

The Quality of Semen Extenders-Influences on Semen Quality and Fertility

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More than 90% of pig farms in Thailand use artificial insemination (AI). Monitoring semen quality is, therefore, a routine procedure on most farms. Fresh semen will be examined routinely after collection. Periodically, every 3-4 months, semen samples will be submitted to university laboratory to examine a more complicated characteristic of semen quality such as acrosomal integrity.

Although semen extenders are available worldwide, Thailand is a major source of semen extenders in this region. Generally, there are 2 types of extenders; short-term (1-3 day storage) and long-term (5-7 day storage) extenders. Long-term

extenders usually contain a more complex buffering system and antioxidant, more expensive ones. Monitoring semen quality composes of macroscopic examination (volume, color, pH, temperature, osmotic pressure) and microscopic examination (progressive motility, sperm morphology, dead/live staining, concentration). Table 1 shows the normal and limit values of parameters used to determine the semen quality. Although there are several parameters, progressive motility is the easiest one to measure and it is a fair indication of plasma membrane integrity, sperm metabolism and fertilization ability of the semen.

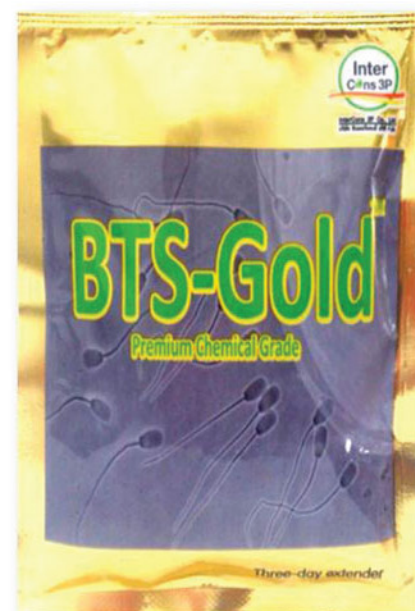


Table 1. Normal and limit values of semen quality for semen used within 24 hours after collection

Ejaculate characteristic	Normal value	Limit value
Ejaculate volume	100-500 ml	50 ml
Total sperm/ejaculation (billion)	10-100	10
Progressive motility	70-90%	60%
Clumping (% coverage of microscopic field)	0-10%	25%
Acrosome integrity	90%	60%
Viability	90%	70%

Adapted from Kevin J. Rozeboom



There are plenty of boar semen extenders available in Thailand, Malaysia, Vietnam and Philippines. Kaeoket *et al.* (2010) and Paiboon (2012) reported that the quality of various brands of short-term and long-term extenders in terms of pH, osmotic pressure, sperm motility, viability and acrosomal integrity.

Average pH and osmotic pressure of some commercial semen extenders after dilution are shown in Table 2 and 3. The parameters including sperm motility, viability and acrosomal integrity of semen diluted with various extenders and stored at 18 °C are presented in Table 4.

Table 2. Mean value of pH and osmotic pressure of each commercial semen extender

Parameters	M-III (Germany)	OPTIM-I.A. (Spain)	BTS Gold (Thailand)	Average 6 long term extenders	Normal range
pH	7.20	7.35	7.15	7.20	6.8-7.2
Osmotic pressure	360	386	334	297	290-330

Adapted from Kaeoket K. *et al.*, 2010

A good semen extender should supply nutrients needed for metabolic maintenance of the sperm cell (glucose), provide protection against cold shock, control the pH and osmotic pressure of diluted semen and also inhibit microbial growth.

Regulating pH

The pH of fresh boar semen is in the range of 7.2-7.6. The activity of sperm cells results in a metabolic waste, the lactic acid which will reduce the diluted semen pH as well as sperm motility. Effective regulation of the pH of diluted semen is therefore, an essential property of semen extenders. The pH of commercial extenders is generally in the range of 6.8-7.3 as shown in Table 2.

Osmotic pressure

The osmotic pressure of boar semen varies between 290-300 mOsm. The osmotic pressure between

250-290 mOsm is, however, detrimental to sperm motility and viability (Fraser *et al.*, 2001). A good extender should therefore provide isotonic or a slightly hypertonic (300 mOsm) environment for the sperm cells.

