

AQUATIDE 65

THE BEST SUSTAINABLE PROTEIN SOURCE FOR AQUACULTURE



**FISHMEAL
REPLACER**



**PROTEIN
CONCENTRATE**



**PROBIOTIC
EFFECTS**



AQUATIDE65, the fermented protein concentrate is the best sustainable protein ingredient for aquafeeds. With the advanced bio-processed technology, AQUATIDE65 leads to higher bio-availability. AQUATIDE65 has high potential for becoming diverse and cost-efficient fishmeal replacer.

SPECIFICATION

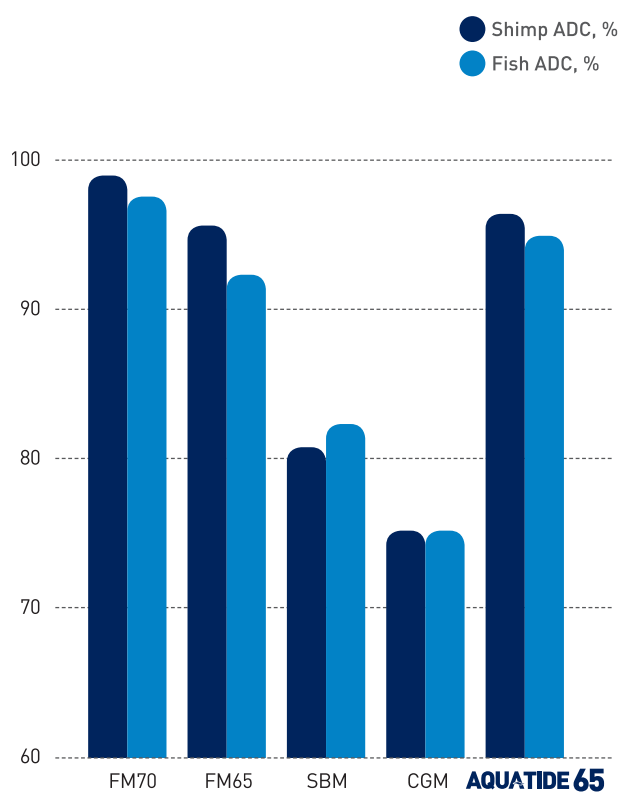
AQUA TIDE 65

AQUATIDE65, the **fermented protein concentrate** is the best sustainable protein ingredient for aquafeeds.

With the advanced bio-processed technology, AQUATIDE65 leads to **higher bio-availability**.

AQUATIDE65 has high potential for becoming **diverse** and **cost-efficient** fishmeal replacer.

PROTEIN AVAILABILITY



► ACD (Apparent digestibility coefficient) in white leg shrimp and rainbow trout, Tested by Pukyong National University, Korea, 2015

* SBM, soybean meal

* CGM, corn gluten meal

TYPICAL ANALYSIS

Ingredients	Composition
Crude Protein	≥ 65.0 %
Crude Fat	≥ 3.0%
Moisture	≤ 12.0 %
Crude Ash	≤ 8.0 %
Crude Fiber	≤ 5.0 %
Phosphorous	≥ 1.0%
Peptide (≤ 30kDa)	≥ 70%
Trypsin Inhibitor	< 1.0 mg/g
Stachyose	< 0.1%
Raffinose	< 0.05%
Particle Size	200 – 250 um

AMINO ACID PROFILE(%)

Essential amino acid

Lysine	2.10
Methionine	1.20
Threonine	2.35
Leucine	8.10
Isoleucine	2.58
Phenylalanine	3.82
Tryptophan	0.36
Valine	2.93
Histidine	1.76
Arginine	3.05

Non-essential amino acid

Cystine	1.12
Alanine	4.44
Serine	3.34
Glycine	2.20
Proline	4.84
Tyrosine	2.50
Glutamic acid	12.26
Aspartic acid	5.34

FATTY ACID PROFILE(%)

Unsaturated fatty acid

Oleic acid C18:1	26.27
Linoleic acid C18:2n6	49.85
Linolenic acid C18:3n3	3.02

Saturated fatty acid

Palmitic acid C16:0	14.44
Stearic acid C18:0	2.99

CHARACTERISTICS

ANTI-BACTERIAL ACTIVITY

✓ Advanced immunity and survival rate

- *Bacillus subtilis*, the fermentation strain of AQUATIDE65 has the strongest antimicrobial activity against various aquatic pathogenic bacterial.



