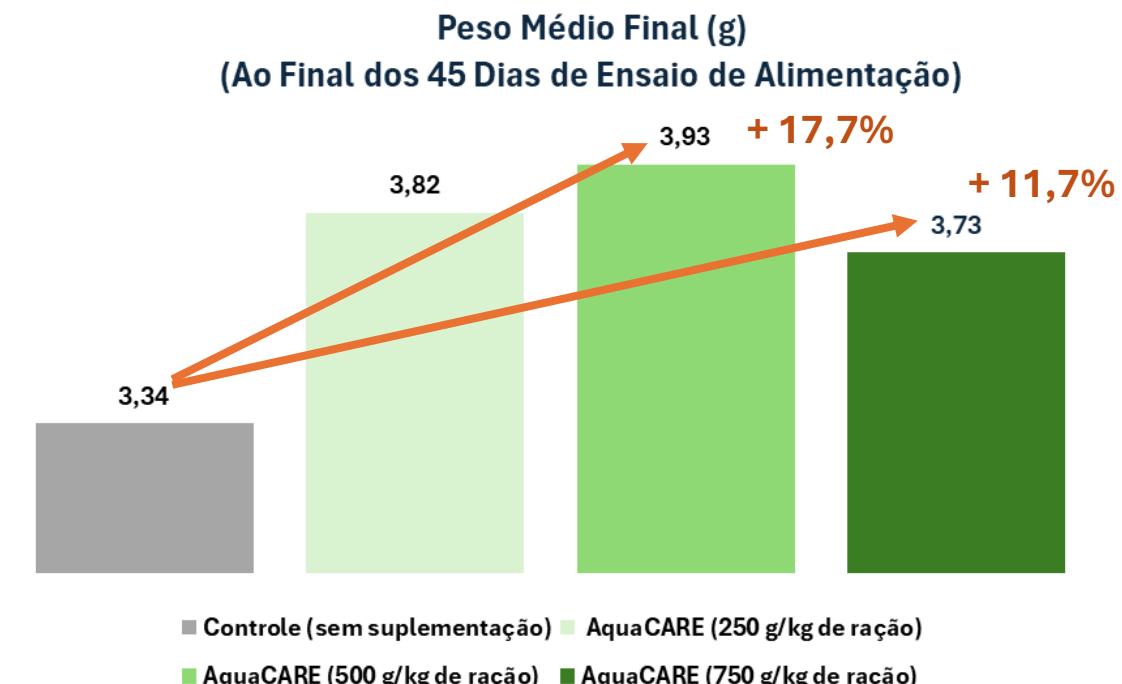
- Controle (sem suplementação)
- AquaCARE (250 g/kg de ração)
- AquaCARE (500 g/kg de ração)
- AquaCARE (750 g/kg de ração)

Crescimentos Médios Pré-Desafios (g)

Kasetsart University (2022)
PL₁₂ a juvenis ~ 1,5 g

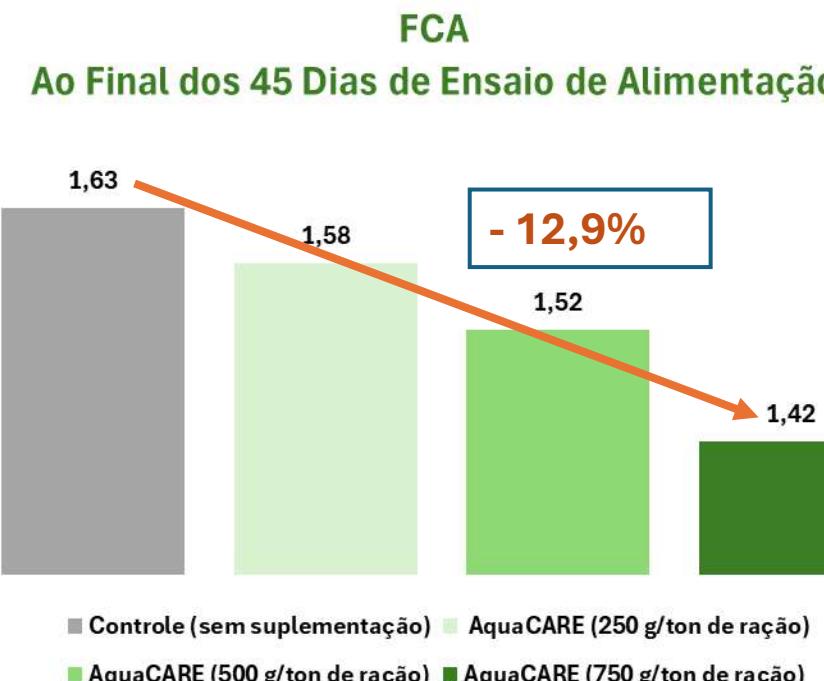


Kasetsart University (2025)
Juvenis *P. vannamei* > 1,0 g

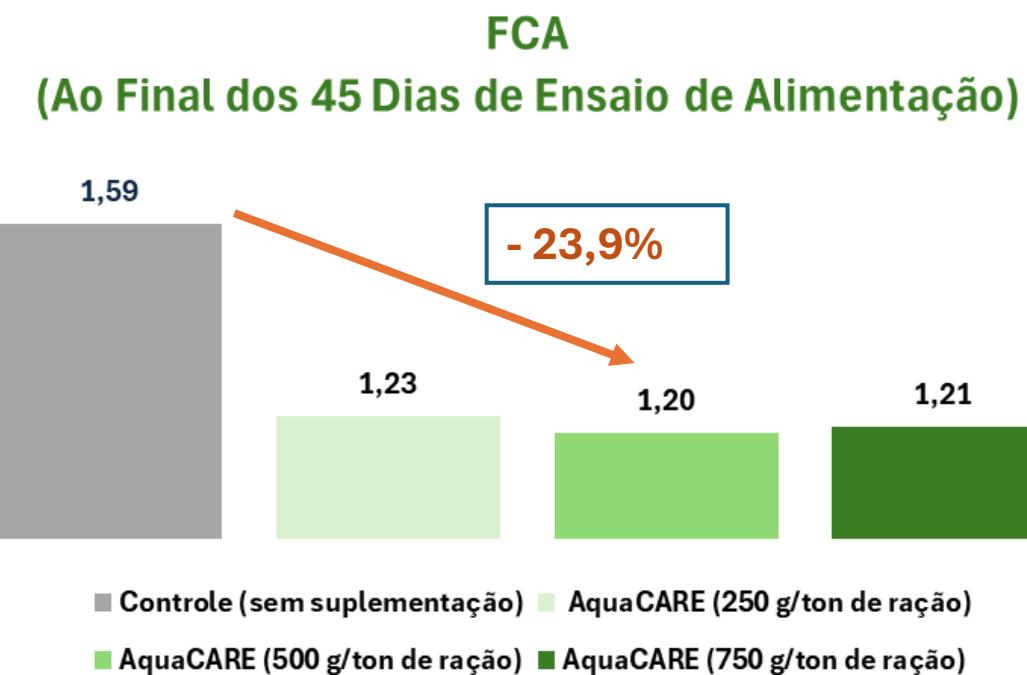


FCA's (Pré-Desafios)