Antibiotics

Bacterial contamination of boar semen may occur during semen collection process. The most common contaminations include *E. coli*, *Salmonella* and *Pseudomonas* species. Bacterial contamination could lead to alterations of semen quality including diminished sperm motility, sperm agglutination, clumping sperm, increased proportion of sperm with altered acrosomes and lowering the semen pH (5.7-6.4). Adding gentamicin at 200 mg/litre of semen extender can improve sperm viability and fertility.

Table 3. Mean value of pH and osmotic pressure of each commercial semen extenders after diluted with fresh semen on day 1, 3 and 5

Days	M-III (Germany)		OPTIM-I.A. (Spain)		BTS Gold (Thailand)		Average 6 long term extenders	
	pH	Osmotic pressure	pH	Osmotic pressure	pH	Osmotic pressure	pH	Osmotic pressure
1	7.3	355	7.4	378	7.3	333	7.3	298
3	7.0	354	7.4	374	7.4	332	7.1	299
5	6.8	354	7.5	377	7.4	332	6.7	299

Adapted from Kaeoket K. *et al.*, 2010



Table 4. Progressive Motility (PM), Viability (V) and Acrosome Integrity (AI) of each commercial semen extenders after diluted with fresh semen on day 1, 3 and 5 (Mean)

Days	M-III* (Germany)			OPTIM-I.A.** (Spain)			BTS Gold** (Thailand)			Average 6 long term extenders*		
	PM	V	AI	PM	V	AI	PM	V	AI	PM	V	AI
1	87	74	81	74	74	75	73	74	76	86	77	84
3	82	64	78	65	71	75	67	73	76	84	71	79
5	68	56	73	48	66	75	42	65	71	79	66	76

Adapted from Kaeoket K. et al., 2010

*; progressive motility of fresh semen started at 90%

**; progressive motility of fresh semen started at 75%

The average pH and osmotic pressure of each commercial semen extender before and after dilution and semen quality parameters including sperm motility, viability and acrosomal integrity of boar spermatozoa did not differ significantly among extenders during the first 3 days of storage. Motility tends to decline as storage time increases. The fertility of semen is, however, acceptable unless the storage time is longer than 72 hours (Alexopoulos *et al.*, 1996)

The biochemical compositions of short-term and long-term extenders are similar. Glucose is utilized as an energy source for cell metabolism and movement of sperm cell flagellum. Bicarbonate and sodium citrate are used as buffering agents while potassium chloride is used as osmotic regulator (Gadea, 2003).

The choice of semen extenders should depend on it proposes. When the storage time is less than 3 days, the most rational choice should be a short-term extender (M-III, OPTIM-I.A. or BTS Gold). This type of extenders is less expensive while semen quality and

fertility are quite appreciable. When the storage time needs to be longer than 3 days, a long-term extender must be used. Whether short-term or long-term extender is used, it should be kept in mind that there are many factors that can affect the fertility. A good extender should provide a potential to obtain good farrowing rate and litter size if extended semen is kept within the recommended storage time and temperature.





PerfectDigest™ - Redefining Peptides

PerfectDigest™ is a product line of membrane purified, isolated fractions of bio-active peptides obtained from fresh marine-sourced raw material. The secret of PerfectDigest™ in animal nutrition is due to its low molecular weight components and the bio-active nature of peptides which have not been denatured (the way fishmeal/solubles are denatured). This specifically prepares the nutrients for the peptide receptors in the animal gut, which have 2 times more affinity for peptides than for free amino acids. This allows the product to act as growth catalyst during juvenile animal development which greatly benefits poultry, pets and aquaculture applications.

Amino acids are essential building blocks for growth and as a source of energy for the gut mucosa. PEP T1 is a specific molecule found in the intestinal mucosa that efficiently transports di and tri peptides into the mucosa cell to provide energy source for the cell as well as amino acids to the blood stream. As the mucosa is the first level of defense for the immune system, PerfectDigest™ provides the fuel for improved immune response and animal performance.

Special Features

- Exclusively marine-sourced, ultra purified bio-active peptides for safe, pathogen-free nutrition
- Ultra low molecular weights for rapid digestion and gut absorption, resulting in higher weight gain, better FCR and early gut development
- Proven performance in broiler / layer breeders by increasing percentage lay
- Provides solution for supporting increased growth in low weight broilers and layers
- Adapted peptide products for specific applications across poultry requirements and production systems

Proven Performance

PerfectDigest™ provides for Increased Bioavailability of Peptides. University trials conducted in broilers where PerfectDigest™ was added to the drinking water show significantly increased levels of amino acids in the blood, especially during stress conditions. Trial results can be noted in Figure 2. Broiler performance increased by 9% in terms of weight gain and FCR improved by 3%.

