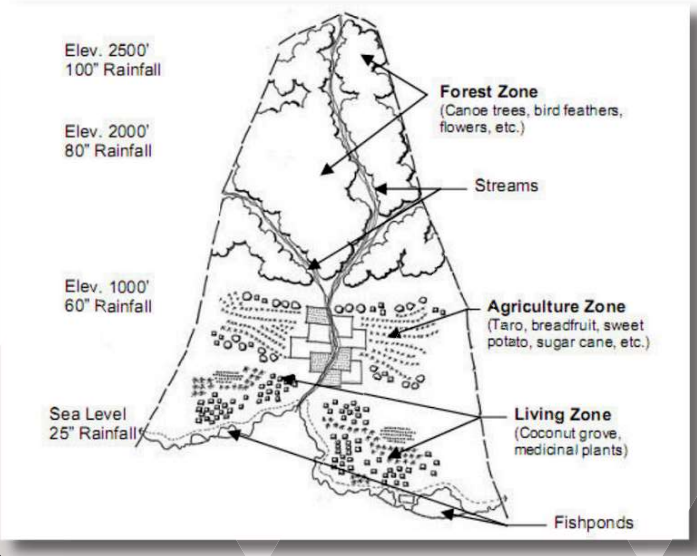
EcoponicX

INTEGRATED, SUSTAINABLE, AGRITECH

Mana'o (wisdom)

Lōkahi (ロカヒ)

Represents Balance. It is the interconnections between a person's mind, body, and spirit with the land.

