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Inclusion Body Hepatitis (IBH) in Commercial Broiler Chicken 肉鸡场的包涵体肝炎

What is Inclusion Body Hepatitis (IBH)? 什么是包涵体肝炎 (IBH)?

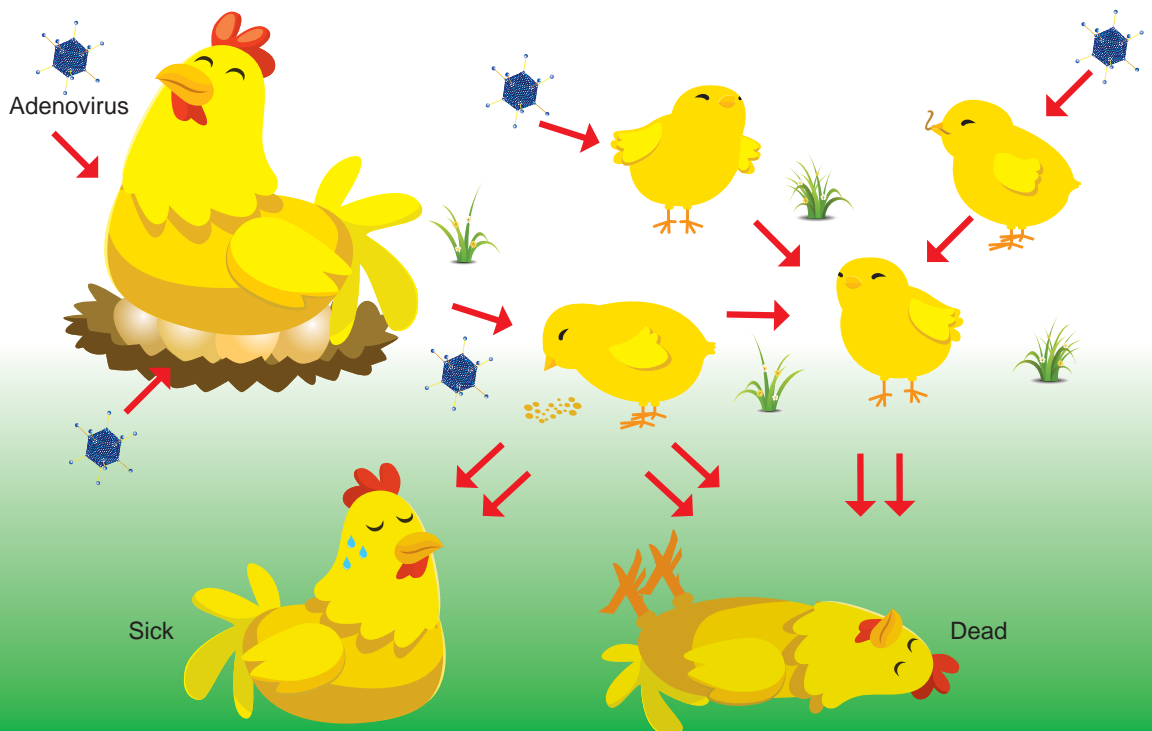
Inclusion body hepatitis has been reported in many countries in the world and widespread throughout all avian species. IBH was first reported by Helmboldt and Frazier (1963) in USA. IBH in chicken is a disease caused by Group I adenovirus. Group I avian adenovirus are ubiquitous in domestic fowl but low virulence and frequently isolated from healthy chicken (Philippe, C. et al., 2005). Avian adenovirus has 12 different serotypes, the common serotype 4 and 8 causes lesion of hydropericardium and peracute inclusion body hepatitis (Philippe, C. et al., 2005). Morbidity is low but mortality can reach 10% and may up to 30%. This disease normally occurs in meat producing birds at 3-7 weeks of age but it may as early as < 1 week old. The incubation period of adenovirus is 3-4 days (Hair-Bejo, M, 2005). The duration of infection is up to 14 days. Immunosuppression chicken caused by Infectious Bursal Disease (IBD) and Chicken Anemia Virus (CAV) was found increased incidence of IBH and death (Calnek et al., 1991).

在许多国家都有报道包涵体肝炎及在所有禽类的广泛流传。IBH是由 Helmboldt 和 Frazier (1963) 首次在美国报道。包涵体肝炎是由I群腺病毒引起。I群禽腺病毒无处不在，但毒力较低，健康鸡只的体内也存在着 (Philippe, C. et al., 2005)。鸡腺病毒有12个血清型，其中血清型4和8是引起心包积水及急性包涵体肝炎的病变 (Philippe, C. et al., 2005)。发病率较低，但死亡率可达到10%，或可能高达30%。这种疾病通常发生在3-7周龄的雏鸡，但它也可早在1周龄前发生。禽腺病毒的潜伏期为3-4天 (Hair-Bejo, M, 2005)。感染的时间持续长达14天。感染传染性法氏囊病 (IBD) 和鸡贫血病毒 (CAV) 的鸡只往往会影响 IBH 的发病率和死亡 (Calnek et al., 1991)。

How do the virus to infect the chicken? 鸡只如何感染病毒?

Adenovirus can be transmitted horizontal and vertical. Infected chick can transmit virus horizontally through direct contact and indirectly such as contaminated feed and equipment.

禽腺病毒可以通过水平和胚胎垂直传播。水平传播描述此病毒是通过污染的饲料和设备传播在鸡群中。



What are the clinical signs? 临床症状有哪些?

- ✓ Depression 精神不郁
- ✓ Lethargy 嗜睡
- ✓ Ruffled feather 羽毛蓬松
- ✓ Inappetence 食欲不振
- ✓ Greenish diarrhea 下痢
- ✓ Huddling and smothering 拥挤和窒息

What should I observe during post mortem? 剖检病变?

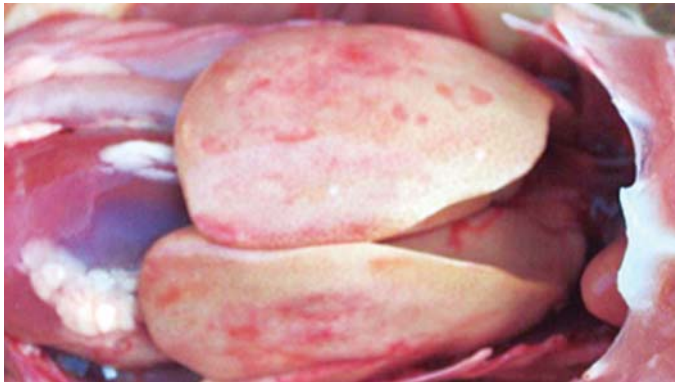


Figure 1: Enlarged pale mottled, white necrotic liver with friable texture, showing pin-point or petechiae haemorrhage.