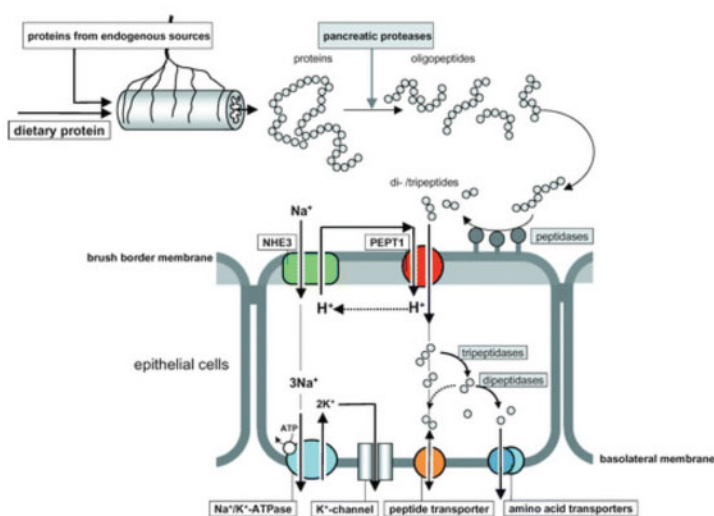


Figure 1. PEP T1 mechanism in absorption of di and tri peptides from the gut to supplying amino acids to the blood stream.

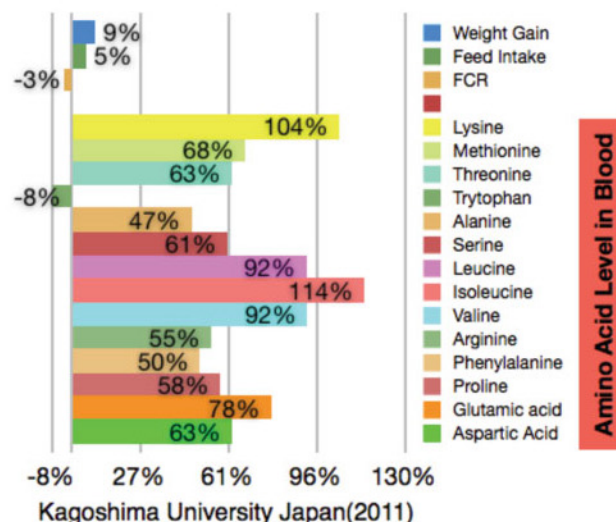


Figure 2. PerfectDigest™ FPI in broilers under heat stress (% change over control).



Feedback from the Field

In Broiler Breeders:

- Improved hatchability
- Higher Class A DOC
- More aggressive males
- Improved colouration
- Improved weight gain during moulting, better feathering and colouration

In Broilers:

- Improved ADG and FCR
- Compensatory growth in runt birds
- Improved colouration

PerfectDigest™ FPI in Broiler Breeders' Water

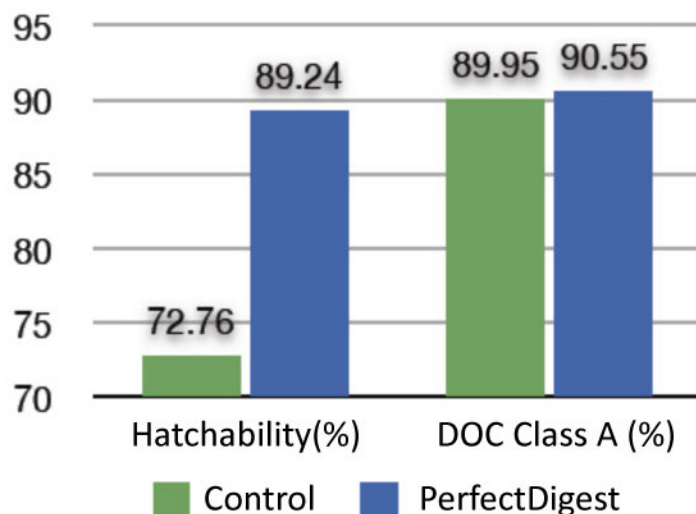


Table I : Broiler Trial: Kagoshima University, Japan 2012

Ross 308 Males. Standard Broiler diet. 0-27 days. 9 day Temperature Challenge: 33°C