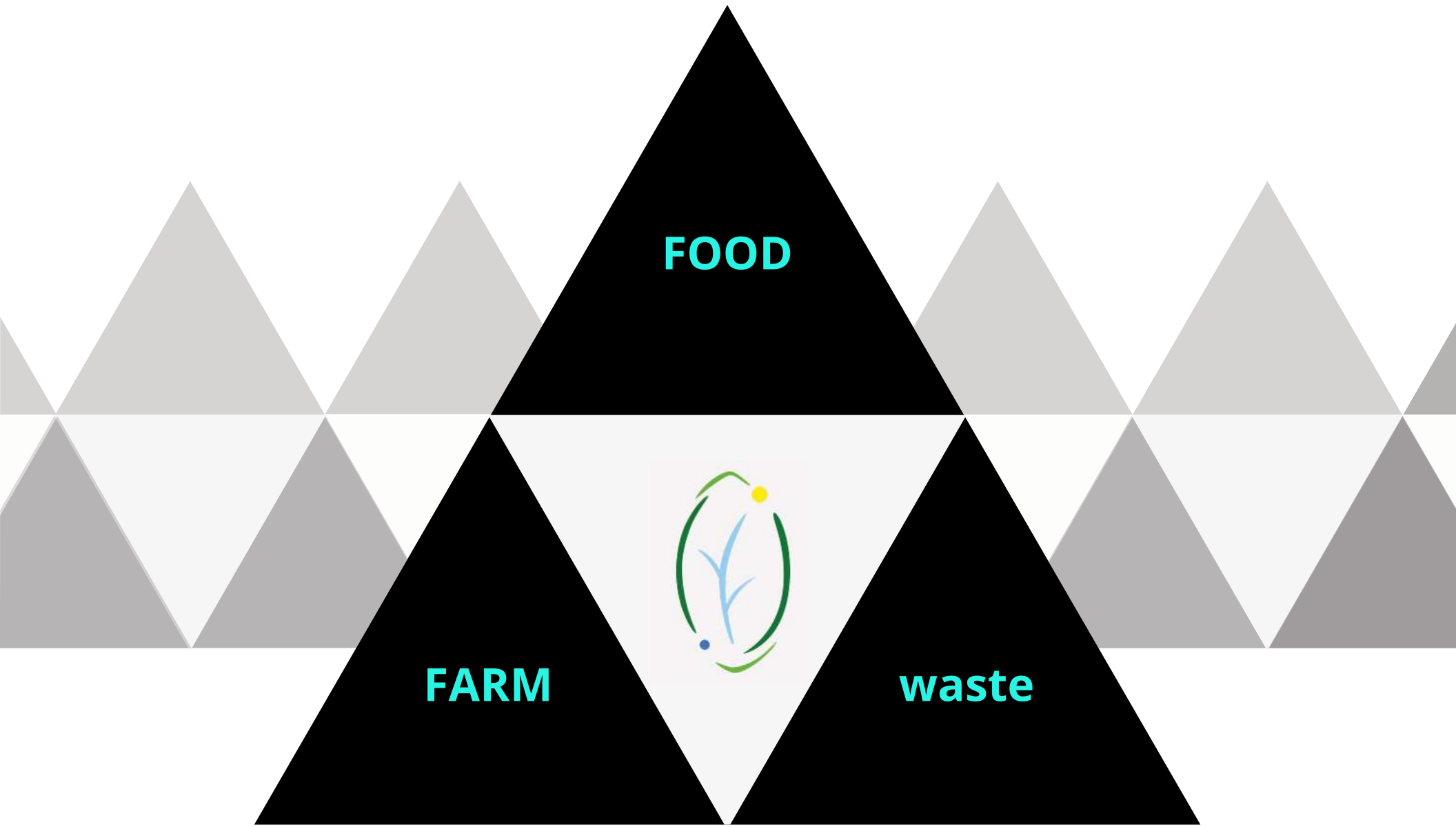


Mālama ʻĀina (マラマʻアイナ)

A persons responsibility, kuleana, to be caretakers for the land. Wellness is intimately linked to environmental health.

Ahupua'a (アフプア)

An extensive land management system centered around the flow of rainwater, into streams, and then ocean.