Kasetsart University (2022)
PL₁₂ a juvenis ~ 1,5 g



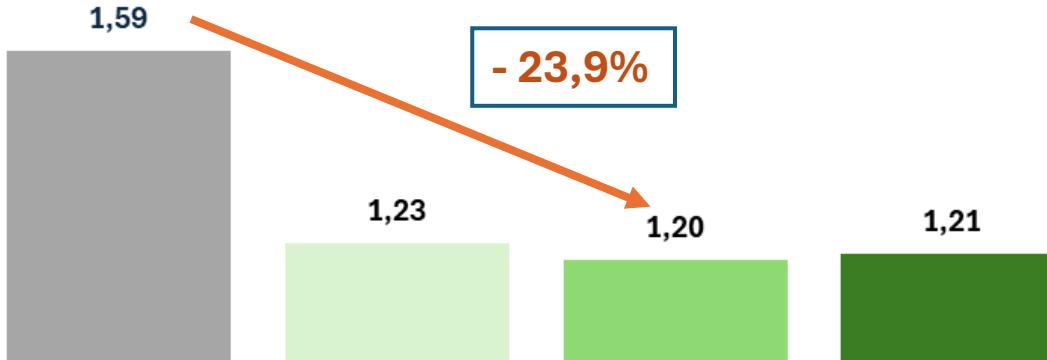
Kasetsart University (2025)
Juvenis *P. vannamei* > 1,0 g



Relação entre Resultados de FCA e Tripsina

Kasetsart University (2025)
Juvenis P. vannamei > 1,0 g

FCA
(Ao Final dos 45 Dias de Ensaio de Alimentação)

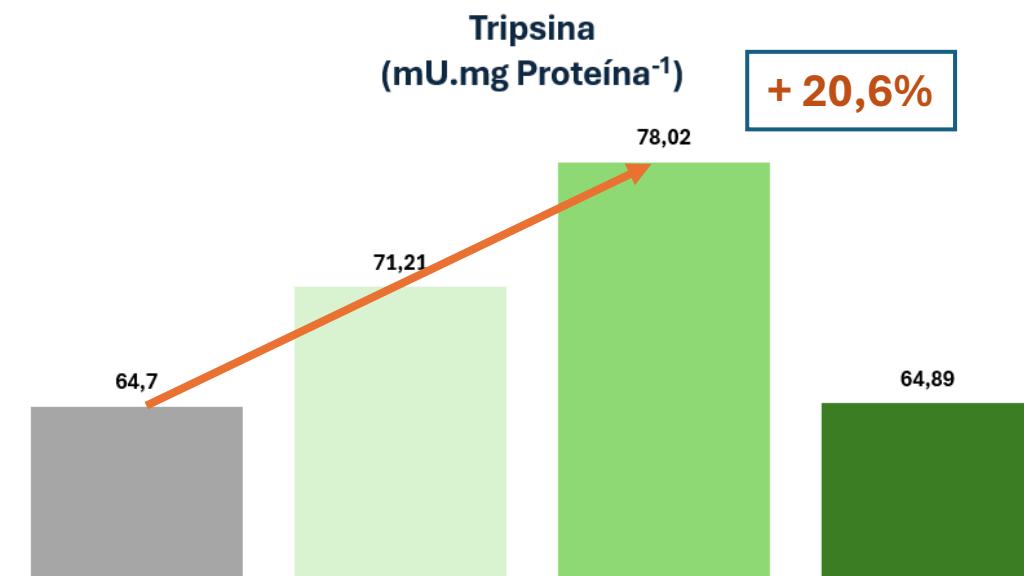


- Controle (sem suplementação)
- AquaCARE (250 g/ton de ração)
- AquaCARE (500 g/ton de ração)
- AquaCARE (750 g/ton de ração)

Kasetsart University (2025)
Enzimas Proteolíticas
Tripsina e Quimiotripsina

Tripsina
(mU.mg Proteína⁻¹)

+ 20,6%



- Controle (sem suplementação)
- AquaCARE (250 g/kg de ração)
- AquaCARE (500 g/kg de ração)
- AquaCARE (750 g/kg de ração)



Ensaio de Alimentação de 45 dias (Kasetsart University – Tailândia (2022))

Parâmetros para Base de Cálculo da Simulação	Controle	AquaCARE (250 g/kg de ração)	AquaCARE (500 g/kg de ração)	AquaCARE (750 g/kg de ração)
Quantidade de PL12	1.000.000	1.000.000	1.000.000	1.000.000
Densidade de Estocagem (PL ₁₂ /m ³)	120	120	120	120
Tempo do Ensaio de Alimentação Pré-Desafio (dias)	45	45	45	45
Taxa de Sobrevida (%)	83,3%	90,4%	90,8%	92,5%
Peso Médio Final (g)	1,73	1,74	1,81	1,91
Biomassa ao Final dos 45 dias de Ensaio de Nutrição (kg)	1.442	1.573	1.644	1.767
Fator de Conversão Alimentar - FCA	1,63	1,58	1,52	1,42
Ração Consumida (kg)	2.350	2.486	2.499	2.509
Preço da Ração (R\$/kg)	7,0	7,0	7,0	7,0
Custo com ração (R\$)	R\$ 16.448,76	R\$ 17.400,79	R\$ 17.492,40	R\$ 17.561,50
Preço do camarão (R\$/kg)	R\$ 20,00	R\$ 20,00	R\$ 20,00	R\$ 20,00
Faturamento por Tratamento (R\$)	R\$ 28.832	R\$ 31.466	R\$ 32.880	R\$ 35.335
Faturamento - Custo com Ração (R\$)	R\$ 12.383	R\$ 14.065	R\$ 15.388	R\$ 17.774
Quantidade de AquaCARE (kg)	-	0,62	1,25	1,88
Investimento com AquaCARE (R\$)	- R\$	217,5 R\$	437,3 R\$	658,6 R\$
Aumento Biomassa (kg)	-	131,7	202,4	325,1
Aumento do Faturamento (R\$)	R\$	2.633,98 R\$	4.048,28 R\$	6.502,82 R\$
Percentual do Investimento sobre a Receita (%)	-	0,69%	1,33%	1,86%
ROI - Retorno sobre o Investimento		12,1	9,3	9,9