	Control	Peptide Treatment (FPI LD I%)	Diff (%)
Day of Peptide treatment	-	15-27	
Day of Imposed heat stress	18-27	18-27	
Weight gain during trial (g/12days)	604	658	+8.9
Weight gain under summer stress (g/9days)	539	577	+7.0
Feed Intake during trial (g/12days)	1013	1066	+5.2
feed Intake during summer stress (g/9days)	856	897	+4.8
FCR during trial (12days)	1.69	1.64	
FCR under summer stress (9days)	1.60	1.57	



At the recently held Poultry Production Conference, Dr. Jo Vincente Mapa presented his experience with a marine sourced peptide in broiler breeders. The peptides were applied through the drinking water post peak for two weeks on a daily basis at the dose rate of 250 ml per 1000 heads. Results showed improvements in both hatchability and day old chick class A% (Figure 3). Interestingly, it was also noted from this same trial a number of qualitative attributes including:

- ◆ more aggressive males
- ◆ improved colouration of wattles and comb

Other results found from extensive infield use in the Philippines has shown improvements in FCR and ADG, improvements in runt bird weight, improved colouration of feathers especially on birds fed high wheat diets.

Research on peptides has been going on for many years and will continue for many more. Only recently have commercial sources of peptides containing high concentrations of di or tripeptides become available at acceptable costs and volumes. Based on the results from both university research and now field conditions, peptide use can be considered to be an effective tool for a number of poultry applications.

What is PerfectDigest™ FPI?

In simple terms, PerfectDigest™ FPI is a concentrated form of peptides with an ultra-low molecular mass. The eco-friendly source of the peptides includes by-product of the fish industry which is produced under “food grade” standards. As such, PerfectDigest™ FPI is free from pathogens including salmonella.

Applications and Solutions

PerfectDigest™ FPI in Drinking Water

Broilers	Day 0-7	Day 8 to Harvest	Stress Periods
FPI LD: ml/liter drinking water Apply for 6 hours/day	5-20	2-10	5-20
Layers/Breeders	Rearing 0-7 days	Stress Periods	1 week before lay
FPI LD: ml/liter drinking water Apply for 6 hours/day	5-20	5-20	2-10
Layers/Breeders	Peak	Post Peak	Stress Periods
FPI LD: ml/liter drinking water Apply for 6 hours/day	5-20	2-10	5-20



Bio-Active Peptides for Improved Immunity and Performance



8th International Poultry Show and Seminar, Bangladesh

For the year of 2013, we have planned to visit and participate in a few exhibitions in different continents to maintain and broaden our networks with the livestock industry players and also to promote the company and products to other countries.

The first exhibition that we have participated for this year was the 8th International Poultry Show and Seminar at Bangabandhu International Conference Centre, Dhaka, Bangladesh which was held from 28 February - 2 March 2013. This was the second time



we have participated at this exhibition as an exhibitor. The first time was two years ago where we were trying to explore in Bangladesh's animal livestock industry to look for potential distributor and customers. This year, we participated this exhibition with our distributor which we have appointed two years ago. We have managed to meet our existing customers and some potential ones in Bangladesh. For our existing customers, we were discussed about our products feedback and also how we can further to work together to improve the animals performance. As for the potential customers, we have shared the info regarding the products that they are interested.



During this exhibition, our colleague, Dr. Lai Pui Wah, a nutritionist, has presented a paper on a new product (OsmoPRE-IMO) which has been developed last year. It is a prebiotic which helps to enhance the animals performance.



VIV Asia 2013, Bangkok, Thailand



In the mid of March 2013, we have also visited VIV Asia 2013, at Bangkok International Trade and Exhibition Centre (BITEC), Bangkok, Thailand. We have participated at this exhibition as visitors. At this exhibition, we have managed meet our suppliers and existing customers there. It is a very big exhibition in Asia and a lot of exhibitors participated at this exhibition, thus, it was a great chance for us to meet with our suppliers from around the globe to discuss our business plans, marketing strategies and etc. there.

At the same time, we also managed to meet up with my clients from different countries such as Bangladesh, Pakistan, Thailand, The Philippines, Taiwan and etc. to update our planning on how to develop the business in the respective countries. Apart from that, we were also able to discuss with some potential suppliers especially in aquaculture and ruminant sectors because we intend to have more variety of products for these two sectors.