图1：肝脏肿大苍白，质脆，有点状或斑状出血

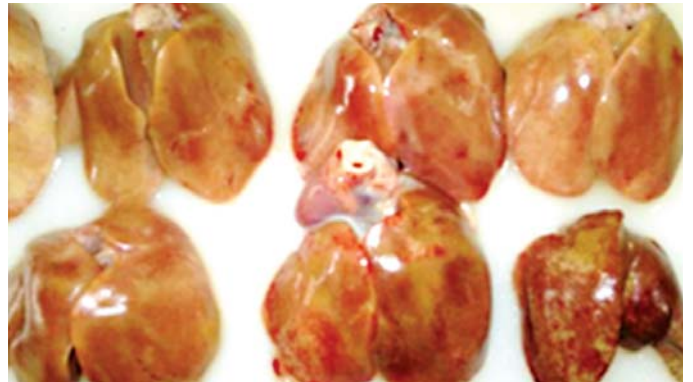


Figure 2: Enlarged, yellowish multifoci necrotic livers with friable texture.

图2：肿大，质脆，并有针尖形黄白色坏死肝



Figure 3: Enlargement and congestion with focal necrotic area in the kidneys.

图3：肿大充血和灶性坏死的肾脏



Figure 4: Swelling, urate deposition and mottled haemorrhage in kidneys.

图4：肿胀，尿酸盐沉积在肾脏和斑状出血

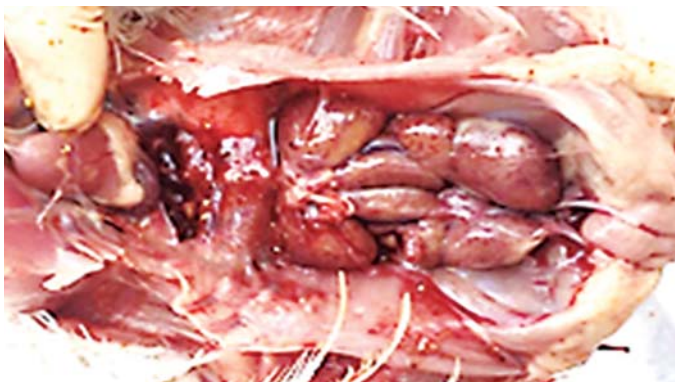


Figure 5: Swelling and petechiae haemorrhage in kidneys.

图5：肿胀，点状出血在肾脏



Figure 6: Normal liver and heart (Left), yellowish hepatitis and hydropericardium (arrow) (Right).

图6：正常的肝脏和心脏（左），呈黄色肝炎和心包积水（箭头）（右）

What should I observe under a microscope? 显微镜检的病变?

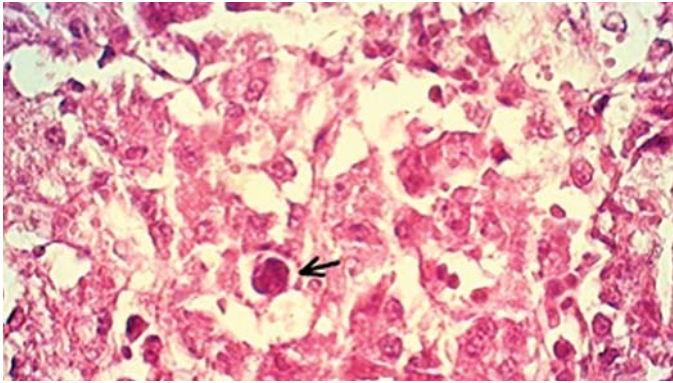


Figure 7: Large eosinophilic intranuclear inclusion body (arrow). (Liver)(Rahimi et al., 2015)
图7：嗜碱性核内包涵体（箭头）(肝脏)
(Rahimi et al., 2015)

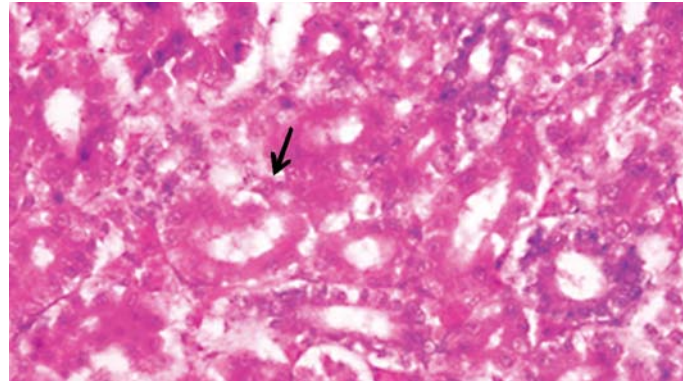


Figure 8: Degeneration and necrosis of tubular epithelium with intranuclear inclusion bodies (arrow), focal haemorrhage and mononuclear cell infiltration. (Kidney) (Kumar et al., 2013)
图8：小管上皮细胞发生变性和部分已坏死（箭头），灶性出血和浸透单核细胞（肾）

How to treat? How to prevent? 如何治疗？如何预防？

- ✓ No treatment for IBH. Antibiotic may help to prevent secondary bacterial infection. Liver supplement such as MEBOLIV (pic 1) can be recommended to protect liver and regenerate the damage liver tissue. Multivitamin supplement can help in recover process.
- ✓ Vaccination is recommended to prevent outbreak in the farm. Avian adenovirus serotype 4 and 8 are commonly used in commercial vaccine. There was a UPM research suggests proper vaccination strategies should be developed, FAdV-8b serotype IBH was identified as common IBH outbreak in Malaysia commercial broiler farm. (Hair-Bejo, M. et al., 2014)
- ✓ Proper vaccination program must be carried out to prevent immunosuppression diseases that can exacerbate IBH.
- ✓ Proper biosecurity and disinfection program to destroy virus out of the farm.
- ✓ IBH没有任何的治疗。抗生素可能有助于防止二度的细菌感染。肝脏补剂，如MEBOLIV（图1）可用来保护肝脏和再生受损的肝组织。多种维生素的补充剂可帮助肝脏的复原。
- ✓ 疫苗接种可尽量防止农场的爆发。4和8血清型的禽腺病毒较常使用在商业疫苗。UPM的研究表明，应制定适当的疫苗接种策略。马来西亚肉鸡场IBH的爆发已确认是FADV-8B血清型的IBH。(Hair-Bejo, M. et al., 2014)
- ✓ 必须进行适当的疫苗接种计划，以防止免疫抑制性疾病，避免引发IBH。
- ✓ 加强生物安全和消毒程序可消灭农场的病毒。