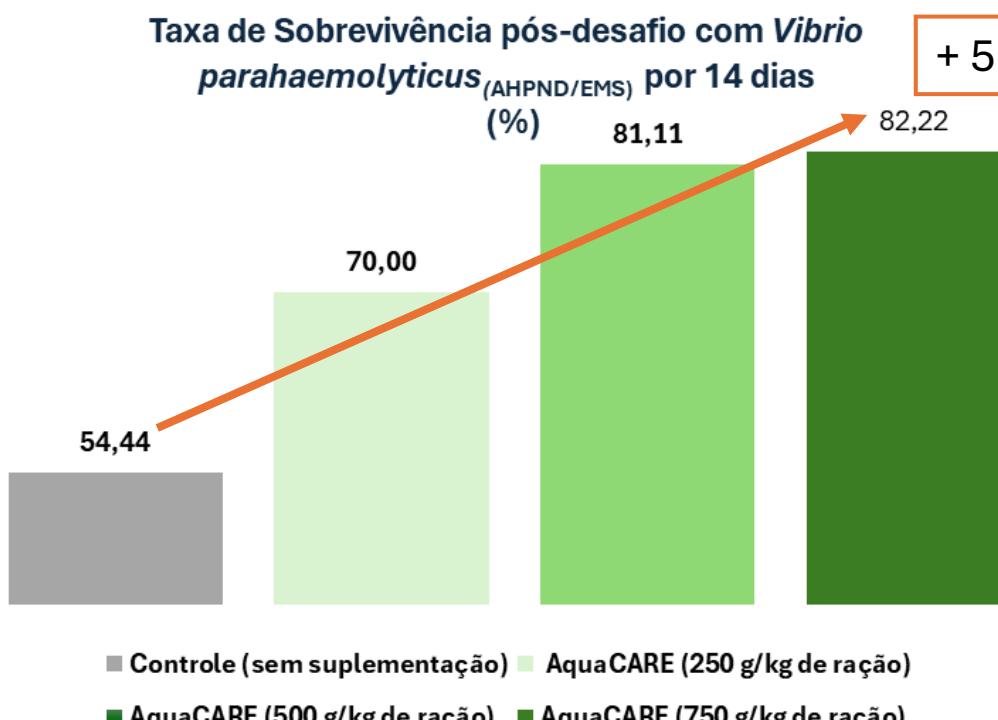
Ensaios de Alimentação de 45 dias (Kasetsart University – Tailândia (2025))

Parâmetros para Base de Cálculo da Simulação	Controle	AquaCARE (250 g/kg de ração)	AquaCARE (500 g/kg de ração)	AquaCARE (750 g/kg de ração)
Quantidade de Juvenis ~ 1g	1.000.000	1.000.000	1.000.000	1.000.000
Densidade de Estocagem (PL ₁₂ /m ³)	120	120	120	120
Tempo do Ensaio de Alimentação Pré-Desafio (dias)	45	45	45	45
Taxa de Sobrevida (%)	80,4%	86,3%	87,1%	90,0%
Peso Médio Final (g)	3,34	3,82	3,93	3,73
Biomassa ao Final dos 45 dias de Ensaio de Nutrição (kg)	2.686	3.295	3.422	3.357
Fator de Conversão Alimentar - FCA	1,59	1,23	1,20	1,21
Ração Consumida (kg)	4.271	4.053	4.107	4.062
Preço da Ração (R\$/kg)	5,5	5,5	5,5	5,5
Custo com ração (R\$)	R\$ 23.489,31	R\$ 22.288,98	R\$ 22.586,81	R\$ 22.340,84
Economia de Ração (R\$)	R\$ -	R\$ 1.200,33	R\$ 902,50	R\$ 1.148,48
Preço do camarão (R\$/kg)	R\$ 20,00	R\$ 20,00	R\$ 20,00	R\$ 20,00
Faturamento por Tratamento (R\$)	R\$ 53.721	R\$ 65.895	R\$ 68.445	R\$ 67.140
Faturamento - Custo com Ração (R\$)	R\$ 30.231	R\$ 43.606	R\$ 45.858	R\$ 44.799
Quantidade de AquaCARE (kg)	-	1.01	2.05	3.05
Investimento com AquaCARE (R\$)	-	R\$ 354,6	R\$ 718,7	R\$ 1.066,3
Aumento Biomassa (kg)	-	608,7	736,2	671,0
Aumento do Faturamento (R\$)	R\$	12.174,44	R\$ 14.724,32	R\$ 13.419,44
Percentual do Investimento sobre a Receita (%)	-	0,54%	1,05%	1,59%
ROI - Retorno sobre o Investimento		34,3	20,5	12,6