For the coming exhibitions, we might participate at VIV Russia 2013 in Moscow, Russia, Livestock Asia 2013 in Kuala Lumpur, Malaysia and Livestock Myanmar 2013, in Yangon, Myanmar as an exhibitor or visitor to generate more potential customers.



精液稀释液-对于精液品质和生育能力之影响

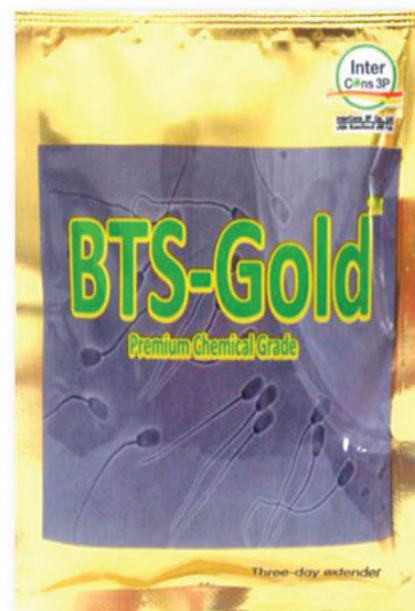
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在泰国, 90%以上的养猪场使用人工授精(AI)。因此, 监控精液品质是大多数农场的例行程序。采精后, 常规检查新鲜精液。每隔一段时间, 每三至四个月, 精液样本将被送到大学实验室, 检测更复杂的精液品质特性如顶体的完整性。

虽然精液稀释液遍布世界各地, 该地区的主要来源来自泰国。一般情况下, 有两种类型的稀释液, 短期(可储存一至三天)和长期(可储存五至七天)。可长期

储存的稀释液通常包含更复杂的缓冲系统和抗氧化剂, 价格也比较昂贵。

精液品质的监控组成的宏观检验(量、颜色、pH值、温度、渗透压)和显微镜检验(精子活力、精子形态、死/活精子、浓度)。表一显示正常和限定之参数值, 以确定精液品质。虽然有几个参数, 精子活力是最简单的测量, 它也是一个指标显示精子质膜的完整性, 精子代谢和受精能力。



表一、采精24小时内, 精液品质之正常值和限定参数值

射精特性	正常值	限定值
射精量	100-500 ml	50 ml
总精子/射精 (十亿)	10-100	10
活力	70-90%	60%
凝集 (显微镜的覆盖率%)	0-10%	25%
顶体的完整性	90%	60%
生存能力	90%	70%

改编自Kaeoket K.等, 2010

在泰国、马来西亚、越南和菲律宾有许多不同品牌的公猪精液稀释液。Kaeoket等（2010）和Paiboon（2012）的报告中指出各品牌的可短期和长期储存的精液稀释液之pH值、渗透压、精子活力、存活率和顶体的完整性。

表二和表三显示一些商业精液稀释液的平均pH值和渗透压。表四显示存储于18°C的各种精液稀释液，参数包括精子活力、存活率和顶体完整性。

表二、各商业精液稀释液之平均pH值和渗透压

参数	M-III (德国)	OPTIM-I.A. (西班牙)	BTS Gold (泰国)	平均6种可长期储存的精液稀释液	正常范围
pH值	7.20	7.35	7.15	7.20	6.8-7.2
渗透压	360	386	334	297	290-330

改编自Kaeoket K.等, 2010

一个好的精液稀释液应提供可延长精子细胞维持代谢所需的营养（葡萄糖），提供防止冷休克的保护，控制稀释精液的pH值和渗透压，也抑制微生物的生长。

存能力（Fraser等，2001）。因此，一个好的精液稀释液必须提供等渗压或略高渗压（300 mOsm）的环境于精子细胞。

调节pH值

新鲜的公猪精液的pH值在7.2-7.6的范围内。精子细胞的活动会排出代谢废物，乳酸会降低精液的pH值和精子活力。因此，稀释精液的pH值可有效地被监管，这是精液稀释液的必要属性。商业精液稀释液的pH值一般是在6.8-7.3的范围内，列于表二。

抗生素

在采精过程中，公猪精液可能会受到细菌的污染。最常见的污染物包括大肠杆菌、沙门氏菌和假单胞菌属。细菌污染可能会导致精液品质的改变，包括精子活力下降、精子凝集、精子顶体改变的比例增加和降低精液的pH值（5.7-6.4）。每公升精液添加200毫克的庆大霉素可提高精子的活力和生存能力。