FOOD
FARM
waste

Farm

Soybean

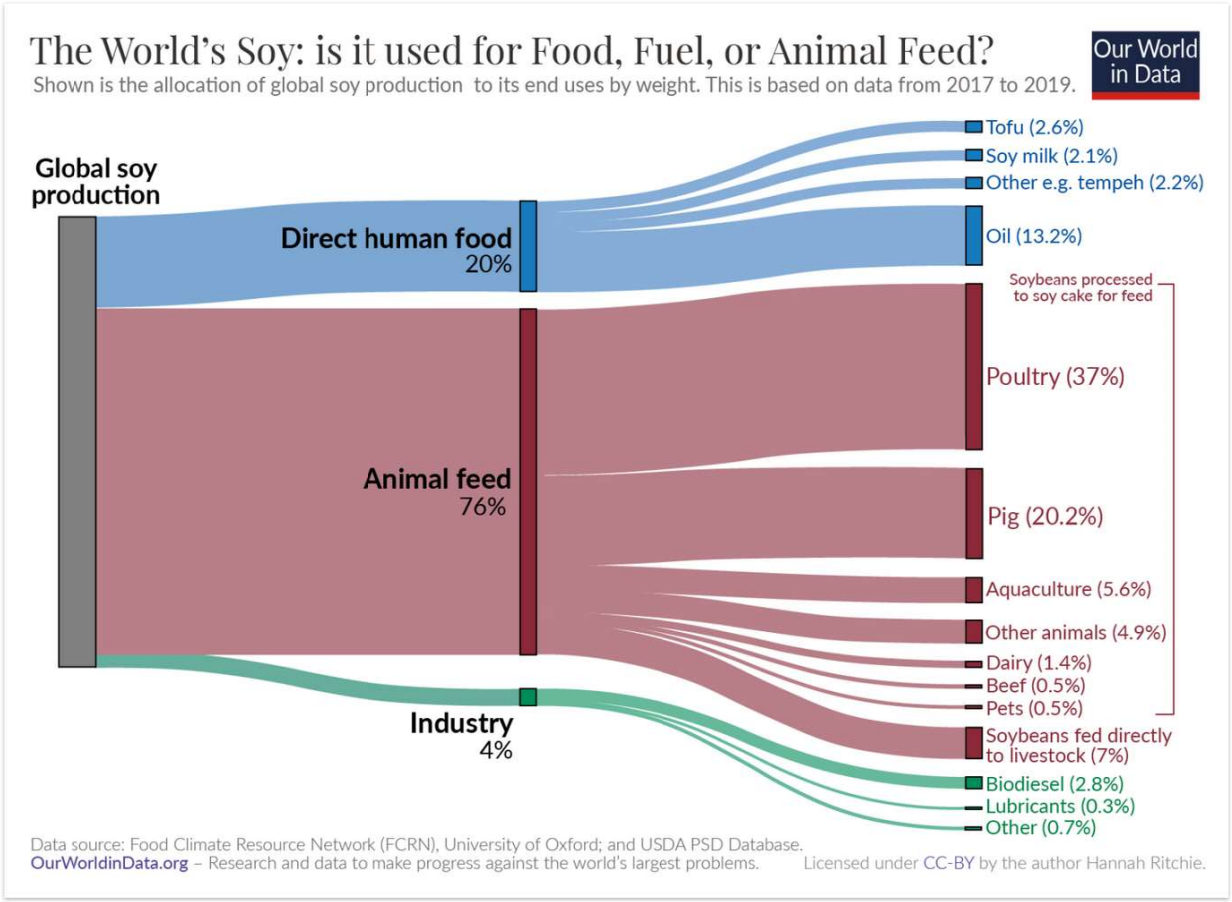
Food

Tofu

Waste

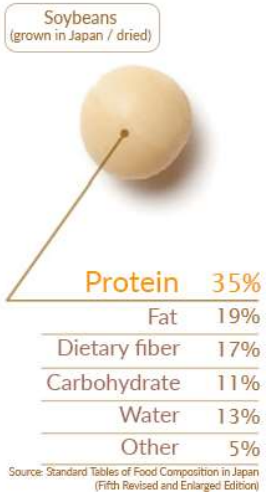
Soy Dregs

Soy Industry



Ranking Of Countries That Produce The Most Soybeans (FAO)

Total Top 25 Countries		728,456,054,155	
Rank	Country	Pounds	% Of Top 25
1	Brazil	251,920,586,991	34.58%
2	United States	213,392,180,492	29.29%
3	Argentina	121,835,879,376	16.73%
4	China	34,675,974,145	4.76%
5	India	29,249,839,942	4.02%



Compositional Analysis

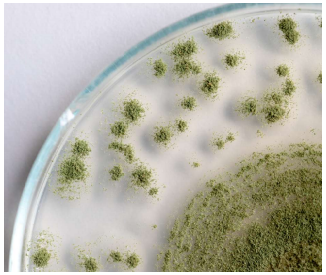
Soy Dregs

Protein	25-28%
Lipids	9-10%
Fiber	
Insoluble	40-43%
Soluble	12-14%
Carbohydrates	3-5%
Other	0-11%