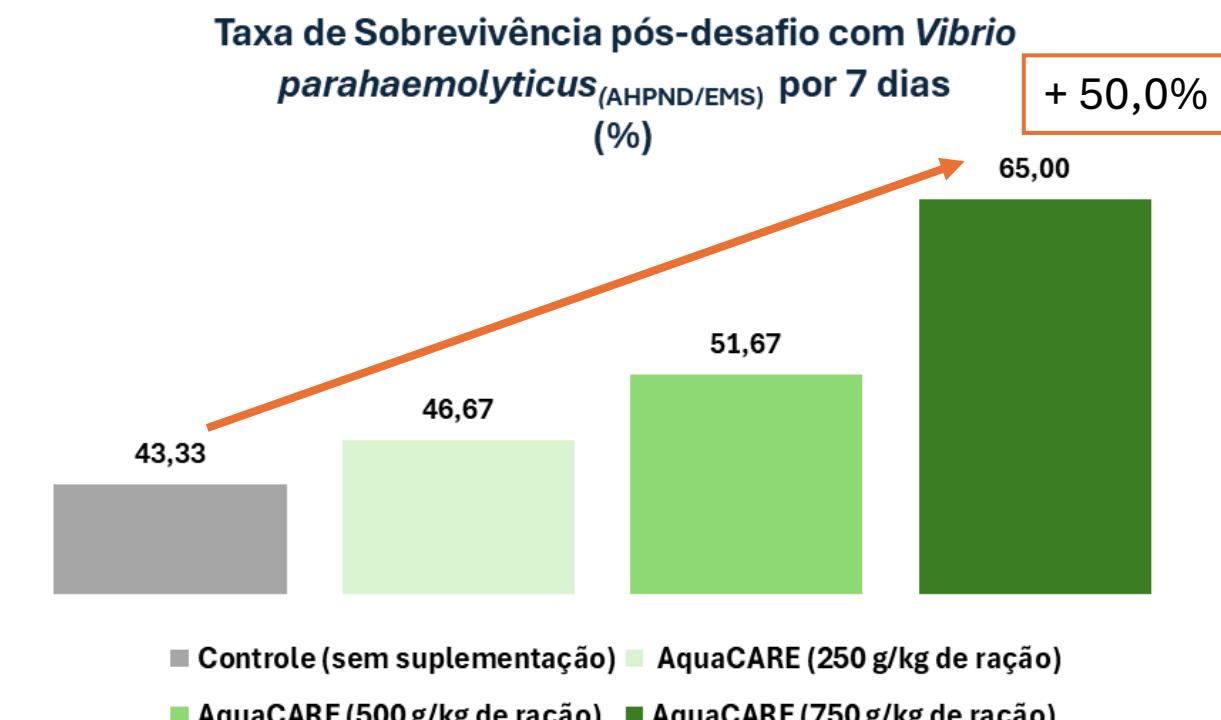
DESAFIOS

Vibrio parahaemolyticus (AHPND/EMS)

Kasetsart University (2023)
PL12 a ~1,5 g



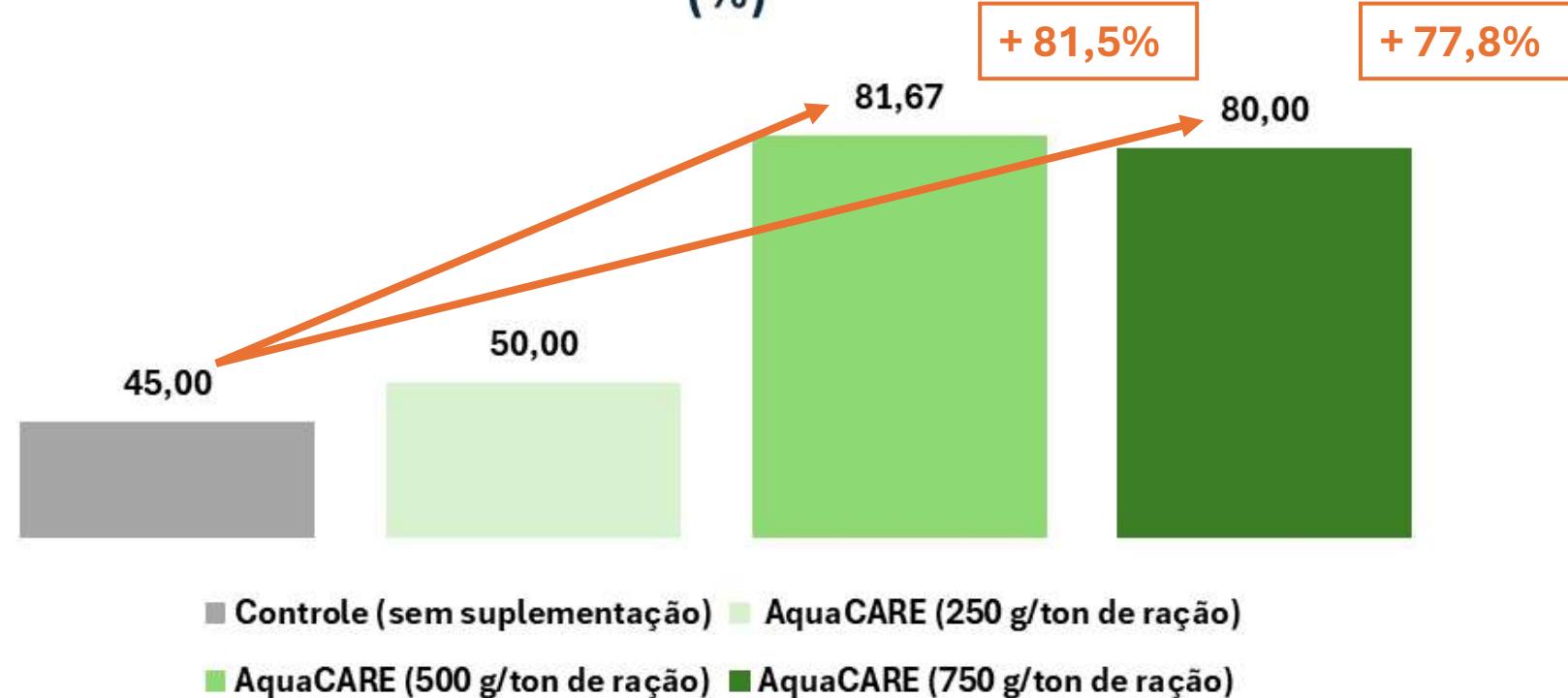
Kasetsart University (2025)
Juvenis *P. vannamei* > 1,0 g



DESAFIO AMBIENTAL

Taxa de Sobrevida pós-desafio com *hipoxia* (OD ~2,0 mg/L) por 7 dias

(%)