渗透压

公猪精液的渗透压介于290-300 mOsm。但是，250-290 mOsm的渗透压，不利于精子的活力和生

表三、在第一、三和五天，经由各品牌稀释液稀释的新鲜精液之平均pH值和渗透压

天	M-III (德国)		OPTIM-I.A. (西班牙)		BTS Gold (泰国)		平均6种可长期储存的精液稀释液	
	pH	渗透压	pH	渗透压	pH	渗透压	pH	渗透压
1	7.3	355	7.4	378	7.3	333	7.3	298
3	7.0	354	7.4	374	7.4	332	7.1	299
5	6.8	354	7.5	377	7.4	332	6.7	299

改编自Kaeoket K.等, 2010



表四、在第一、三和五天，经由各品牌稀释液稀释的新鲜精液之精子活力(PM)、生存能力(V)和顶体的完整性(AI)

天	M-III* (德国)			OPTIM-I.A.** (西班牙)			BTS Gold** (泰国)			平均6种可长期储 存的精液稀释液*		
	PM	V	AI	PM	V	AI	PM	V	AI	PM	V	AI
1	87	74	81	74	74	75	73	74	76	86	77	84
3	82	64	78	65	71	75	67	73	76	84	71	79
5	68	56	73	48	66	75	42	65	71	79	66	76

改编自Kaeoket K.等, 2010

*; 新鲜的精液精子活力始于90%

**; 新鲜的精液精子活力始于75%

各商业精液稀释液在稀释前后的平均pH值和渗透压和精液品质参数包括精子活力、生存能力和公猪的精子顶体完整性在前三天的储存期间并没有显著差异。精子活力会随着存放时间的增加而呈现下降的趋势。但是，只要存放的时间较长，超过72小时，精子的生育力是可以被接受的（Alexopoulos等，1996）。

和生育能力是相当可观的。当存放时间需要多于三天，必须使用可长期储存的精液稀释液。无论是使用短期或长期储存的精液稀释液，还是有许多因素可以影响生育。如果经过稀释的精液保存在推荐的存放时间和温度下，一个好的精液稀释液是可以带来良好的生产率和产仔数。

可短期和长期储存的精液稀释液的生化组成相似。葡萄糖被用作为细胞代谢和精子鞭毛活动的能量来源。碳酸氢钠和柠檬酸钠被用作为缓冲剂而氯化钾可调节渗透压（Gadea, 2003）。

精液稀释液的选择应取决于它的目的。当存放时间不超过三天，最合理的选择应该是一个可短期储存的精液稀释液（M-III, OPTIM-IA或BTS Gold）。这种类型的精液稀释液比较便宜，而精液的品质





PerfectDigest™ - 重新定义生物活性肽 (Peptides)

PerfectDigest™的产品线源自新鲜的海洋原料，是一种经由薄膜的分离和纯化的生物活性肽(bio-active peptides)。在动物营养方面，PerfectDigest™的秘诀在于其低分子量组成和稳定性(鱼粉/可溶物的变性)的生物活性肽，可以具体地为动物肠道中的肽受体提供营养份，对肽受体的亲和力比游离氨基酸高两倍。这使得该产品可以增长及催化年幼动物生长及发育，大大地有利于家禽，宠物和水产养殖业的应用。

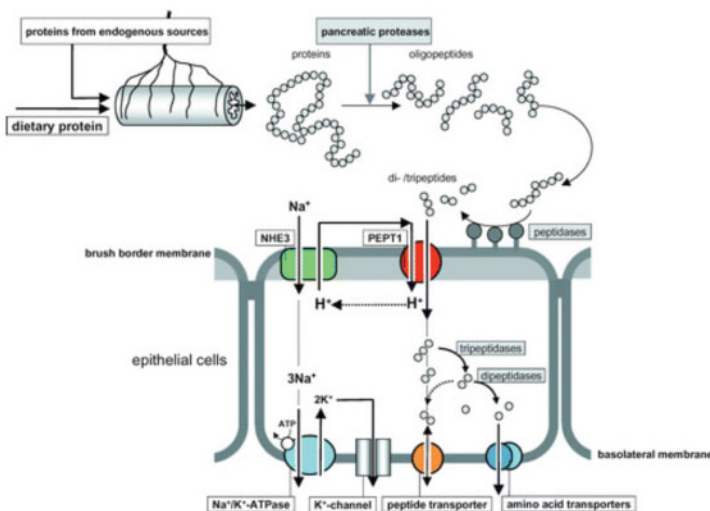
产品特色

- 源自于海洋，超纯化的生物活性肽，安全，无病原体的营养
- 超低分子量可被快速地消化及肠道吸收，可以促进日增重，更好的换肉率和早期肠道粘膜的免疫反应
- 增进肉鸡生产性能/蛋鸡种鸡产蛋率
- 为弱小的肉鸡和蛋鸡提供营养份，促进生长，改善鸡群的整齐度
- 经改良的生物活性肽产品符合家禽需求和生产系统