Fermentation

Soy Dregs

+



Microorganisms

=

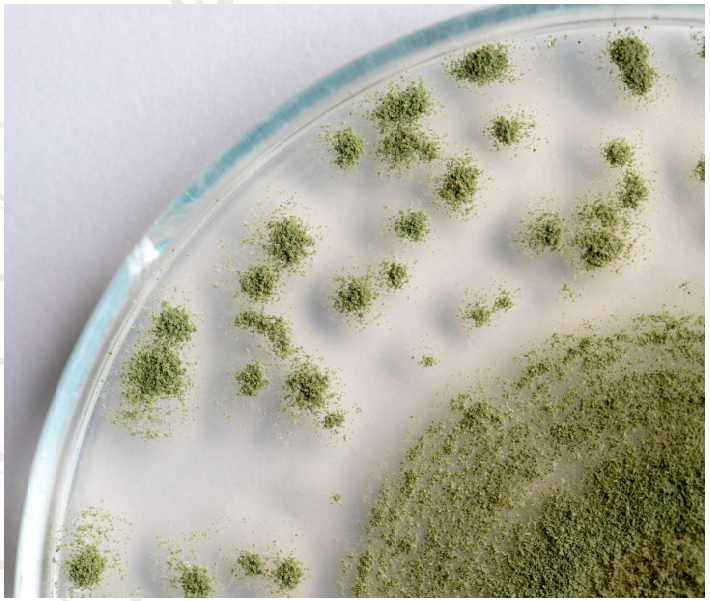
Feed Component

Local Target Species

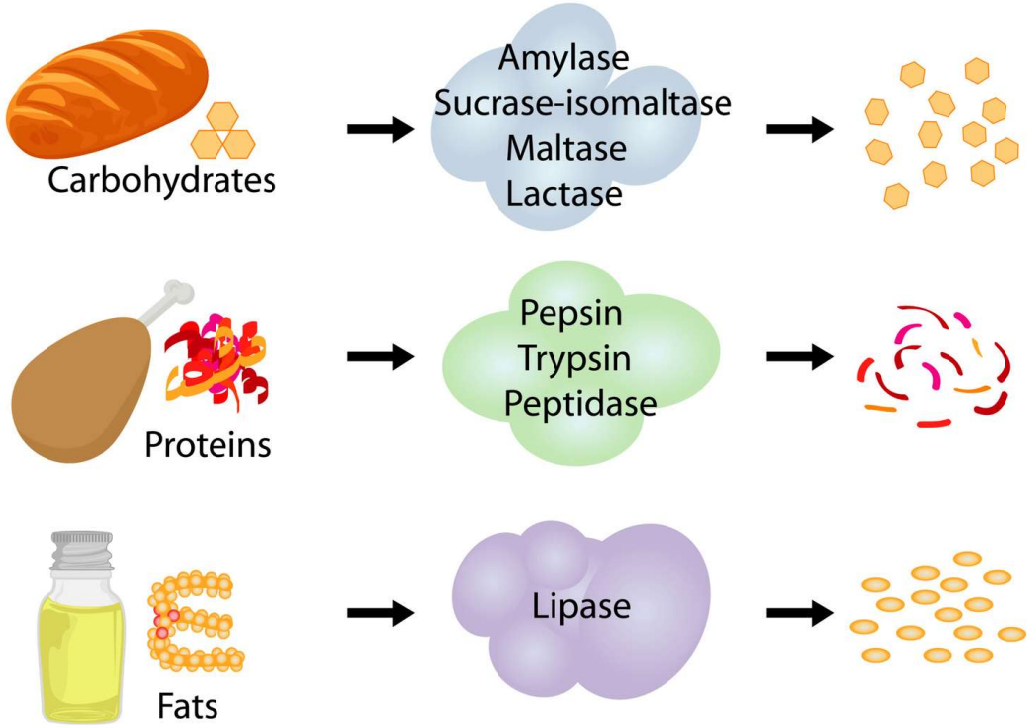
Litopenaeus Vannamei

Macrobrachium Rosenbergii

Enzymatic Conversion

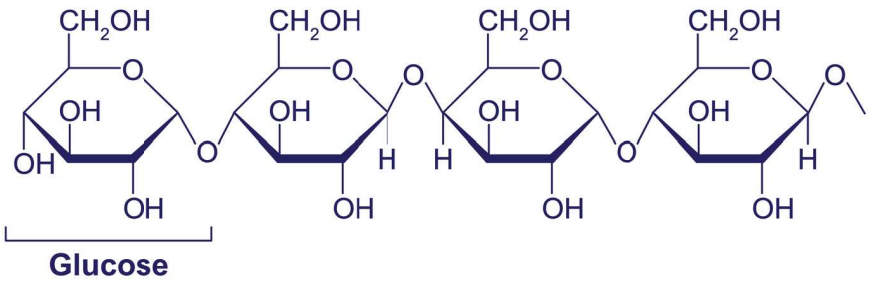


Microorganism



Insoluble Fiber Enzymatic Conversion

Cellulose Structure



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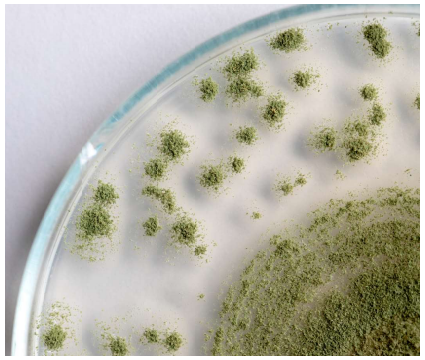

(Cellulases)

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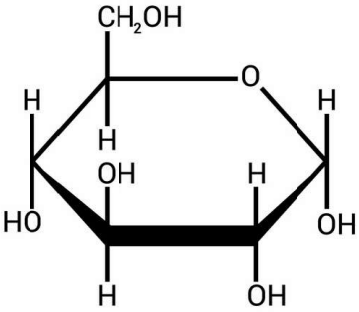

Glucose

Question & Research

Apparent Digestibility of Feedstuffs by the Marine Shrimp *Penaeus vannamei* BOONE

D. M. Akiyama, S. R. Coelho, A. L. Lawrence, E. H. Robinson

Author information

JOURNAL FREE ACCESS

1989 Volume 55 Issue 1 Pages 91-98

DOI https://doi.org/10.2331/suisan.55.91

Details

Article overview

Abstract

The apparent dry matter digestibility (ADMD), apparent protein digestibility (APD), and apparent amino acid digestibility (AAAD) of thirteen feedstuffs used for marine shrimp diets were determined for the marine shrimp,

Highlights

- The dietary fillers (cellulose, chitin, and diatomaceous sand) were either poorly digested or not digested

.