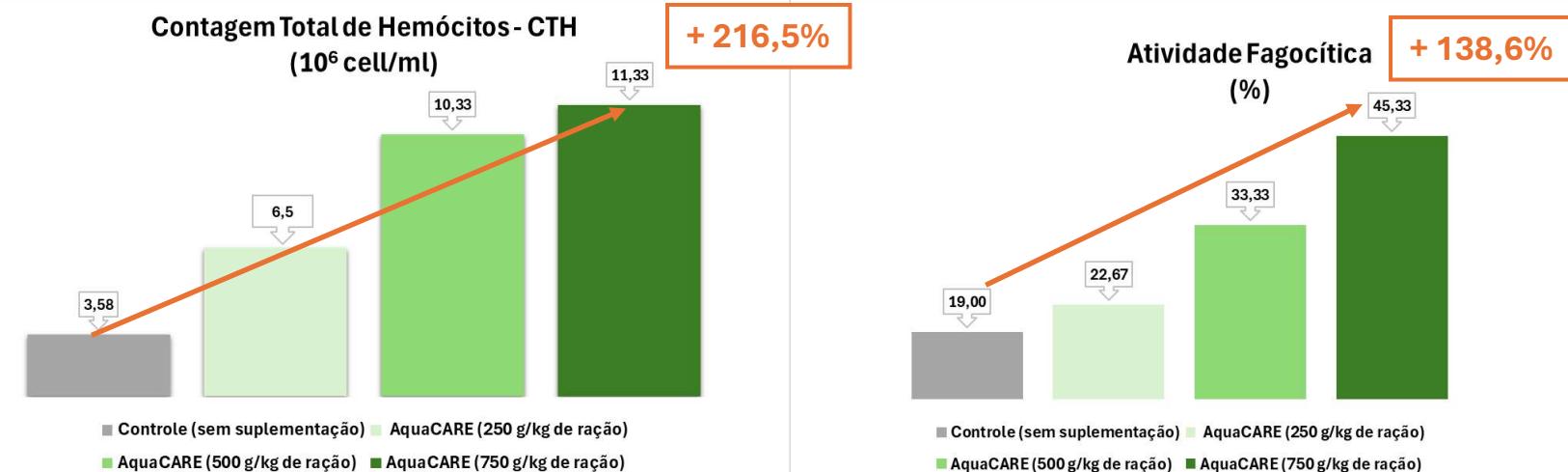


(KASETSART UNIVERSITY
(THAILAND, 2025)

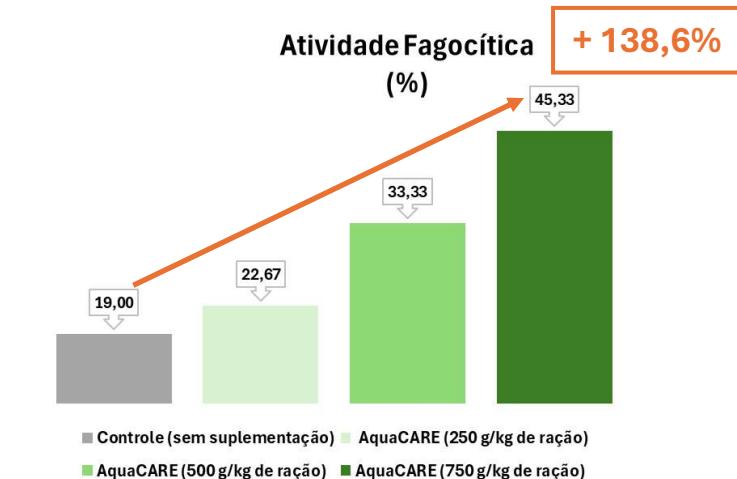
Parâmetros Imunológicos do
camarão *P. vannamei* após
Estresse por Hipoxia
(~ 2 mg/L) Durante 7 Dias



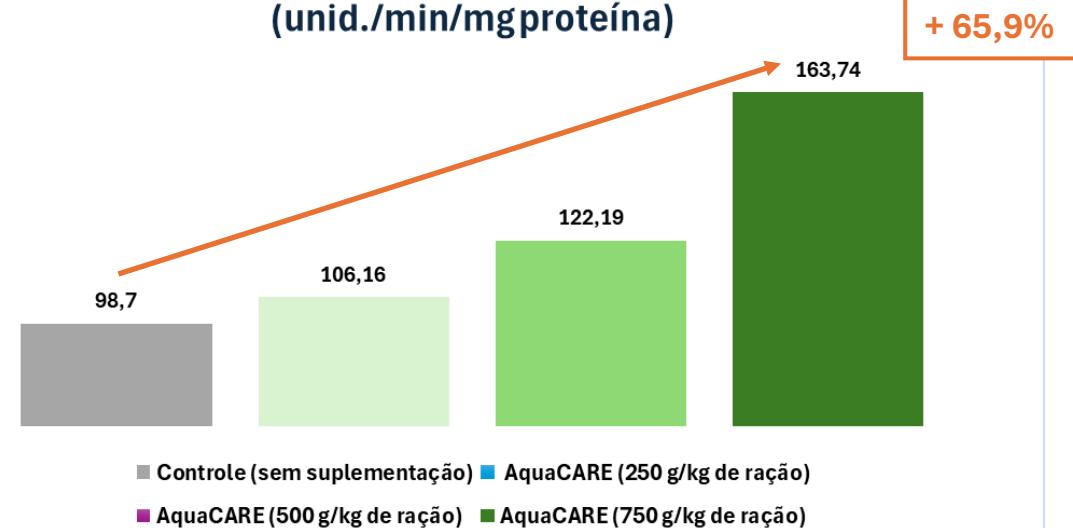
Contagem Total de Hemócitos - CTH
(10^6 cell/ml)



Atividade Fagocítica (%)



Status Antioxidante - Atividade da Phenoloxidase (PO)
(unid./min/mg proteína)





Efeitos do AquaCARE sobre o Desempenho Zootécnico-Financeiro de Pós-Larvas ^(10 a 16) de *Penaeus vannamei* durante a fase de Aclimatação em Berçários-Intensivos



Informações e imagens gentilmente compartilhadas pelo Engenheiro de Pesca De Angelis Souza, Diretor Técnico da Camarões Iguatú. Iguatú/CE, Brasil (2025).

