

透视高价鱼粉市场下 配方修改的风险控制

FISH MEAL · MODIFIED FORMULA · RISK MANAGEMENT

**Rongcheng Ge Di Marine Biotechnology Co.,
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Fish meal industry

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论述

New opportunity

Shidao
Fishing Port

1. The total quantity of feed increases while raw material resources reduce.
2. Formula: Reduced fishmeal dosage and non-formula fishmeal. (Chicken feed, pig feed, freshwater fish meal and marine fish meal) We keeps modifying formula structure and adjusting raw materials in bid to earn more through cultivation.
3. Under the circumstances of short supply of international fishmeal, domestic fishmeal becomes main supply in domestic market.
4. Get rid of dependence on the supply chain and form a real strategic alliance in the feed industry.

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饲料企业改配方带来风险与控制

Modify the formula of risk management

- ✓ Farmers care for feed conversion ratio.
- ✓ Feed enterprises care for profit.
- ✓ Fishmeal enterprises need high prices to maintain fishery production.

Major performances of the risks of modifying formula: palatability, feed conversion ratio and safety

Substitutes: Fermented soybean meal and meat meal have poor palatability.

Optional: fish solubles, fish soluble powder and fish oil are best choices which can increase palatability, food calling and digestibility.

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饲料企业改配方的重要性

The importance of modify the formula

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- ☑ Protect marine resources
- ☑ Stay away from marketing hype
- ☑ From passive to active
- ☑ Return to real cost performance
- ☑ Reduce feed and cultivation costs
- ☑ Accelerate reshuffle of the fishing industry, fishmeal enterprises, feed enterprises and cultivation industry

A photograph of an industrial facility, likely a fish processing plant, featuring several large, vertical stainless steel tanks and a complex network of pipes. The tanks are arranged in a row, and the pipes connect them to various parts of the machinery. The background shows a clear blue sky and a building with a blue roof.

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鱼溶浆.鱼溶粉 de 生产工艺和营养功能

The production process and nutritional functions of
fish solubles and Fish soluble powder

Falling-film
Concentrator

- (1) . Fish soluble is made with residual protein water condensed through a low temperature.
- (2) . Fish soluble is rich in green biological active products such as ,low molecular peptides (small), taurine, nucleotide, free amino acids, trimethylamine oxide and unidentified growth factors.
- (3) . Fish soluble is the growth medium for enzyme, **which can energize enzyme**
- (4) . With strong fish odor and fine palatability, it is a perfect attractant.
- (5) . Fish soluble powder is a kind of solid matter after condensing the water of protein water (fish soup) by 50%. It is rich in protein, free amino acids, and 8-10% organic salt.

A photograph of an industrial fish processing plant. The scene is filled with large, cylindrical stainless steel tanks and a complex network of blue and silver pipes. A worker is visible in the background, and the overall atmosphere is that of a busy manufacturing facility.