Control Infectious Bursal Disease (Gumboro Disease) by vaccination

- Part 2/2 By Dr Teguh Prajitno



控制传染性法氏囊病(甘保罗病)疫苗接种 – 第2篇

Evaluating safety and efficacy 安全性和有效性的评定

There are no live IBD vaccines which will not affecting bursa and causing transient lymphoid depletion. Both, seeds trains and antigen contents of the vaccines can cause lesions to various degree and recovery of bursa is considered normal after 3.5-4 weeks post vaccination. There are two ways to measure the bursal damages caused by both, vaccination and field challenge.

The first method is determining the bursal damage by histological staining of formalin fixed tissues.

The second method is determining the ration of bursa weight to the chicken body weight. This provides us an idea of bursal lymphoid depletion, and

Since strain LZD228 is an intermediate plus strain, transient bursal lymphoid depletion is expected. In Tab.2 we compare 4 Gumboro intermediate plus vaccines and their recovery rates of bursa of fabricius are documented below:

5 groups with each 20SPF chickens of 14-days of age were vaccinated with 5 doses of intermediate plus vaccines per bird, where group 1 (IBD A) has been using an EuroAsian strain, group 2 and group 3, have been using Winterfield 2512 strains and group 4 has been using Vaksimune IBD D, while group 5 was the negative control.

It was obvious that 3 weeks old vaccinate birds have showed slight to severe bursal lymphoid depletion with scores from 1-4., while bursa start to recuperate by 4 weeks post vaccines and for Vaksimune IBD D has almost been fully recovered at 5 weeks post vaccines.

所有的IBD活性疫苗都会影响到法氏囊和造成淋巴组织短暂衰竭。疫苗的种株和疫苗的抗原含量都可会导致病变的程度有所不同。疫苗接种后，法氏囊在第3.5-4周的恢原属于正常。有两个方法可以测量法氏囊是由疫苗接种和野外病毒挑战所破坏的。

第一个方法是透过染色镜检来鉴定法氏囊的损坏。

第二个鉴定的方法是法氏囊重量和鸡只重量之比来说明法氏囊的衰竭。

LZD228株是属中等毒力加强型疫苗，所以法氏囊短暂的衰竭是意料之中。在图表2我们比较了4种甘保罗中等毒力加强型的疫苗和法氏囊复原的比率：

5组个别20只14天龄的SPF鸡，每只鸡只给予5剂量的中等毒力加强型疫苗，第1组（IBD A）使用了EuroAsian株，第2和第3组使用Winterfield 2512株，第4组使用Vaksimune IBD D，而第5组则是对照组。

接种疫苗鸡只在第3周龄很明显地从分数1-4呈现法氏囊轻微到严重的衰竭。而在接种疫苗后，法氏囊开始在第4周复原，使用Vaksimune IBD D疫苗鸡只的法氏囊基本在第5周已经完全复原。

Principal	Age	Histopathology - Lymphoid Folicles Depletion (%)				
		0 (Normal)	1 (<15%)	2 (15-30%)	3 (31-60%)	4 (>61%)
IBD A	3 W				2/5 (40%)	3/5 (60%)
IBD M	3 W		1/5 (20%)			4/5 (80%)
IBD C	3 W			1/5 (20%)		4/5 (80%)
Vaksimune IBD D	3 W			1/5 (20%)	1/5 (20%)	3/5 (60%)
Control	3 W	5/5 (100%)				
IBD A	4 W		1/5 (20%)	1/5 (20%)	2/5 (40%)	1/5 (20%)
IBD M	4 W		1/5 (20%)		3/5 (60%)	1/5 (20%)
IBD C	4 W		1/5 (20%)	1/5 (20%)	1/5 (20%)	2/5 (40%)
Vaksimune IBD D	4 W		1/5 (20%)	3/5 (60%)		1/5 (20%)
Control	4 W	4/5 (80%)	1/5 (20%)			

Principal	Age	Histopathology - Lymphoid Follicles Depletion (%)				
		0 (Normal)	1 (<15%)	2 (15-30%)	3 (31-60%)	4 (>61%)
IBD A	5 W		3 (30%)	1/10 (10%)	2/10 (20%)	4/10 (40%)
IBD M	5 W	1/10 (10%)	1/10 (10%)	2/10 (20%)	1/10 (10%)	5/10 (50%)
IBD C	5 W	1/10 (10%)	1/10 (10%)	6/10 (60%)		2/10 (20%)
Vaksimune IBD D	5 W		10/10 (100%)			
Control	5 W	10/10 (100%)				

Tab.2 Bursal lymphoid follicle depletion after vaccination with 4 selected IBD intermediate plus vaccines and its recovery.

图表2：4种不同的甘保罗中等毒力加强型疫苗对法氏囊衰竭和复原的比较。

Bursa : Bodyweight Ratio Index (BBWI) 法氏囊：鸡只体重比率值

Bursal atrophy after vaccination can be measured by calculation of bursa/body weight ratio using the formula given below:

B: B index: B:BW ratio of vaccinated chicks/mean B:BW ratio of control group

Chickens with a B:BW index lower than 0.70 are considered to have bursal atrophy.

Due to heavy epidemiological challenge in Asia more and more countries requires usage of intermediate plus vaccines, which cause transient bursa atrophy till 4-5 weeks post vaccination.