RESULTADOS PRÁTICOS NO BRASIL

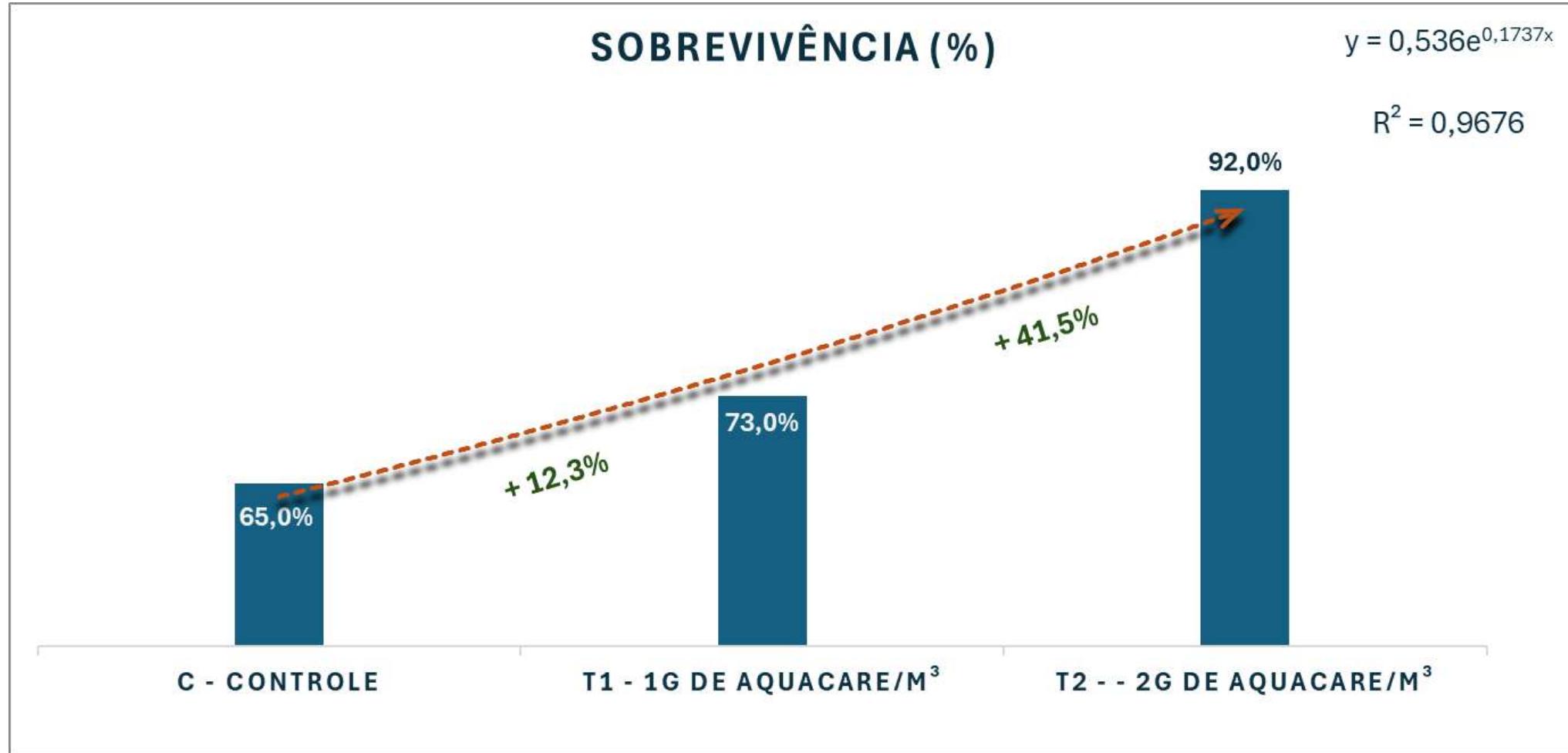
Fazenda Iguatu Camarões



Sobrevivência de Pós-Larvas_(10 a 16) do *Penaeus vannamei*

Fase de Aclimatação: Salinidade de 12,0 ppt para 0,6 ppt

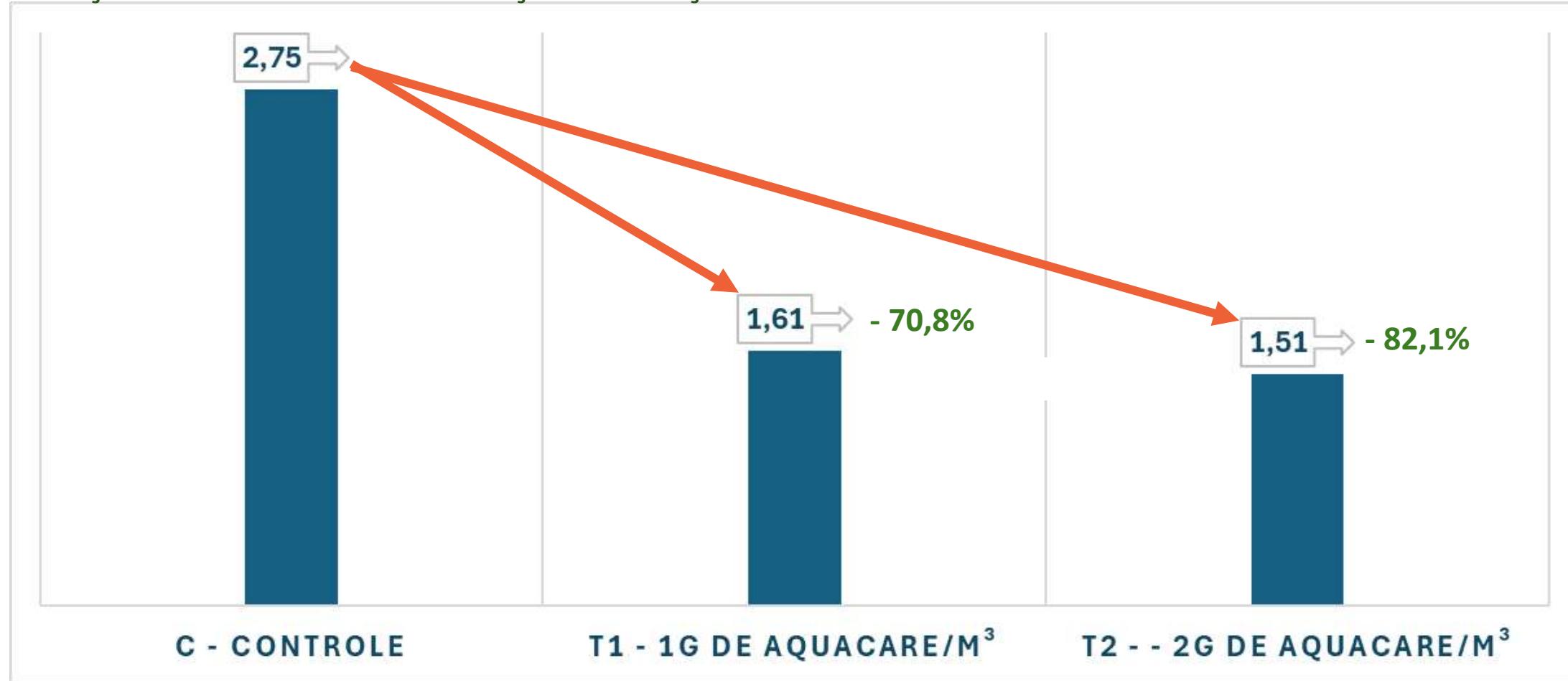
Duração do Período de Aclimatação em Berçários Intensivos: 06 dias