Question & Research

Available online at www.sciencedirect.com
ScienceDirect
Aquaculture 269 (2007) 259–264
Aquaculture
www.elsevier.com/locate/aqua-online

Effect of probiotics on growth performance and digestive enzyme activity of the shrimp *Penaeus vannamei*

Yan-Bo Wang *

Food Quality and Safety Department of Zhejiang Gongshang University, Jiao Gong road 149, Hangzhou, 310035, China

Received 18 October 2006; received in revised form 25 May 2007; accepted 29 May 2007

Abstract

The effect of probiotics on growth performance and digestive enzyme activity of the shrimp *Penaeus vannamei* was investigated. Photosynthetic bacteria and *Bacillus* sp. were added to shrimp basal diets as probiotics at three concentrations: T-1, 2 g kg^{-1} (1 g kg^{-1} lyophilized photosynthetic bacteria cells (PSB) and 1 g kg^{-1} lyophilized *Bacillus* sp. (BS)); T-2, 10 g kg^{-1} (5 g kg^{-1} PSB and 5 g kg^{-1} BS); and T-3, 20 g kg^{-1} (10 g kg^{-1} PSB and 10 g kg^{-1} BS). Twelve aquaria with three replicates for

Highlights

- The protease activity of T-2 and T-3 was significantly higher compared with T-1 and the Control.
- The amylase activity of T-2 was highest and significantly different (Pb0.05) from that of the Control and T-1.
- Both treatment groups had significantly higher lipase and cellulase activity compared to the Control.

Question & Research

EFFECTS OF DIETARY FIBER ON GROWTH, ASSIMILATION AND CELLULASE ACTIVITY OF THE PRAWN (*Macrobrachium rosenbergii*)[1]

P. H. Fair, A. R. Fortner, M. R. Millikin, L. V. Sick

First published: March 1980 | https://doi.org/10.1111/j.1749-7345.1980.tb00131.x | Citations: 21

[1] Contribution No. 80-16C, Southeast Fisheries Center, National Marine Fisheries Service, NOAA, Charleston, SC 29412.

PDF TOOLS SHARE

ABSTRACT

Cellulose fiber comprising up to 30% of an isonitrogenous series of diets (0, 5, 15 and 30% fiber concentration) did not suppress growth of prawn having average initial weights of 0.08 ± 0.002 g over a 12-week period. In addition, dietary fiber concentrations of 5 and 20% were found to stimulate growth over an 8-week period among prawn having initial

Highlights

- Results from the present study indicated that use of dietary fiber may make a significant contribution to commercial formulations of cost-effective crustacean diets.

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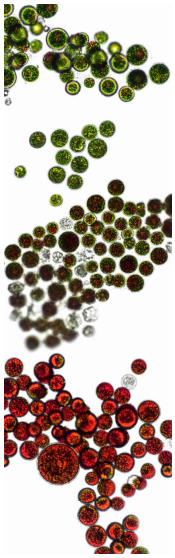

Enrichment +

Question & Research

Aquaculture and Fisheries | Published: 09 August 2018

Dietary effects of *Azolla pinnata* combined with exogenous digestive enzyme (Digestin™) on growth and nutrients utilization of freshwater prawn, *Macrobrachium rosenbergii* (de Man 1879)

Ashraf Goda, Amal Saad, Mohamed Hanafy, Zaki Sharawy & Ehab El-Haroun

Journal of Oceanology and Limnology **36**, 1434–1441 (2018) | Cite this article

193 Accesses | **5** Citations | Metrics

Abstract

The present study was conducted to evaluate the effect of either individual or combined wheat bran (WB) replacement with *Azolla pinnata* supplemented with Digestin™ in the diet of freshwater prawn, *Macrobrachium rosenbergii* Postlarvae (PL) on growth performance, nutrient utilization, chemical body composition and survival (%). Experimental diets were a

Highlights

- These results are clearly indicating that A . pinnata have a good potential for use in prawn diets at reasonable levels than other conventional diets.