The agreed classification at 4 weeks post vaccination is determined as follows:

IBD mild vaccine, BBWI >_ 0.7

IBD Intermediate vaccine, BBWI >_ 0.4 - < 0.7

IBD intermediate plus vaccine, BBWI >_ 0.3 < 0.4

疫苗接种后，可以通过法氏囊和鸡只重量的比率来计算法氏囊的萎缩：

法氏囊：法氏囊值：法氏囊：疫苗鸡只体重比率/法氏囊平均值：对照组鸡只体重比率

鸡只的法氏囊：鸡只体重值少于0.70可结论为法氏囊萎缩。

由于在亚洲有很多病学的挑战，越来越多的国家要求使用中等毒力加强型疫苗，这在疫苗接种后，法氏囊短暂的萎缩可到第4-5周。

普遍上疫苗接种后4星期的分类如下：

IBD温和型疫苗，BBWI >_0.7

IBD中等毒力疫苗，BBWI >_0.4 - <0.7

IBD中等毒力加强型疫苗，BBWI >_0.3 <0.4

Fig.3 shows BBWI of 4 different IBD intermediate plus vaccines at 3, 4 and 5 weeks post vaccination. It clearly shows that Vaksimune IBD D and Vaccine no.3 have recovered faster than vaccines no. 1 and no. 2.

图表3显示出4种不同IBD中等毒力加强型疫苗在接种后的第3,4和5周的BBWI。这清楚地表明，Vaksimune IBD D和第3排名疫苗的法氏囊复原比起第1和第2排名疫苗更快。

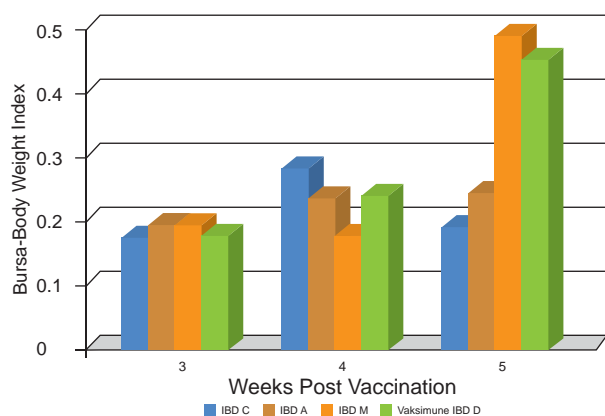


Fig.3 Comparison of BBWI and the recovery rate of 4 intermediate plus vaccines.

图表3：4个中等毒力加强型疫苗的BBWI和复原率的比较

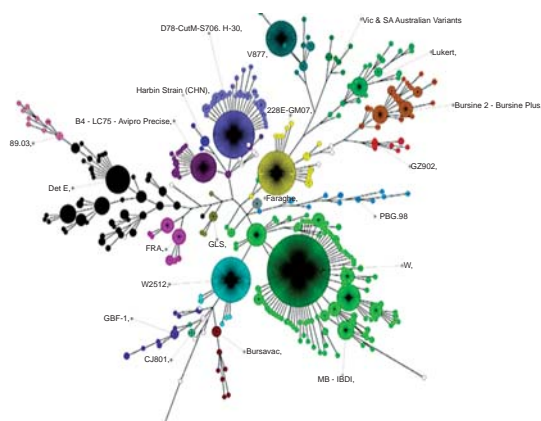


Fig. 4 IBD phylogenetic tree of IBD strains. According to Dr. Sjak de Wit there are 19 groups.

图表4：IBD毒株的“系统发生树”。据Dr. Sjak de Wit的解说一共有19组。

Vaccination Timing 疫苗接种的时间

In order to have chickens protected against IBDV field challenge, it is crucial to determine the optimal timing for IBD vaccine delivery. The optimal timing is often predicted based on serological data following detection of IBDV MDA by an ELISA system during the first week post hatch (Kouwenhoven & van den Bos, 1992; 1994). The "Deventer formula" was developed to estimate the optimal vaccination time point based on the half life time of the MDA, the age of the chicken at sampling, genetic background, breakthrough titre of the vaccine, and the requested percentage of the flock having antibody levels below the breakthrough titre of the vaccine at the time of administration (de Wit, 1998, 2001)



为了保护鸡只对抗野外的 IBDV 挑战，合适时机使用 IBD 疫苗是其关键。最佳时机经常是基于第一周孵化后，通过 ELISA 的 IBDV MDA 检测的血清学数据来预测 (Kouwenhoven & van den Bos, 1992; 1994)。“Deventer 方式”是基于 MDA 的半衰期，鸡只抽血的天数，基因背景，突破母源抗体，雏鸡从母源抗体水平降至“疫苗敏感水平”的巴仙率，都是用来预测疫苗接种的最佳时机。

Jakarta, Dec 13, 2015

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有关详细的资料，请联络 F.E Venture Sdn Bhd 03-5633 3493 或 Dr. Ong 012-329 1854

Swollen kidney lesions - caused by Mycotoxicosis or variant IB Infections? 肾脏肿大的病变 - 是由霉菌毒素中毒或感染野菌 IB 而造成?

Recently there are many cases of swollen kidney lesions observed in broiler farms, we frequently ask what the causes of these lesions are.

What are the FAQ?

1. Mycotoxin could produce a wide array of clinical manifestations in poultry, including swollen kidney?
2. Is it conclusive to diagnose ochratoxicosis based on the post mortem findings of swollen kidneys?
3. A confirmatory diagnosis could be very complicated. Do we have sufficient time and budget to diagnose mycotoxicosis?
4. Clinical findings of such swollen kidneys along with some respiratory problem could be suggestive of nephropathogenic infectious bronchitis (IB)?
5. How does infectious bronchitis (IB) different from mycotoxicosis?



What is Infectious Bronchitis?

Infectious bronchitis is respiratory disease in poultry caused by an enveloped, single-stranded RNA virus called coronavirus. The virus is fairly labile (fragile), being easily destroyed by disinfectants, sunlight, heat and other environmental factors. Hence, biosecurity is the first line of defense. Effective cleaning and disinfection protocol shall be adopted from a reliable supplier.

IB virus has the ability to mutate or change its genetic makeup readily. As a result, numerous serotypes have been identified and have complicated efforts at control through vaccination. Three common serotypes in North America are the Massachusetts, Connecticut, and Arkansas 99 IB viruses. In Europe, various "Holland variants," usually designated using numbers (D-274, D-212) are recognized. Several strains of IB virus have a strong affinity for the

kidney (nephropathogenic strains). These strains may cause severe renal damage. From here, we arrive at a point that we need a vaccination program that could cover the widest serotypes and one that could confers the highest protection to the chickens.

Live vaccine confers local immunity whilst a killed vaccine confers higher antibody protection, and does this mean that the combination of live and killed is sufficient to constitute a successful vaccination? I think nobody is sure about the answer to this question. However, I could have a suggestion for the better immune response, which could invite a better chance of protection.