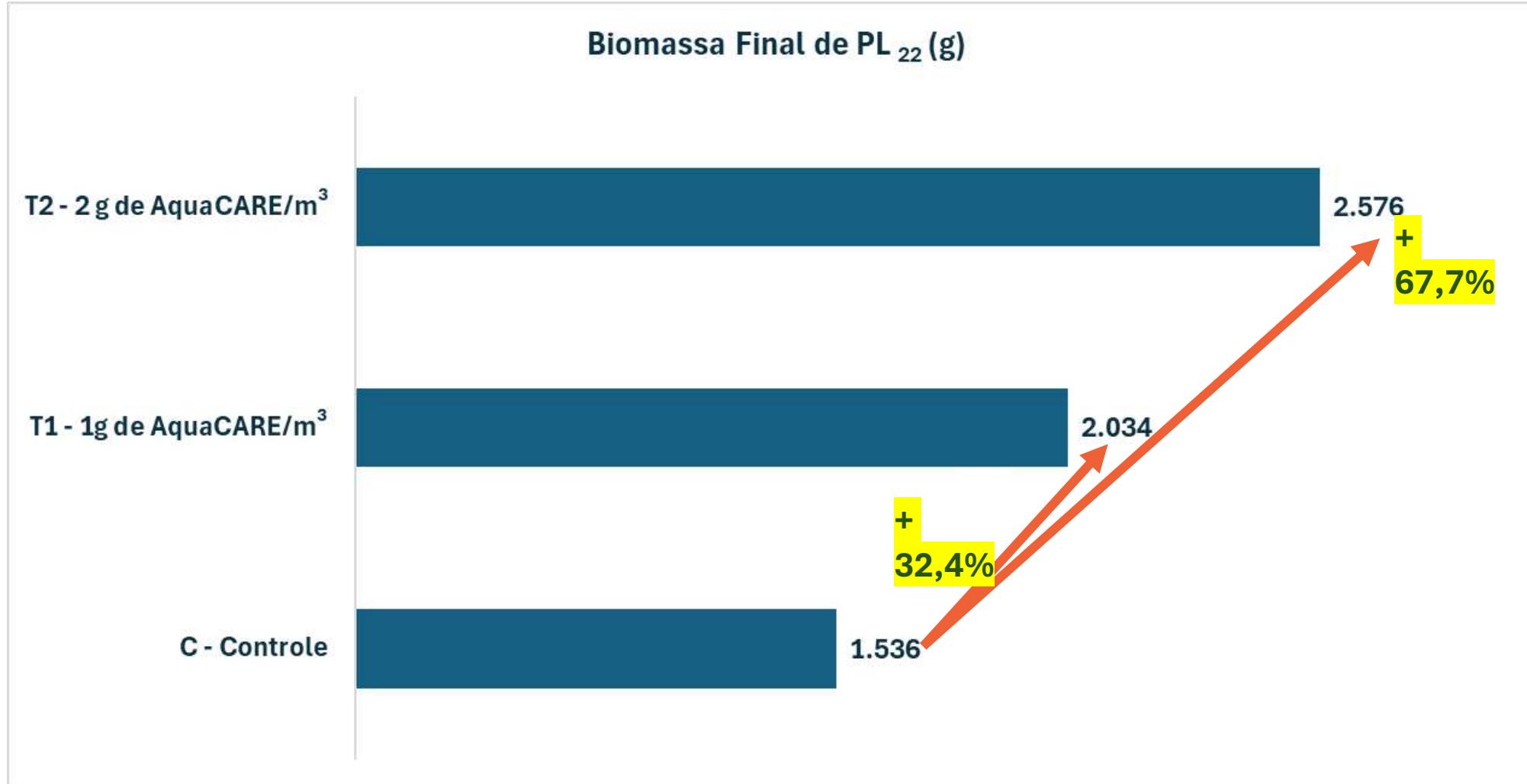
FCA de Pós-Larvas_(10 a 16) do *Penaeus vannamei*

Fase de Aclimatação: Salinidade de 12,0 ppt para 0,6 ppt

Duração do Período de Aclimatação em Berçários Intensivos: 06 dias



Biomassa Final de Pós-Larvas_(16 a 22) de *Penaeus vannamei*



Fase de Aclimatação
Dias de Cultivo em Berçários-Intensivos: 6 Dias

Parâmetros - Base de Cálculo	Controle - Sem AquaCARE	T1 - AquaCARE (1 g/m ³ /dia)	T1 - AquaCARE (2 g/m ³ /dia)
Quantidade de Pós-Larvas ₁₆ Estocadas / Berçário (Nº)	1.000.000	1.000.000	1.000.000
Volumes dos Berçários-Intensivos (m ³)	60	60	60
Densidade de Estocagem (PL ₁₆ /m ³)	11.667	11.667	11.667
Tempo de Aclimatação para Baixa Salinidade de 12 p/ 0,6 ppt (dias)	6	6	6
Taxa de Sobrevida (%)	65%	73%	92%
Peso Médio Individual Final (mg)	6,75	7,96	8,00
Biomassa Final (g)	4.388	5.811	7.360
Fator de Conversão Alimentar - FCA	2,75	1,61	1,51
Total de Dietas de Berçário (g)	12.066	9.355	11.114
Investimento com Dietas Pós-Larvas (R\$/ciclo)	1.659	1.286	1.528
Nº Milheiros Vivos / Tanque-Berçário	650	730	920
Preço do Milheiro Aclimatado para 0,6 ppt	R\$ 30,00	R\$ 36,00	R\$ 42,00
Valor da Biomassa Viva (R\$ / Tanque)	R\$ 19.500,00	R\$ 26.280,00	R\$ 38.640,00
Quantidade de AquaCARE (g/m ³)	-	1,00	2,00
Consumo de AquaCARE/Ciclo (kg)	-	0,36	0,72
Investimento com o AquaCARE (R\$/ciclo)	R\$ -	R\$ 151,20	R\$ 302,40
Percentual do Investimento sobre a Receita (%)	-	0,58%	0,78%
Aumento da Receita/Faturamento (BRL)	R\$ 6.780,00	R\$ 19.140,00	
ROI - Retorno sobre o Investimento	44,8	63,3	