Question & Research

Contents lists available at ScienceDirect

Aquaculture

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

Effect of dietary *Ganoderma lucidum* polysaccharides on biological and physiological responses of the giant freshwater prawn *Macrobrachium rosenbergii*

K. Mohan [a,*], A.M. Padmanaban [a], V. Uthayakumar [a], R. Chandirasekar [a], T. Muralisankar [b], P. Santhanam [b]

[a] PG and Research Department of Zoology, Sri Vasavi College, Erode, Tamil Nadu 636 316, India
[b] Marine Planktonology and Aquaculture Laboratory, Department of Marine Science, Bharathidasan University, Tiruchirappalli 620 024, Tamil Nadu, India

ARTICLE INFO

Article history:
Received 27 November 2015
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Available online 1 June 2016

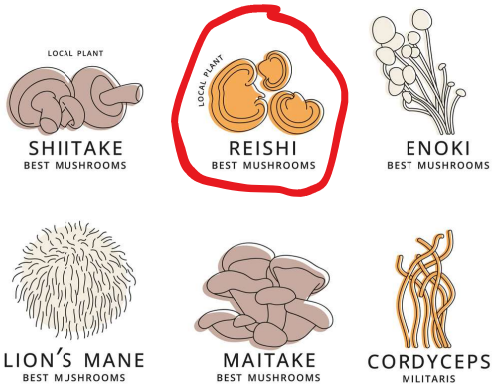
Keywords:
Macrobrachium rosenbergii
Ganoderma lucidum polysaccharides
Growth
Muscle composition
Antioxidants
Metabolic enzymes

ABSTRACT

The aim of the current study was to assess the effects of dietary *Ganoderma lucidum* polysaccharides (GLPs) on the growth, digestive enzyme activities, muscle biochemical compositions, antioxidant, and metabolic enzyme status of the freshwater prawn, *Macrobrachium rosenbergii*. GLPs were isolated and supplemented with basal diets at 0, 1.0, 1.5, 2.0 and 2.5 g kg^{-1}. *M. rosenbergii* was fed these GLPs supplemented diets for 90 days experiment. At the end of the feeding experiment, survival, growth, digestive enzyme activities, muscle biochemical compositions, profile of amino acids and fatty acids were found to be significantly ($P < 0.05$) higher in GLPs supplemented feed fed prawns. Among these GLPs supplementations, 2.5 g kg^{-1} GLPs supplemented feed fed prawns produced significantly better performance. Whereas, the antioxidants and metabolic enzyme activities were insignificantly ($P > 0.05$) altered in prawns fed with GLPs supplemented feeds when compared to control. It indicates that the supplementation of GLPs did not produce any adverse effects on *M. rosenbergii*. Hence, present study suggests that 2.5 g kg^{-1} GLPs can be taken as a dietary supplement for regulating better production of *M. rosenbergii*.

Highlights

- At the end of the feeding experiment, survival, growth, digestive enzyme activities, muscle biochemical compositions, profile of amino acids and fatty acids were found to be significantly (P b 0.05) higher in GLPs supplemented feed fed prawns.



Question & Research

Survival And Growth Of Juveniles Of The Giant Malaysian Prawn, Macrobrachium rosenbergii, Fed Natural Plant Diets

Henrietta L. Stern, David A. Armstrong, Allen W. Knight, Deborah J. Chippendale

First published: March 1976 | https://doi.org/10.1111/j.1749-7345.1976.tb00095.x

PDF TOOLS SHARE

ABSTRACT

Several aquatic plants (Azolla filiculoides, Cladophora sp., Elodea sp., and Lemna sp.) were fed singly to groups of 30 juvenile Malaysian prawns (Macrobrachium rosenbergii) for 28 days, and comparisons were made with control prawns fed Ralston Purina Ration #20. The comparisons made were survival, weight change, and molting frequency.

The animals ingested all diets during the experiment, though none on a plant diet fared as well as the controls in weight gains and survival by day 28. The controls increased 65% in dry weight, whereas the others lost weight. The control group had significantly higher survival by day 28, although on day 16 survival was better only than that of the

Highlights

- A single-species plant diet apparently did not satisfy the nutritional requirements of the prawn as indicated by increased mortality and decreased weight.
- Several aquatic plants (Azolla filiculoides, Cladophora sp., Elodea sp., and Lemna sp.) were fed singly to groups of 30 juvenile Malaysian prawns (Macrobrachium rosenbergii) for 28 day

Question & Research

Usefulness of *Spirulina* sp. Meal as Feed Additive for Giant Freshwater Prawn, *Macrobrachium rosenbergii*

Heisuke NAKAGAWA, GÓMEZ-DÍAZ Gabriel

Author information

Keywords: Giant freshwater prawn, *Spirulina*, Feed additive, Midgut gland lipids