Vibrio parahemolyticus



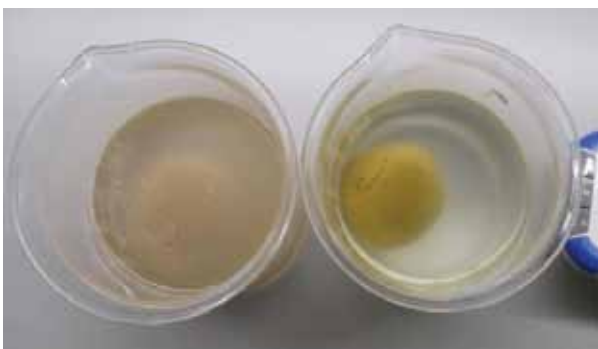
Aeromonas salonicida

Tested by Konkuk Univ, Korea, 2014

BINDING STABILITY

✓ Excellent binding capacity for aquafeed

- AQUATIDE65 is stable in water because binding capacity increases during the fermentation process.



SPC

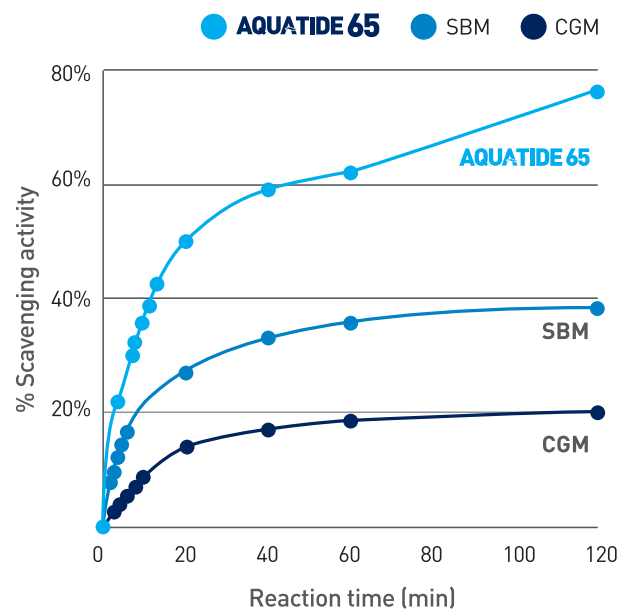


AQUATIDE 65

ANTI-OXIDANT ACTIVITY

✓ High content of bioactive compounds

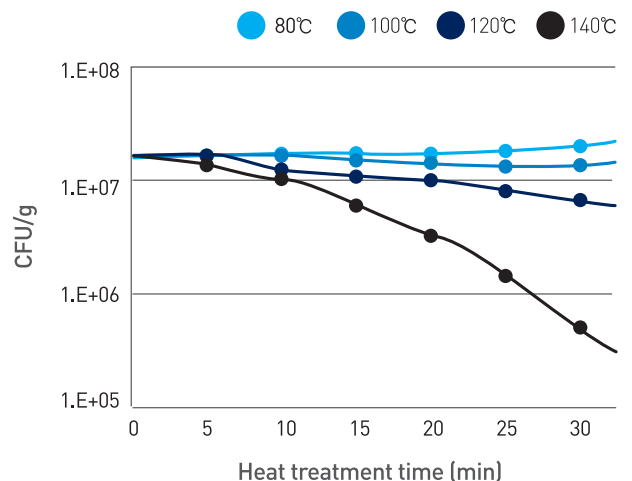
- Anti-oxidant activity is maximized after the *Bacillus* fermentation.
- Structurally bound compounds are degraded into bioactive peptide form by fermentation process.
- As a result, immune enhancement is highly expected by anti-oxidant activation.



THERMO-STABILITY

✓ Thermo-stable microorganism

- AQUATIDE65 is made with heat-stable bacteria *Bacillus subtilis*. It is sustainable at an intense heat pelleting condition.
- Probiotic effect is caused by *Bacillus subtilis* which enhances growth performance and water quality.