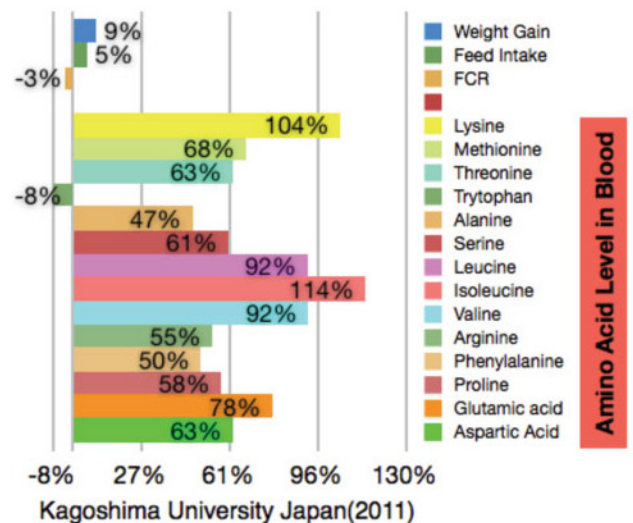
氨基酸是动物生长的重要基石和提供肠道黏膜的能量来源。PEP T1是一种在肠道粘膜内的特定分子，可有效地输送二肽(dipeptides)和三肽(tripeptides)到粘膜细胞内，为细胞提供能量，以及供应血液内所需要的氨基酸。由于肠道粘膜是免疫系统的第一防御，PerfectDigest™能够改善动物的免疫反应和生产性能。

被证实的性能

PerfectDigest™提供较高的生物活性肽的有效性。在大学所进行的肉鸡实验中发现，在饮水中添加PerfectDigest™，尤其是在紧迫的情况下，可显著地提高血液中氨基酸。图二显示实验结果。肉鸡的体重增加9%和改善换肉率3%。



图一、PEP T1机制从肠道吸收二肽和三肽以提供氨基酸于血液内。



图二、使用PerfectDigest™ FPI于热紧迫之肉鸡(与对照组相比%)。



现场反应

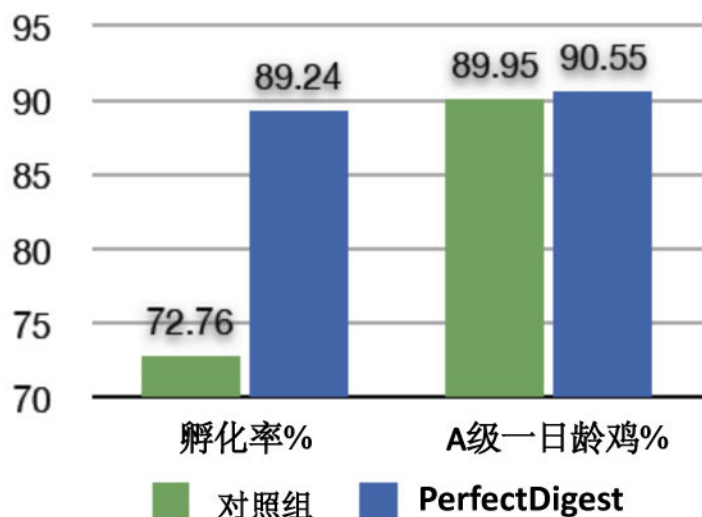
种鸡:

- 改善孵化率
- 较多的A级一日龄小鸡
- 较佳的公鸡
- 改善色泽
- 在换羽时，改善增重，较佳地羽毛和色泽

肉鸡:

- 改善每日增重和换肉率
- 弱小的鸡有代偿性的生长
- 改善色泽

添加PerfectDigest™ FPI在种鸡饮水中



表一，肉鸡实验：日本鹿儿岛大学，2012

Ross 308公鸡，标准肉鸡日粮，0-27日，9天热紧迫挑战：33°C

	对照组	生物活性肽实验组 (FPI LD 1%)	差异 (%)
生物活性肽实验组的使用天数	-	15-27	
热紧迫天数	18-27	18-27	
实验中之增加 (克/12天)	604	658	+8.9
在夏季热紧迫下之增重 (克9天)	539	577	+7.0
实验中之摄食量 (克12天)	1013	1066	+5.2
在夏季热紧迫下之摄食量 (克9天)	856	897	+4.8
实验中之换肉率 (克12天)	1.69	1.64	
在夏季热紧迫下之换肉率 (克/9天)	1.60	1.57	



在近期的肉鸡生产研讨会中，Jo Vincente Mapa博士发表了有关喂饲源自海洋原料的生物活性肽对肉鸡种鸡性能的经验。在高峰期后的两个星期，每1000只鸡添加250毫升的肽于每天饮水中，结果显示孵化率和A级的一日龄小鸡%都有改善（图三）。在实验中，也发现了以下有趣的现象：

- ◆ 较佳的公鸡
- ◆ 肉垂和鸡冠之色泽较佳

其它在菲律宾的现场实验结果也显示较佳的换肉率、每日增重、改善弱小鸡之体重、改善羽毛色泽，尤其是喂饲高小麦的鸡只。

对肽的研究已持续多年，并会继续有更多的研究，在近期出现商业化的高浓度二肽或三肽却可应用在动物生产事业，成本的生意效应也被业者接受，其应用量也不断地在增长。基于大学的研究结果和现场的条件，肽的使用于家禽是有效的。

什么是PerfectDigest™ FPI?

简单来说，PerfectDigest™ FPI是一种浓缩和超低分子量的生物活性肽。这种生态友好的肽源自“食品级”标准的鱼品加工业之副产品。因此，PerfectDigest™ FPI不含病原体，包括沙门氏菌。

应用和解决方案

在饮水中添加PerfectDigest™ FPI

肉鸡	0-7天	第8天至售卖	紧迫期
FPI LD: 毫升/公升饮水 使用于6小时/天	5-20	2-10	5-20
蛋鸡/种鸡	0-7天	紧迫期	产蛋前一星期
FPI LD: 毫升/公升饮水 使用于6小时/天	5-20	5-20	2-10
产蛋期	高峰期	高峰期后	紧迫期
FPI LD: 毫升/公升饮水 使用于6小时/天	5-20	2-10	5-20



生物活性肽改善免疫和性能



8th International Poultry Show and Seminar, 孟加拉

在2013年，我们计划在不同的国家观摩和参与展览会，以维护和扩大我们与畜牧界的联系，同时推广公司和产品到其他国家。

今年我们参与的第一个展览会是2013年2月28至3月2日在Bangabandhu International Conference Centre达卡，孟加拉所举办的8th International Poultry Show and Seminar。这是我们第二次以参展商名义参加此展览会。



第一次参展是在两年前，我们探索孟加拉国的畜牧业和寻找分销商和客户。今年，我们与两年前委任的分销商参加了此展览会。我们与现有的孟加拉国客户和一些潜在的客户会面。对于现有的客户，我们收集他们对产品的意见和讨论如何提高动物的生产性能。至于潜在的客户，我们共享产品的信息。



在此展览会上，本公司的营养师，黎配华博士发表了一篇有关在去年研发的新产品（OsmoPRE-IMO）的报告。它是一种益生元，有助于提高动物的生产性能。



VIV Asia 2013, 曼谷, 泰国



在2013年3月中，我们也参加了在Bangkok International Trade and Exhibition Centre (BITEC)，泰国所举办的VIV Asia。在此展览会上，我们与供应商和客户会面。这是一个在亚洲非常大的展览会，很多厂商都参展。因此，这是一个很好的机会与世界各地的供应商讨论业务计划、营销策略等。

同时，我们也来自不同国家，如孟加拉国、巴基斯坦、泰国、菲律宾、台湾等国家的客户更新我们的营销规划，如何在各自的国家发展业务。此外，我们还能够与一些潜在的供应商，特别是在水产养殖和反刍动物方面的厂商交流，因为我们打算在两方面有更多种类的产品。



对于未来的展览会，我们可能参与在俄罗斯莫斯科的VIV 2013、马来西亚吉隆坡的Livestock Asia、缅甸仰光的Livestock Myanmar 2013，以寻找更多的商业机会。