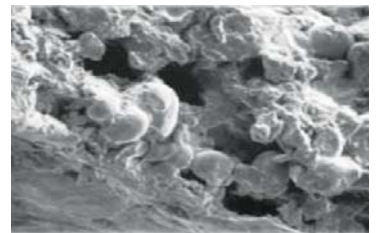
Nutritional supplements such as prebiotic, probiotic, volatile fatty acids, organic acids, essential oils and herbal extracts are some example that could be used to boost immune response. Of course, they are different in the way they work. Some are effective experimentally but is quite difficult to be used practically at the farm level.

A new nutraceutical product called AviCare™, is consist of yeast fermentation metabolites, which is a prebiotic formulation. AviCare™ could provide local intestinal immunity as well as systemically. The healthy intestinal flora ensures the birds are stable and readily responsive to vaccination. Besides, the nutrilites could reduce vaccinal stress and vaccine reaction. Hence, there is no harm to provide AviCare™ before and after vaccine as more nutrients are partitioned towards building the immunity. As rule of thumb, providing supplements at time of stress or challenges could help the birds to perform on par with the performance standard.

最近有很多肾脏肿大的病变发生在肉鸡养殖场，到底这些病变的原因是什么。

常见的问题如下？

1. 霉菌毒素对家禽可会有多种的临床病变，包括肾脏肿大？
2. 解剖发现肾脏肿大的病变可诊断为赭曲霉毒素中毒？
3. 验证诊断将会是非常复杂的过程。我们是否有足够的时间和资金预算来诊断霉菌毒素中毒？
4. 肾脏肿大加上一些呼吸道的临床症状可能会是肾型传染性支气管炎（IB）吗？
5. 如何分辨传染性支气管炎（IB）和霉菌毒素中毒？



什么是传染性支气管炎？

传染性支气管炎是由不分段的正链单股 RNA 病毒称名为冠状病毒而引起家禽的呼吸系统疾病。该病毒是相当不稳定（脆弱），病毒对环境抵抗力不强，对消毒剂过敏，容易被高温破坏。因此，生物安全是防御的第一道防线。采用可靠供应商的产品才确保有效的清洁和消毒。

IB 病毒具有很强的变异性，随时改变其基因构成的能力。目前已确定出多个的血清型并通过接种疫苗来控制。在北美洲三种常见的血清型是 Massachusetts, Connecticut, 和 Arkansas 99 IB 病毒。在欧洲，各种“变异株”通常是使用指定的数字（D-274, D-212）来认可。有些 IB 毒株能引起肾脏病变（肾型株）。这些菌株可能会严重损害肾脏的功能。因此，我们需要一个可以涵盖广泛血清型并给予鸡只最高保护的疫苗接种计划。

活性疫苗可以给予局部免疫力而灭活疫苗则可以给予较高的抗体保护，但这是否意味着使用这两种组合的疫苗就足以给予足够的保护？我想肯定没有人能回答这个问题。不过，我可有一个加强免疫反应，续而给予更好保护的提议。

营养补充剂如益生元，益生菌，挥发性脂肪酸，有机酸，精油和草药提取物，都是能提高免疫反应的产品。当然，它们是由不同的方式达到其效果。实验室的研究效果不一定能在农场展现出来。

新营养药物产品 - AviCare™，是由酵母发酵代谢产物的一种益生元。AviCare™ 可以提高肠道免疫力。健康的肠道菌群可以确保家禽稳定和容易地进行免疫注射。此外，也可以减少疫苗注射的压力和反应。因此，疫苗前后的期间都适用 AviCare™，不会带来任何的损害，反而能提供更多的营养物质逐渐建立免疫力。经验之谈，在压力反应或疾病挑战的期间给予家禽营养补充剂能帮助家禽的表现达到标准内。



What Is Paraform Prills?

Paraform Prills 是何物?

Paraform Prills is a Paraformaldehyde which is defined as a white solid polymer of formaldehyde. Paraformaldehyde has been widely used as part of livestock biosecurity program.

How does Paraform Prills works as a fumigating disinfectant?

When paraformaldehyde is heated, it generates formaldehyde fumes, which will fill the entire airspace in a closed environment. During contact of the fumes with the clean surface, it will release the activity of formaldehyde in a suitable environment with a relative humidity (RH) of 70 to 80 %. The aim of fumigating such as using Paraform Prills provides the final disinfection after proper washing and cleaning practice has taken place, prior to restocking. The penetrating nature of the product ensures contact on all surfaces.

* However, paraformaldehyde should not be applied as a single / concluding disinfectant, but it should be a part of a complete and proper cleaning and disinfection program.

Where Can Paraform Prills be Applied?

1. Terminal Disinfection in Closed Poultry House
2. Fumigation and Sanitisation of hatching eggs
3. Slow release disinfection when placed in breeder nest- box

How is Paraform Prills a better choice?

When heated, Paraform releases formaldehyde gas, which is actually a decontaminant. It is highly effective against viruses, bacteria and fungi giving a complete and concluding protection before poultry entering the closed house.

Paraform is safer and easier to handle than liquid formalin because it does not give out formaldehyde fume in its solid form. Conventional formalin solution that contains 37% w/v formalin is known to be corrosive and releases extremely pungent fumes. Paraform has been widely used in many countries as a specialized fumigant for hatcheries and closed poultry houses whereby handling of liquid formalin and potassium permanganate is classified as highly dangerous to the operator.

On the other hand, Paraform usage has been proven to be highly cost effective, compared to the conventional method. Due to overwhelming price increase of potassium permanganate and recently price increase of 37% formalin solution has drawn many users to opt to use paraformaldehyde. Scarcity of potassium permanganate due to its hazardous nature under strict control by our local authorities is making the price of this product more expensive.