JOURNAL FREE ACCESS

1995 Volume 43 Issue 4 Pages 521-526

DOI https://doi.org/10.11233/aquaculturesci1953.43.521

Details

Article overview

- Abstract
- References (24)
- Content from these authors

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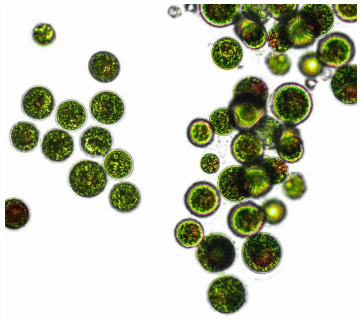
Abstract

Juvenile giant freshwater prawns *Macrobrachium rosenbergii* with individual weights between 0.4-0.7g were reared with purified diets supplemented with various levels of *Spirulina* meal (0, 5, 10, 15, and 20%) for 60 days in duplicate indoor aquaria.

The *Spirulina* meal significantly improved growth, survival, and feed utilization irrespective of supplementation level. Improved growth and feed utilization by feeding *Spirulina* was due to enhancement of protein

Highlights

- The Spirulina meal significantly improved growth, survival, and feed utilization irrespective of supplementation level.
- Improved growth and feed utilization by feeding Spirulina was due to enhancement of protein assimilation.



Question & Research

Dietary protein and astaxanthin levels on growth performance, hepatopancreas antioxidant capacity and immunity of giant freshwater prawn (*Macrobrachium rosenbergii*)

Junjie Xu, Lili Tian, Yong Shen, Xiaojing Dong, Jie Xia, Jingwen Wang, Shuyan Miao, Longsheng Sun

First published: 24 August 2022 | https://doi.org/10.1111/are.16060

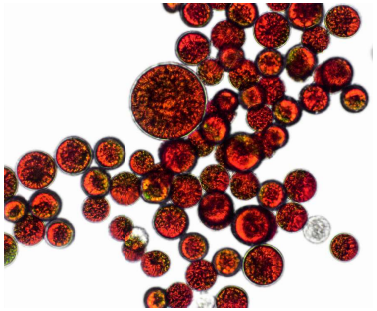
Junjie Xu and Lili Tian contributed equally to this work.

Abstract

The giant freshwater prawn, *Macrobrachium rosenbergii,* is abundantly farmed in East China and Southeast Asia. To date, limited information exists on the relationship between protein and astaxanthin, and the antioxidation and non-specific immunity functions. This study was conducted to investigate the effects of dietary protein and astaxanthin levels on growth, hepatopancreas antioxidant capacity and non-specific immune response of prawns. Further, the interaction between protein and astaxanthin

Highlights

- The results demonstrated that survival rate, feed coefficient, protein efficiency and body composition did not differ significantly among treatments ($p > 0.05$), and the weight gain and specific growth rates disposed in their protein levels in diets by 410 g kg−1 were markedly higher than the other two levels ($p < 0.05$).



Question & Research

Fish and Shellfish Immunology 89 (2019) 603–613

Contents lists available at ScienceDirect

Fish and Shellfish Immunology

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

Full length article

Effects of *Moringa oleifera* leaf extract on growth performance, physiological and immune response, and related immune gene expression of *Macrobrachium rosenbergii* with *Vibrio anguillarum* and ammonia stress

Ivan Venkonwine Kaleo[a,d,1,2], Qiang Gao[c,1], Bo Liu[a,b,*], Cunxin Sun[b], Qunlan Zhou[b], Huimin Zhang[a], Fan Shan[a], Zhe Xiong[a], Liu Bo[a], Changyou Song[a]

[a] Wuxi Fisheries College, Nanjing Agriculture University, Wuxi, 214081, China
[b] Key Laboratory of Freshwater Fisheries and Germplasm Resources Utilization, Ministry of Agriculture, Freshwater Fisheries Research Center, Chinese Academy of Fishery Sciences, Wuxi, 214081, PR China
[c] Zhejiang Institute of Freshwater Fishies, Huzhou, 313001, PR China
[d] Fisheries Commission, Post Office Box 268, Tamale, Ghana

ARTICLE INFO

Keywords:
M. rosenbergii
M. oleifera
Ammonia stress
Immunity
Growth

ABSTRACT

In order to study the effects of *Moringa oleifera* leaf extract on *Macrobrachium rosenbergii* under high ammonia exposure, freshwater prawns were randomly divided into five groups: a control group was fed with basal diet, and four treatment groups fed with basal diet supplemented with 0.25%, 0.5% and 1.0% *M. oleifera* leaf extract and 0.025% Enrofloxacin for 60 days, respectively. Then, freshwater prawns were exposed to high ammonia stress for 72 h and *Vibro anguillarum* infection. The growth, antioxidant capabilities, related immune genes as well as resistance to infection by *V. anguillarum* were determined. The results showed that compared with the control group, the weight gain, specific growth rate and protein efficiency rate, haemolymph catalase (CAT),