05

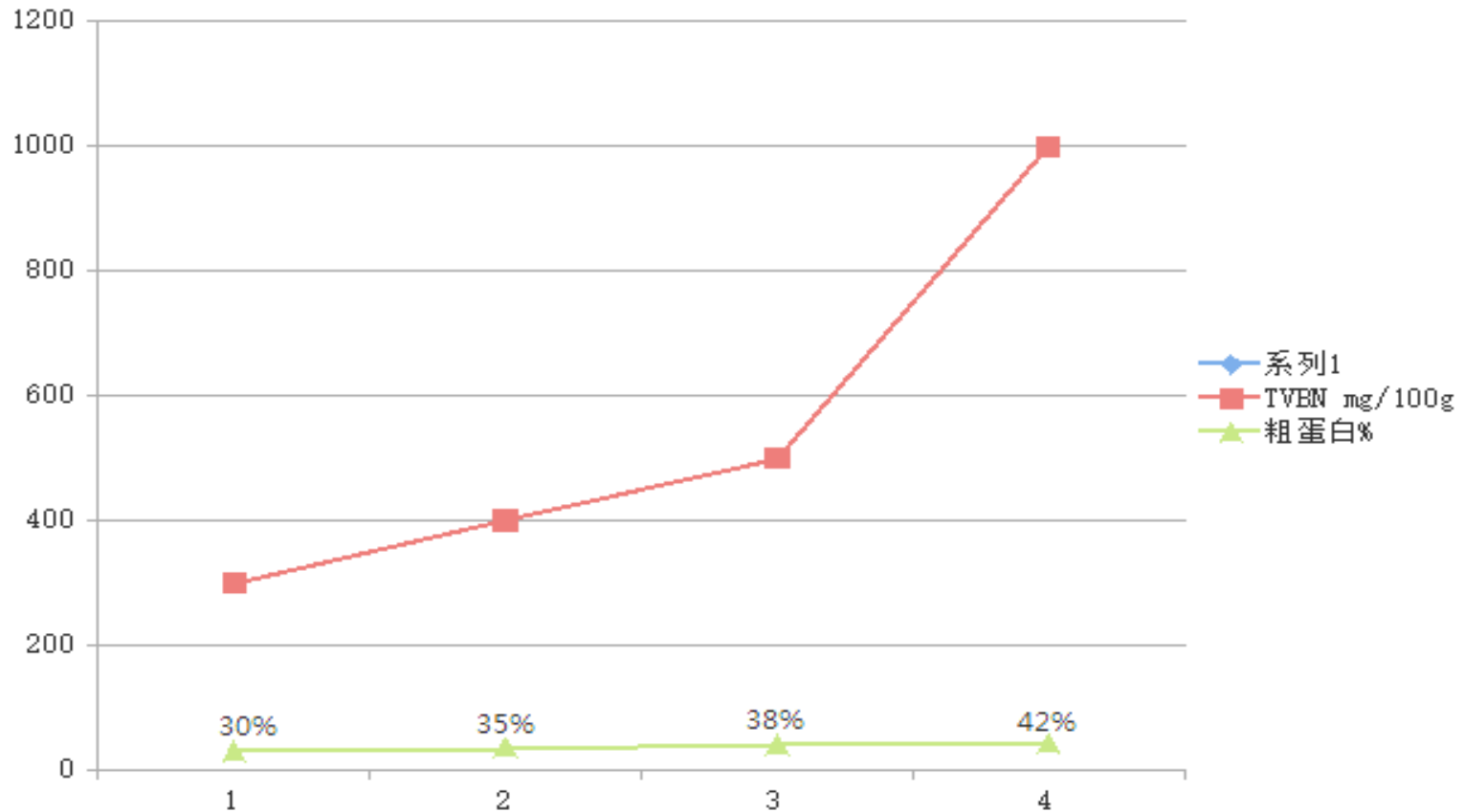
鱼溶浆.鱼溶粉.鱼油 de 使用量与效果

Usage and effect of
fish solubles, Fish soluble powder and fish meal

- (1) . 6 tonnes of original fish soup (protein water) = 1 tonne of fish solubles
- (2) . Using 3% fish solubles equals to using 20% fishmeal (in terms of palatability and tempting function). The remaining 17% could be replaced with other protein sources.
- (3) . Using 2% fish soluble powder equals to using 6% fishmeal. Fish soluble powder is rich in free amino acids.
- (4) . Using 1% fish oil equals to using 10% fishmeal (in terms of tempting function). Fishmeal has 10% fat.
- (5) . Notes for using fish oil: Use reasonable methods according to the features of fish oil.
- (6) . Fish oil is a kind of functional grease which is different from energy grease.
- (7) . **Ways to use fish oil need to be changed.**

06. The freshness of fish directly affects the quality of fish solubles

鱼溶浆（水分值45的条件下）新鲜度与蛋白的关系



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A photograph of a row of industrial stainless steel tanks in a factory setting. The tanks are arranged in a line, receding into the distance. They are connected by a network of pipes and have various valves and gauges. The scene is brightly lit, suggesting an outdoor or well-lit indoor environment.