Paraform Prills (white flowing powder)
Paraform Prills (白色粉末)



The fumigating pot in closed house
在封闭房子的熏锅

Paraform Prills 是多聚甲醛，甲醛是一种白色固体聚合物。
在最近几年里，甲醛已广泛地使用，作为禽畜生物防御计划的一部分。

Paraform Prills 如何发挥作用以成为熏蒸消毒剂？

当甲醛加热时，它释放甲醛烟雾，弥漫着整个封闭式环境的空间。当烟雾接触干净的表面，它将在环境具有相对湿度 (RH) 70至80%的情况下释放甲醛的效力。熏蒸 Paraform Prills (Kilco) 的目的是在未把禽畜赶进农场前，经过正确洗刷清洗干净后，提供最后的消毒作用。产品具有渗透能力特质将确保能接触到所有的表面。

* 然而，甲醛不能作为单一终结的消毒剂，它是完整和正确清洗及消毒的一部分。

在何处使用甲醛？

1. 封闭式鸡舍内的终端消毒
2. 熏蒸和消毒孵化蛋
3. 放置种鸡巢箱时缓慢释放消毒

为何甲醛是一个更好的选择？

当甲醛加热时，释放甲醛气体，它其实是一个除污剂。它高度有效对抗病毒，细菌和微菌，在家禽还未进入封闭式鸡舍前提供一项完整和终结性的保护作用。

甲醛比液蚁醛（福马林）容易处理及安全使用，是因为固体甲醛不会释放甲醛烟雾。含有 37% W/V 蚁醛的传统性福马林液剂已知具有腐蚀性和释放非常刺激性的烟雾。在许多国家，甲醛已广泛地在孵化室和封闭式鸡舍作为特别熏蒸剂使用。因为蚁醛液剂和高锰酸钾的处理被列为对操作员有高度的危险性。

反之，相较于传统的方法，甲醛的使用已经证明非常经济有效。由于高锰酸钾的价格提高和近来37%福马林的价格也升高，已促使许多农友选择甲醛。由于高锰酸钾的危害性特质，并且本地有关当局的严格管制下，货源缺乏，促使了这产品的价格飙升。



CAUTION 注意：

Breathing in formaldehyde gas can be extremely irritating to skin, eyes and mucus membranes of the upper respiratory tract, and can cause nausea and vomiting. Exposure can cause allergic respiratory and skin reactions, and pulmonary edema.

吸入甲醛气体对皮肤，眼睛和呼吸道上部的黏膜刺激性非常高，它可引起恶心和呕吐。暴露于甲醛气体下可引起呼吸过敏和皮肤反应，以及肺水肿。

Wear Protective clothing, full face respirator, gloves and footwear

穿上保护衣着，盖脸呼吸器，戴手套和穿上鞋袜



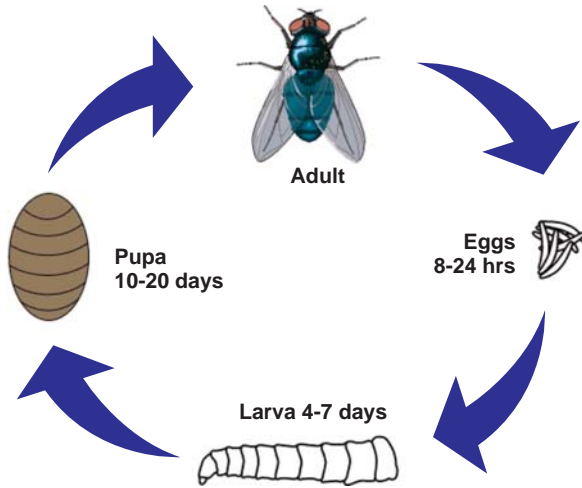
“YOUR SAFE AND CHEAPER OPTION TO FORMALDEHYDE & POTASSIUM PERMANGANATE” – Paraform Prills by Kilco

“为了您的安全及更经济效应，这是使用甲醛和高锰酸钾的好选择” - Paraform Prills by Kilco

Complete Metamorphosis of Fly, Mosquito and Darkling Beetle

苍蝇，蚊子和黑甲虫的完整蜕变

Life Cycle of Fly 苍蝇的生命周期



The life cycle of a fly begins in the egg stage. A female fly is capable to lay up to 500 eggs in a 3 to 4 day period. Female flies favor damp, dark surfaces such as compost, manure and other decomposing organic material for egg laying. House fly eggs resemble individual grains of rice.

Within 8 to 24 hours, house fly eggs hatch into larvae, also known as maggots. Maggots are legless, white insects that feed from the area they were laid for 4 to 7 days. During this time, maggots molt several times. They prefer a warm, moist and dark place to grow in.

Fly pupae are similar in function to butterfly cocoons: they encase themselves in a reddish-brown skin, developing flies. This process take about 11 days, the pupae develop legs and wings, ultimately emerging as full-grown house flies. Within 2 to 3 days, female house flies are capable of reproduction. It's life span is about 15 to 30 days.

苍蝇的生命周期始于卵的阶段。一只雌性苍蝇能够在3至4天内产下高达500颗的卵。雌性苍蝇喜欢在潮湿，阴暗的表面产卵，有如堆肥，粪肥和其它有机的分解物质。家蝇的卵形似米粒。

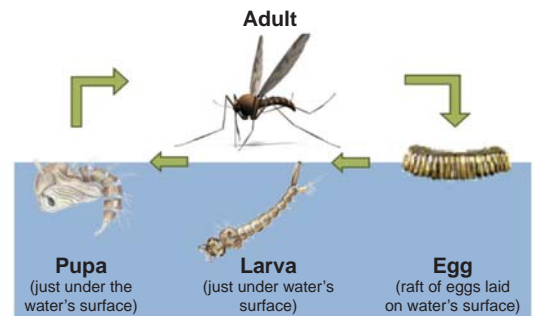
在8至24小时内，家蝇的卵孵化成幼虫，也称为蝇蛆。蝇蛆是无足和乳白色的幼虫。在4至7天内，它们以出生的地方为食，蝇蛆蜕皮数次。它们喜欢在温暖，潮湿和黑暗的地方增长。

蝇蛹破茧的方法与蝴蝶类似：它们用栗褐色的皮构成蛹壳包围自己，进入羽化阶段。这个过程需要大约11天，蛹发育成为有脚和翅膀，最终逐渐形成了成蝇。在2至3天，雌性家蝇能够再产卵。其寿命为约15至30天。

Life Cycle of Mosquito 蚊子的生命周期

Mosquitoes life cycle have 4 distinct stage which are Egg, Larva, Pupa and Adult. Male and female mosquitoes feed on plants and flowers, only female mosquitoes bite because they need the protein from the blood for their egg to develop. A female mosquito can lay as much as 100 to 250 eggs in 1 batch and 600 eggs in her lifetime.