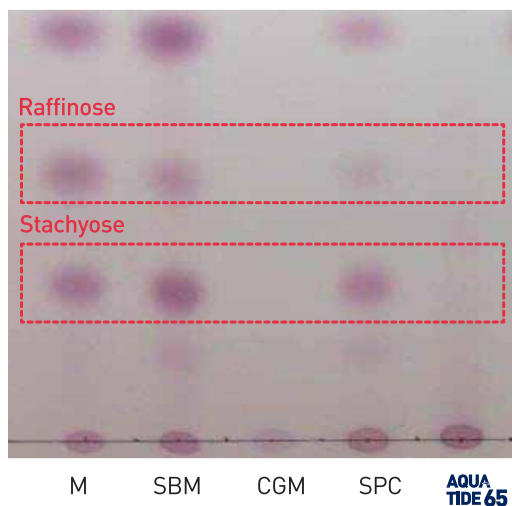


CHARACTERISTICS

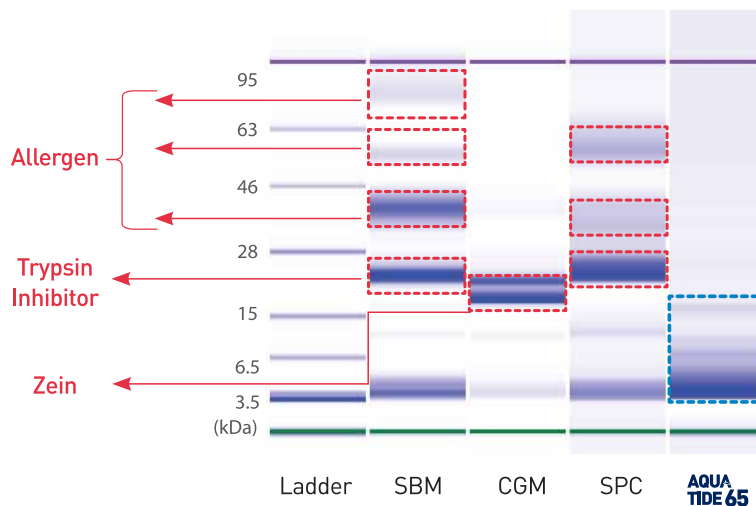
LOW ANF & HIGH PEPTIDE CONTENT

- GOS are catabolized then minimized by *Bacillus subtilis*, the fermentation strain of AQUATIDE65.
- *Bacillus subtilis* produces powerful digestive enzyme for degrading allergen to a lower molecular peptide.
- Peptides in forms of protein hydrolysate improve growth performance of fish and shrimp.

GOS* content (by TLC)



Peptide content (by Bio-analyzer)

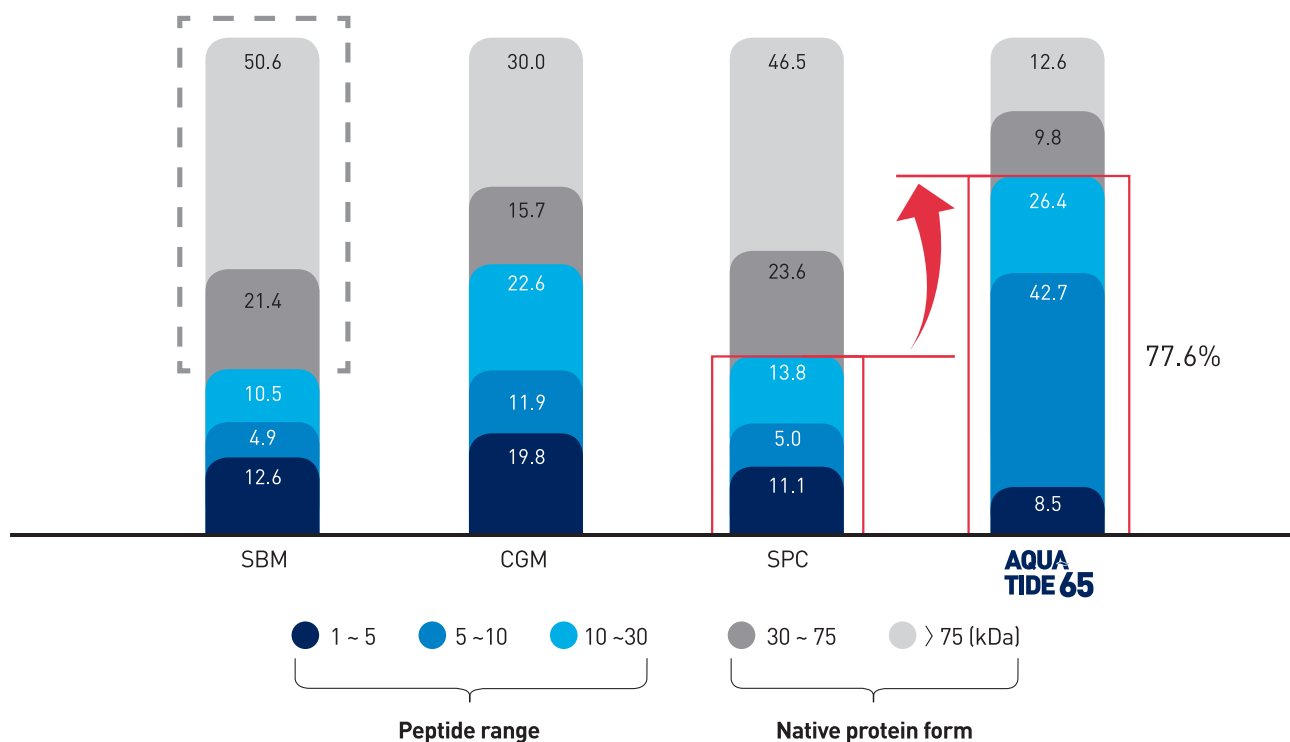


* GOS, galacto-oligo saccharide

Peptide content (by gel permeation chromatography)

► 72.0% of SBM is native protein form (>30kDa).