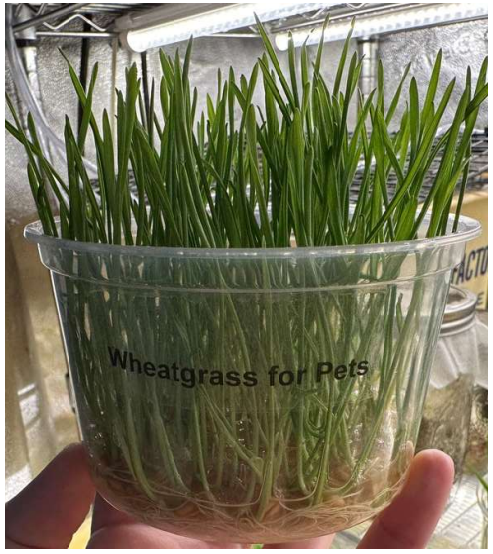
Highlights

- this study suggested that at an inclusion rate of 0.5%, M. oleifera leaf extract could increase the growth performance, even has positive effects on physiological and immune function and prevents high ammonia stress in the Freshwater prawn, M.rosenbergii.

Alternative Processing

Alternative Application

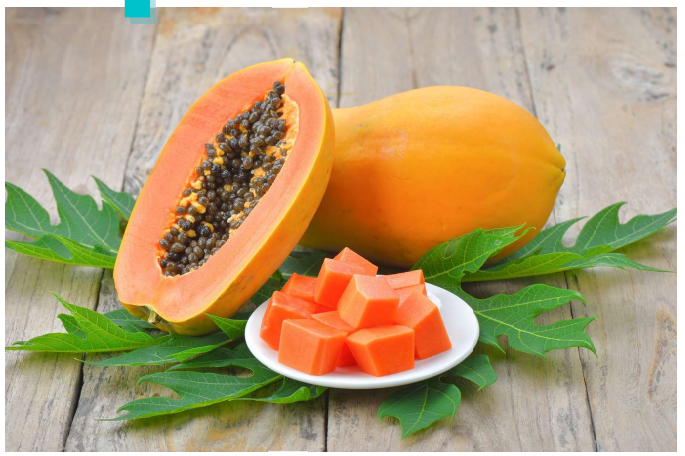
Day 0



Day 3

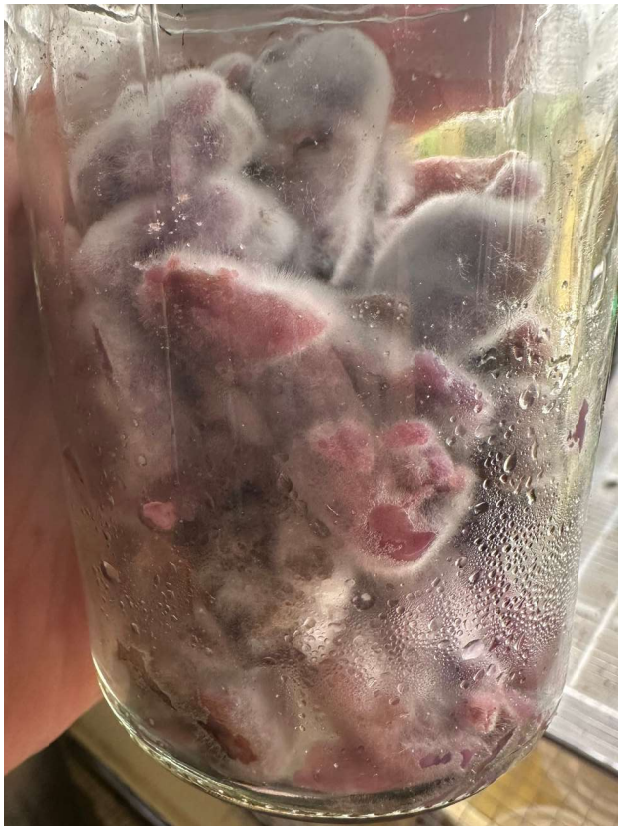
Day 7

Alternative Crops



Alternative Crop Conversion

Day 0



Day 1

Thank You!
Any Questions?