蚊子的生命周期有4个阶段包括卵，孑孓，蛹和成虫。它们的食物是花蜜和植物汁液。只是雌蚊需要叮咬以吸食血液中的蛋白质来促进内卵的成熟。一只雌蚊一次可生产100至250颗卵，一生产卵总数约为600颗。



Egg: Eggs are laid one at a time or attached together to form "rafts." They float on the surface of the water. Most eggs generally require 2-5 days of incubation before hatching; others might stay viable many years. Water is a necessary part of their habitat.

Larva: The larva lives in the water and breathe air but can absorb oxygen through the body wall. Larvae shed (molt) their skins four times, growing larger after each molt. Most larvae have siphon tubes for breathing and hang upside down from the water surface. The larvae feed on microorganisms and organic matter in the water. During the fourth molt the larva changes into a pupa.

Pupa: The pupa stage is a resting, non-feeding stage of development, but pupae are mobile, responding to light changes and moving (tumble) with a flip of their tails towards the bottom or protective areas. This is the time the mosquito changes into an adult. Generally takes 1-2 days to complete the development. When development is complete, the pupa skin splits and the adult mosquito emerges.

Adult: The newly emerged adult rests on the surface of the water for a short time to allow itself to dry and all its body parts to harden. The wings have to spread out and dry properly before it can fly.

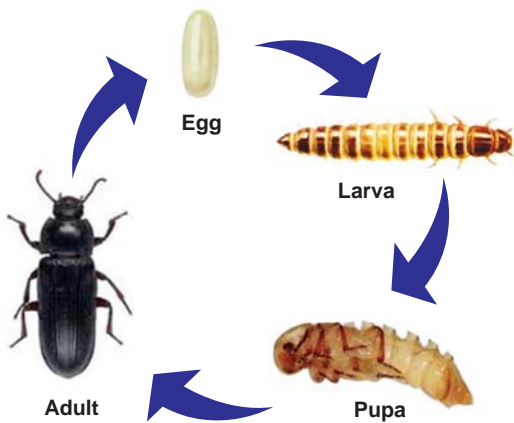
卵: 雌蚊会在水的表面上一产一卵，或多卵连接起来形成“筏”。卵的孵化一般需要2至5天；其它的可能会多年保持活力。它们的栖息地必需有水。

孑孓: 孑孓生活在水里，呼吸空气，但可以通过身体吸收氧气。孑孓经过4次的脱皮，每次蜕皮后更成壮。大部分的幼虫在水面下倒挂，用吸管呼吸。幼虫摄食水中的微生物及有机物。经第4次的蜕皮后变成蛹。

蛹: 蛹是属于休息，不摄食的阶段，但可在水中游动，对光线变化有反应。会翻滚他们的尾巴移至下方或保护区。这是蛹变成一只蚊子的时间。一般需要1至2天才能完全发育成熟。完成时，蚊子破蛹而出。

成虫: 新生的蚊子在翅膀没有硬之前无法起飞，它们将停留在水面很短的时间至翅膀摊开和身体晾干，才可以飞行。

Life Cycle of Darkling Beetle 黑甲虫的生命周期



The darkling beetle experiences complete metamorphosis. It has 4 distinct stages of life which are egg, larva, pupa and adult.

The female darkling beetle lays hundreds of tiny, white, oval eggs, which hatch into tiny mealworms (the larval stage) - it takes from 4 to 19 days to hatch. When first hatched, it is tiny but will grow to about one inch long. Each mealworm eats a tremendous amount and grows a lot. It molts and sheds its hard outer shell in order to grow. Molts will occur ten to twenty times during this stage of life.

It then enters the pupal stage (this stage lasts from 2-3 weeks up to 9 months, if the pupal stage over-winters). The pupa does not eat and seems inactive, but it is transforming itself into an adult. After pupating, a white adult darkwing beetle emerges from the pupa -- it soon turns brown and then almost black. The adult lives for a few months. The entire life cycle takes about a year.

Darkling beetles are the most common poultry house pests. They can be present in extremely high numbers, cause facility damage and reduce productivity. Recent studies have proven darkling beetles can carry poultry diseases, including infectious bursal disease virus (IBDV), astrovirus, RSS orthoreovirus and other unidentified viruses.

Flies and mosquitoes are usually common around most farm. Flies are a nuisance, just buzzing around and being annoying, and because some of them are potential carriers of intestinal diseases. Although most Manitoba mosquitoes are just an itchy annoyance, some can carry encephalitis during outbreak years.

An understanding of fly and mosquito biology lets us reduce their numbers on the farm to a tolerable level, using of insecticides.

黑甲虫为全蜕变的昆虫，其一生可分为卵，幼虫，蛹，成虫4个阶段。

雌性黑甲虫可生产数百个微小，白色，椭圆形的卵，孵化成细小的黄粉虫（幼虫期）—需4到19天的孵化。刚孵化的幼虫是微小的，但将增长到约一英寸长。每个黄粉虫的吃量很大和增长迅速，多次蜕脱其坚硬的外壳以促进它的成长。在这阶段有十至二十次的蜕皮。

然后进入蛹期（这个阶段持续2-3周，如果蛹期是在冬天，时间可长达9个月）。蛹不摄食，看似不活跃，但它却摇身变为成虫。化蛹后，一个白色的甲虫从蛹出现—它快速变成褐色，然后变成几乎是黑色的。黑甲虫可活上几个月。整个生命周期需要大约一年的时间。

黑甲虫是在禽舍最常见到的害虫。它们存在的数量非常高，破坏鸡舍的设备，并减少生产率。最近的研究报告已经证明了黑甲虫可以传播禽类的疾病，包括传染性法氏囊病病毒 (IBDV)，星状病毒，RSS 正呼肠孤病毒和其他不明的病毒。

在大部分农场，苍蝇和蚊子是常见的。苍蝇惹人讨厌；到处嗡嗡响，烦人，和因为它们也有潜能传播一些肠道的疾病。虽然大多数的马尼托巴蚊子只是引起痒的烦恼，但有些可以在脑炎疾病爆发期间传播其病毒。

理解了苍蝇和蚊子的生物学让我们在农场使用正确的杀虫剂，使它们的生存数量减少到可接受的水平。



Mosquitox is a space spray concentration (diesel or kerosene) suitable for dilution in light oil or water and application as an ultra low volume (ULV), thermal fog.

Mosquitox controls flies, mosquitoes, darkling beetle and other insect both indoors and outdoors. The product may be used in domestic, industrial and public health situations. Mosquitox droplets disperse evenly to contact and kill flies and mosquitoes in flight and at rest. Mosquitox is pyrethroid based.