07

鱼溶浆、鱼溶粉的理化指标

The physicochemical index of fish solubles and fish soluble powder

Aerated Concentrator

Index	Protein	Salt	Water	VBN	Fat	Ash Content
Fish soluble	30—42	4—6	45—50	200—1000	4—12	8—10
Fish soluble powder	65—68	9—10	4—6	150—200	6—8	18—20
Spray fish soluble powder	68—72	10—12	4—5	200—300	6—8	19—21

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08. Domestic fishmeal yield over the past years

Domestic fishmeal yield and yield after changing product structure						
Year	Total quantity (ten thousand tons)	Defatted fishmeal	Quality semi-defatted fishmeal	Ordinary fishmeal	Fish soluble	Fish oil
In 2012	124.5	30	60	35	2	3
In 2013	90	30	40	20	2	3
In 2014	54	20	20	14	3	2
In 2015	80-90	40	30	10	20	2
15 years later after changing production structure	80-90	60	20	0	60	2

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09. The importance of increasing production by prolong fishing off season

Anchovy Length and Weight (ten thousand tons)										
Length (cm)	8	9	9.5	10	11	12	13.5	14.5	Annual output	Increment
Weight (g)	3.62	4.72	5.52	6.45	9.63	10.47	17.42	19.79		
12cm considered as the criterion of weight increment Proportion (%)	289 %	221 %	189%	162%	108%	0	0	0		
Proportion in Rongcheng (%)	30%	20%	10%	10%	10%	10%	5%	5%		
400,000t in Rongcheng in 2013	12	8	5	4	4	4	2	1	40	
12cm assumed as the criterion	34.7	15.2	9.5	8.4	4.32	4	2	1	72.12	32.12
Proportion in Liaoning (%)	40	30	20	10	5	2	2	1		
150,000t in 2013	6.5	3.5	2	1.5	0.75	0.3	0.3	0.15	15	
12cm assumed as an example	18.7	7.7	3.78	2.4	0.9	0.3	0.3	0.15	37.74	22.74
Proportion in Zhejiang (%)	5	5	10	23	30	3	2	2		54.86

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10. Synthetic judgment needed to identify the quality of fishmeal

(Three courses after fish dies: stiffness, autolysis and corruption)

Index	TVBN80	TVBN80	TVBN80	TVBN100	TVBN100	TVBN100	TVBN120	TVBN120	TVBN120
Crude protein	65%	65%	65%	65%	65%	65%	65%	65%	65%
Pure protein	63%	60%	57%	58%	56%	52%	56%	52%	50%
Proportion of amino acid and crude protein	93%	90%	87%	88%	86%	84%	86%	82%	78%
Acid value	2	2.5	3	4	4.5	5	4	5	6
Salt	1.5-2%	1.8-2%	2.5%	3%	3.5%	4%	3-4-5%	3-4-5%	3-4-5%
Histamine	Below 300	300	Below 500	Below 500	600	800			

The above-mentioned chart indicates the great influence of fish freshness on amino acid and **production cost**. The temperature of dry fishmeal also affects the **quality**.

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国产鱼粉将面临品质的提升

Domestic fishmeal need to improve their quality

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- Short supply of resources leads to high price of fish
- Prices of fish with different quality differ a lot
- Manufacturers transform equipment to increase quality
- Fish soluble is a kind of auxiliary product of quality fishmeal.



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结束语

Conclusion

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- **Fishmeal: Reasonable cost performance leads to steady consumption.**
- **Fishmeal consumption (fishmeal/fish soluble) needs to **be recalculated.****
- **Change is needed in the ideas of technology and craftsmanship; active nutritional ingredients of raw materials need to be learnt.**
- **Fishmeal is a link of feed enterprises' industrial chain.**
- **Form a strategic alliance and boost mutual development of upstream and downstream enterprises.**

Thanks for your support of the development of domestic fishmeal industry

谢谢!

Thank you for your listening!

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