► Protein has been degraded to low molecular peptide.

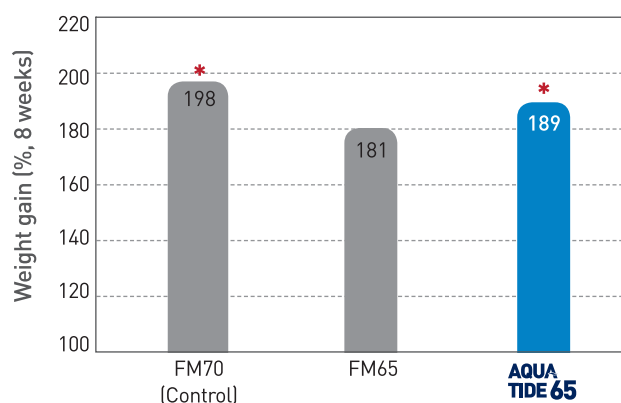


GROWTH PERFORMANCE

WHITE LEG SHRIMP, *Litopenaeus vannamei*

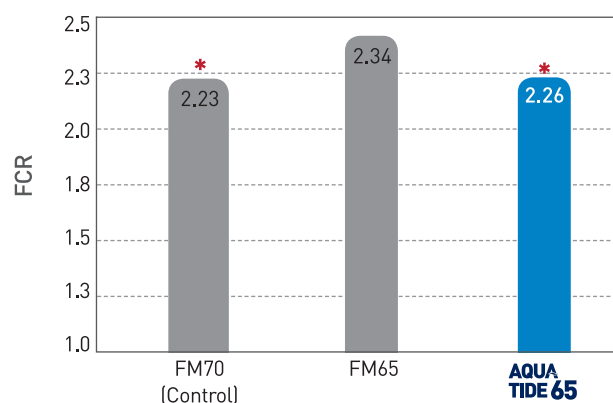
FISHMEAL REPLACEMENT

✓ Same weight gain with fishmeal



FEED CONVERSION RATIO

✓ No significant difference with fishmeal

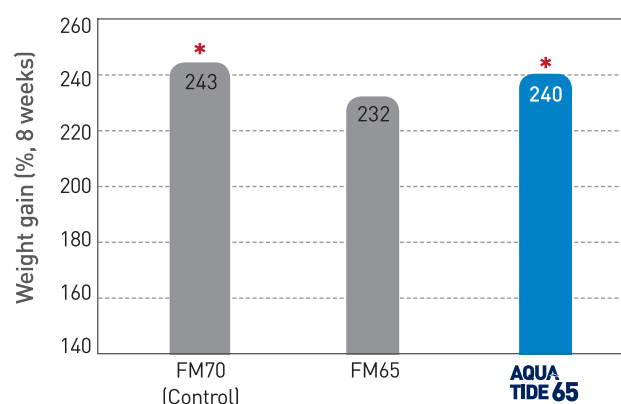


* 30% of Fishmeal (FM70) in feed is replaced by AQUATIDE65

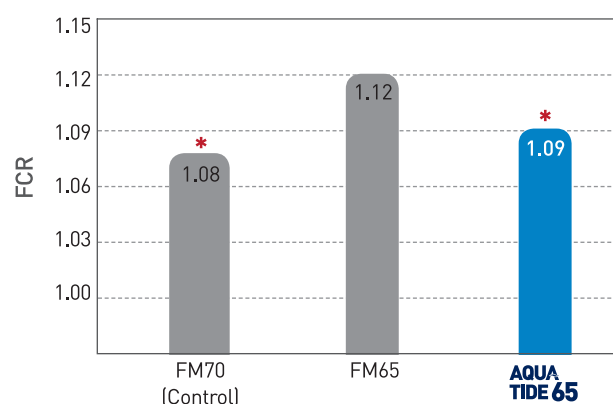
Ingredients	Treatment (%)		
	FM70	FM65	AQUATIDE 65
FM 70 (Denmark)	27.2	-	18.9
FM 65 (Vietnam)	-	28.6	-
AQUATIDE 65	-	-	9.5

RAINBOW TROUT, *Oncorhynchus mykiss*(Salmonidae)

FISHMEAL REPLACEMENT



FEED CONVERSION RATIO



Ingredients	Treatment (%)		
	FM70	FM65	AQUATIDE 65
FM 70 (Denmark)	40.2	-	28.0
FM 65 (Vietnam)	-	43.0	-
AQUA TIDE 65	-	-	12.9

Tested by Pukyong National University, Korea, 2015

CONTACT US

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