Mosquitox是一种非常经济有效的空间喷洒浓缩液(柴油或煤油)，适合稀释于轻油或水中，及可作超低容量喷洒使用。

Mosquitox可广泛而有效的控制所有的飞虫其中包括：苍蝇、蚊子、黑甲虫和其它害虫。这产品可以在家居，工业环境或公众环境下安心的使用。Mosquitox产生的雾滴，可以很均匀的分散，因此可以有效的接触并杀死飞行中和静止中的害虫。Mosquitox以菊酯类为其主要有效成份。

Feature of Mosquitox

- Versatile application
Easily dilutes with either water or oil for thermal fogging and ultra low volume (ULV) treatments against flying insects, both indoors and outdoors.
- Knockdown and kill

Mosquitox 的特征：

- 多方面适用
容易稀释于水或油中，作为喷雾和超低容量喷洒使用，对抗包括室内和室外的飞虫。
- 击倒和杀灭

For further information, please contact us at F.E Venture Sdn Bhd 03-5633 3493 or Ms Chang 014-931 3412

有关详细的资料，请联络F.E Venture Sdn Bhd 03-5633 3493 或 Ms. Chang 014-931 3412

Problems with Pinkeye? 牛传染性角膜结膜炎的问题?



Pinkeye, or infectious bovine keratoconjunctivitis, is a painful contagious bacterial infection of the eye in cattle. This painful disease has a marked economic impact on the cattle industry as it can affect up to 80% of a herd and reduces up to 10% body weight of affected weaner calves.

Moraxella bovis is one of the most common bacteria that cause this problem. The bacteria will attach to the conjunctiva of the cornea and cause inflammation of the eyelids and the eyeballs. In worse case, the cornea may become ulcerated, painful and eventually become blind. The younger cattle are usually the one being affected because the older animals tend to develop immunity on the eye surface after previous exposure.

Although bacteria are the root cause of pinkeye in cattle, environmental factors causing eye irritations such as presence of face flies, dust, sunlight, pollen, weed and grass seeds also affect the severity of the disease. Face flies are the primary vector in spreading the bacteria among the animals as they feed on watery tearing on different animals a day.

Catching this disease at its early stage is important in managing and treating this disease. Swelling and redness of the conjunctiva (inner surface of eyelids and outer perimeter of eyeball), excessive tearing and squinting are the initial clinical signs. Intervention at this stage usually brings rewarding results in short period. When small opaque area starts to appear in the cornea, longer time and more costly treatment is needed. Isolate and keep the affected animals in shaded area, it will enhance the healing process as the eyes are less irritated by UV sunlight. Adopt effective fly control to reduce the annoyance of flies and reduce the spread of pinkeye.

Research and testimonials shown that VetericynPlus™ Pinkeye Spray can be utilized as an aid in corneal healing & reduction of pain & infection of calves with *M. bovis* infections. It is specially formulated for irritated eyes. Based on advanced hypochlorous technology, VetericynPlus™ Pinkeye Spray is formulated at an appropriate pH level and will not burn or sting.

红眼病又名牛传染性角膜结膜炎，是危害牛角膜的一种急性疼痛传染病。由于病畜的局部刺激和视觉扰乱，会对养殖业带来一定的经济损失。该病一旦发生，传播迅速，牛群的发病率可高达80%，并影响离乳牛犊的体重减少高达10%。

牛摩拉克氏菌是引起该红眼病爆发最常见的细菌之一。此细菌会潜伏在角膜结膜并引起眼睑和眼球有明显的炎症。严重者角膜可能发生溃疡，疼痛，最终招致失明。通常以幼年牲畜发病率较高，因为年纪较大的牲畜已建立免疫抵抗力在眼球的表面。

虽然细菌是红眼病的主要病原，但环境因素造成眼睛刺激如面蝇，灰尘，阳光，花粉，杂草和草种子也影响了该疾病的严重程度。面蝇是在牲畜之间传递该病菌的主要媒介，因为它们每天接触病畜并采食其眼的分泌物。

这种疾病在早期阶段的管理和治疗是很重要的。肿胀和结膜充血（眼睑和眼球外周边的内表面），大量流泪和斜视是最初的临床症状。如果在症状的早期内给予适当的治疗将会带来理想效果。但当角膜上开始发现不透明小点时，这需要更长时间和更昂贵的治疗来医治。发现有牲畜发病时，应立即隔离病畜在阴暗地方，让眼睛相对阳光的紫外线较少因而快速康复。采取有效地控制飞蝇，以减少飞蝇的烦恼也同时减少了红眼病的传播。

研究和临床试验显示 VetericynPlus™ 红眼病喷雾可用作予角膜愈合及减少疼痛与治疗牛摩拉克氏菌感染的助剂。它是特制给予眼睛被受刺激。基于先进的次氯酸技术， VetericynPlus™ 红眼病喷雾的 pH 值适当而不会有被燃烧或刺痛的感觉。

Vetericyn Plus™ Pinkeye Spray is/causes: VetericynPlus™ 红眼病喷雾是：

- ✓ Non-cytotoxic
- ✓ Does not sting or sensitize
- ✓ No ocular irritation
- ✓ No oral toxicity
- ✓ Non-caustic
- ✓ 非细胞毒性
- ✓ 不刺痛或敏感
- ✓ 对眼睛无刺激
- ✓ 无毒性
- ✓ 无腐蚀性

Apply to eyes to provide relief from irritation, burning, stinging, itching, pollutants and other foreign materials. Also, use to wash away mucus secretions and discharge. This product is also helpful for symptoms of pinkness of the eye, eye abrasions, and eye irritation. The trigger spray applicator facilitates application directly to the eye and is safe for all animal species of all ages, and life stages. You can view how it is applied at <https://www.youtube.com/watch?v=sbPC2X0-sG0>

适合用于缓解眼睛的红肿，灼热，刺痛，瘙痒，污染物和其他外来物质的刺激。此外，可用来洗去眼睛的液体分泌物。该产品也助于缓解红眼病，眼擦伤和眼睛刺激的症状。喷涂器直接喷发到病畜的眼睛，所有年龄阶段的动物种类都可安全的使用。你可通过以下的网站 <https://www.youtube.com/watch?v=sbPC2X0-sG0> 观看如何使用此产品。



For further information, please contact us at F.E Venture Sdn Bhd 03-5633 3493 or Dr. Vania Kiu 011-2999 2870
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