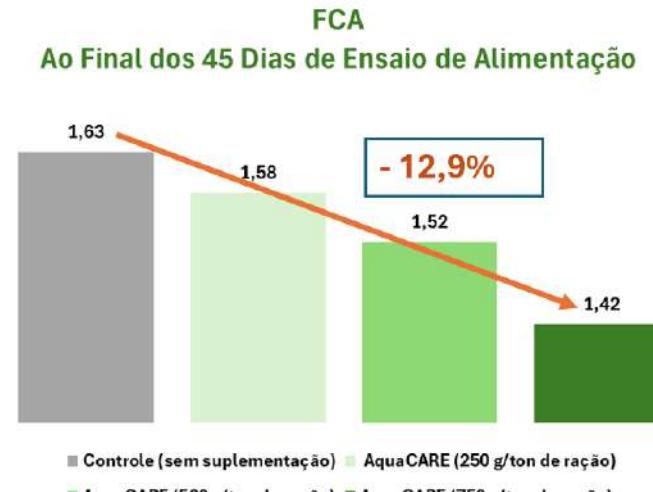
shrimpl.

Natal, 2025

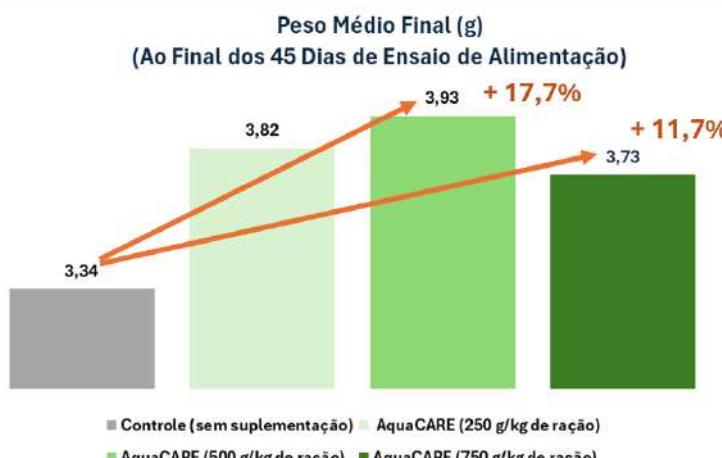
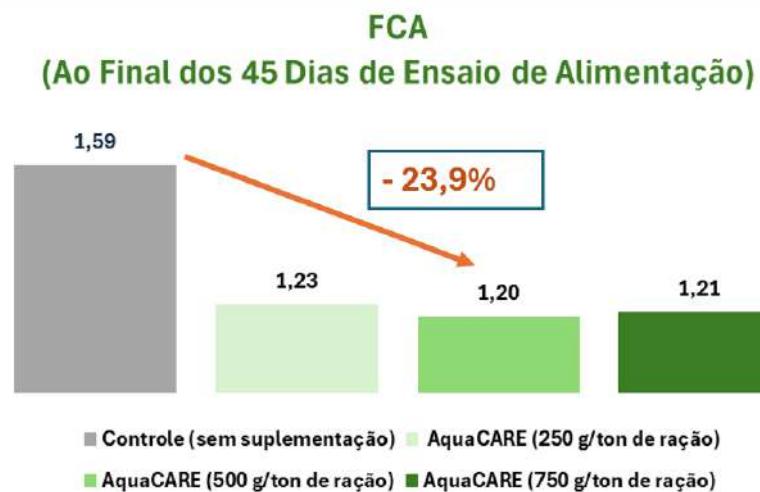
Menos Ração, Mais Biomassa



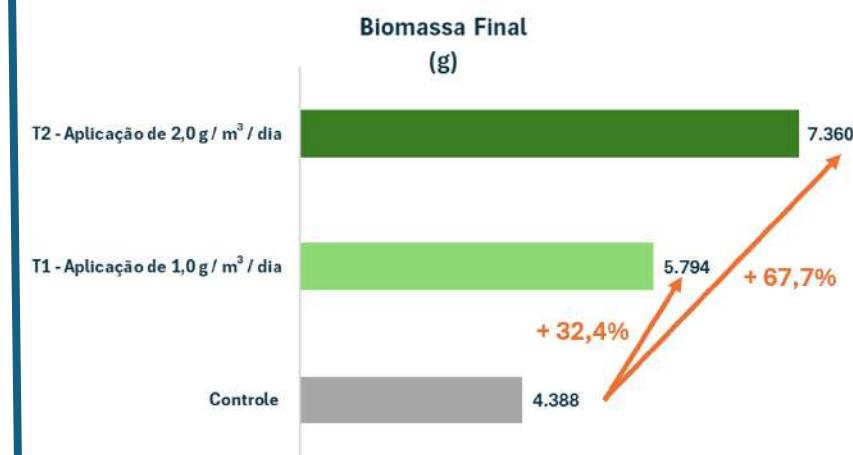
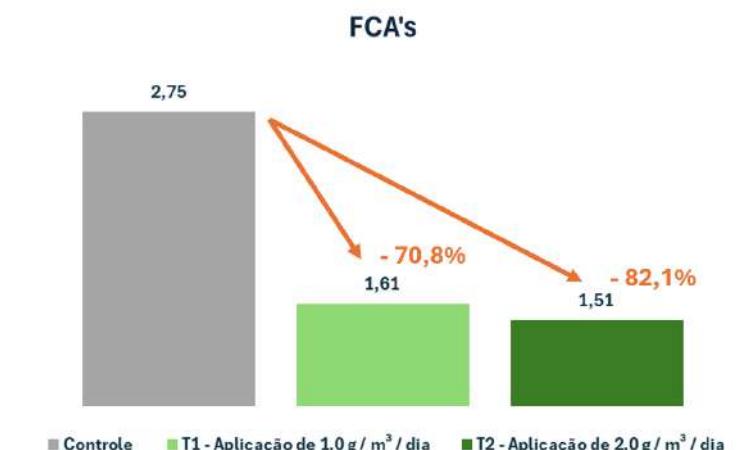
Kasetsart University (2022) PL₁₂ a ~1,5 g



Kasetsart University (2025) Juvenis *P. vannamei* > 1,0 g



Camarões Iguatu (2025) – Aclimatação PL's *P. vannamei*





Muito obrigado!

Muchas gracias

Many thanks

Grazie mille

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