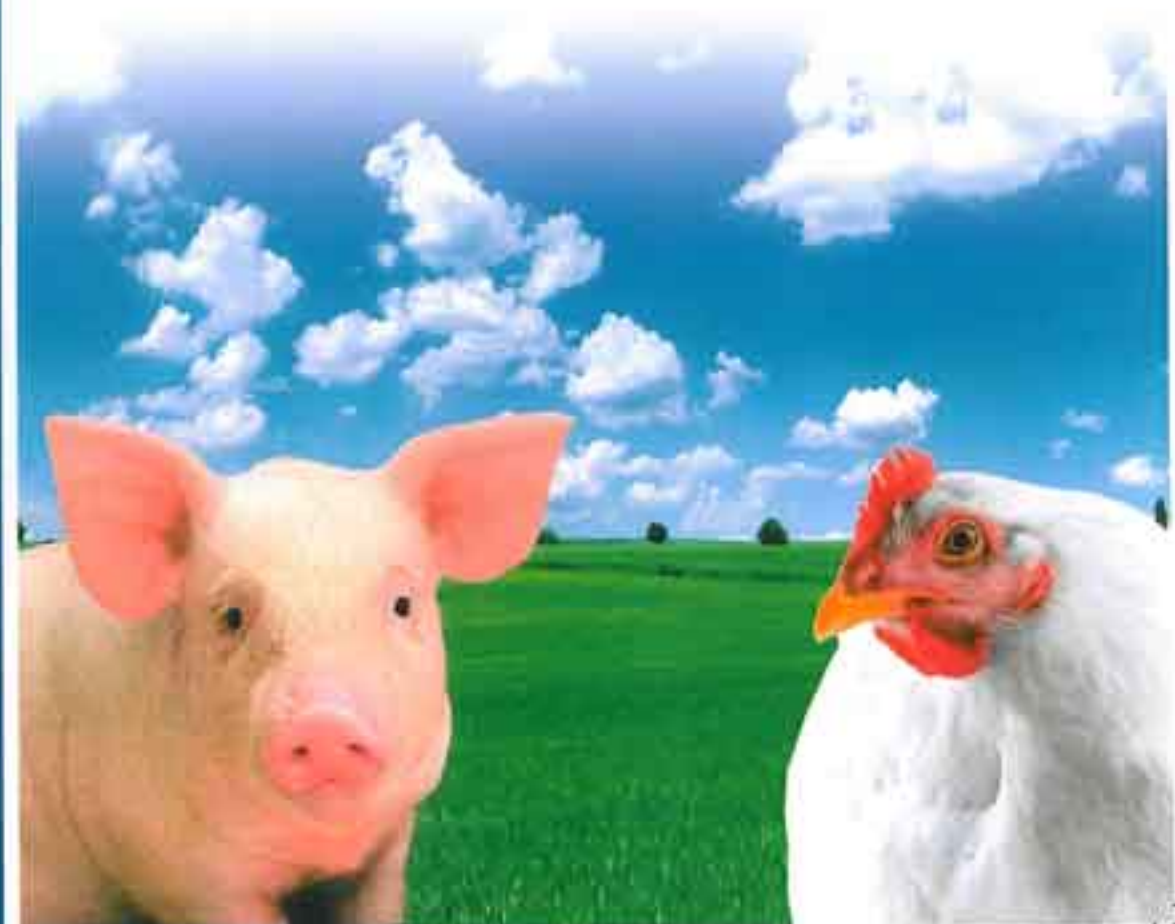




**Protection against and reduction of risk of animal infection
 Increase in efficiency and maximization
 of profitability in livestock farms**



GMP



HACCP



ISO / IEC 17025



Quality Product by

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Betagro Group's subsidiary Better Pharma is among the world leaders in animal health. The company has attained its leadership position by continuously researching and developing the best possible animal health products, specialised supplies and supplements. Based on its world-class manufacturing facilities accredited by international standards and a dedicated team of R&D professionals, Better Pharma is creating maximum animal health value for farmers worldwide.





The spread of infection within a livestock farm is typically caused by the ingress of pathogens through different channels, resulting in an inevitable outbreak and substantial loss of livestock.

Aware of the importance of effective infection control - a fundamental practice in farm management Better Pharma introduced a range of Biosecurity Solutions that are now widely recognised by the livestock farming industry worldwide.

As a standard for protecting against and reducing the risk of animal infection in livestock farms, the Biosecurity Solutions follow the three following principles:

1. Isolation

- The location of the farm should be at least 3 km. from other farms, and at least 500 m. from public roads. Farm buildings should be not less than 50 m. apart.
- Activities should be effectively separated into sections such as animal raising zone, feed storage, administrative office, farmhouse, parking lot, carcass disposal zone and waste management area.
- Fencing around farm buildings or the entire farm is necessary to prevent known carriers of infectious pathogens or unauthorised persons from entering.

2. Traffic Control

- All persons and vehicles entering and leaving the farm should be strictly monitored and recorded.
- All vehicles, equipment and tools should be sprayed with disinfectant before entering the farm.
- Farm workers should be confined to specific farms as assigned by the farm manager to prevent the spread of infectious diseases.



3. Sanitation

- It is necessary to change into appropriate clothing and farm boots before entering the farm, and these should always be sanitised after use.
- Hands should be hygienically washed, and boots should be soaked in disinfectant before wearer enters the farm.
- Sterilisation of equipment and tools before and after use is essential.
- Before a new herd is introduced, the farm should be sanitised and disinfected.
- Control measures should be applied to remove carriers of infectious pathogens such as birds, rats and pests.
- A high standard of hygiene around the farms should be maintained in order to prevent the formation of infectious pathogens while simultaneously discouraging roaches, rats and other pests.
- Meat products should not be brought into the farm.
- Proper carcass management is essential.

A programme of thorough cleaning and disinfecting is highly important in sanitisation procedures as it can significantly minimise the likelihood of infection from pathogens, and prevent the spread of infectious disease.



Biosecurity Solutions is a biosecurity system for livestock farms using Better Pharma's high quality sanitisation products and disinfectants. The product range covers every step in the sanitisation and disinfection process. This process provides protection from and reduces the risk of spread of infectious diseases into farms, and ensures farm management efficiency and maximum profitability.

Better Pharma is aware of the importance of establishing an effective biosecurity system that can provide maximum protective measures to prevent and reduce the spread of infectious disease into and from farms and processing factories as well as transportation systems, waste management tools, carcasses and waste water systems.

Because every disease control programme relies on a comprehensive set of biosecurity measures to guarantee effectiveness and efficiency, Better Pharma has developed a range of sanitisation and disinfection products that provide the most efficient and cost-effective solution for best possible results. Our process includes sourcing high-grade raw materials from reliable manufacturers worldwide, and mixing them using our formulas approved by relevant authorities and scientific bodies. Trials are also conducted to ensure the highest possible quality and efficiency of the prevention of disease transmission and to ensure the programme provides a broad spectrum activity against bacteria, fungi, spores and viruses.

Our innovative product range has been developed to maximise every step in the biosecurity system, from cleaning liquids for equipment sanitisation to disinfectants for proper disinfection inside and outside farms. All of these products come with detailed instructions that lead to best possible results in farm sanitisation and disinfection.



Types of widely used disinfectants that Better Pharma has researched, developed, patented and distributed are as follows :

Quaternary Ammonium Compounds or QACs

Benzalkonium chloride such as BIOCLEAR and BETATOP 200

Aldehyde Compounds

Formaldehyde and Glutaraldehyde such as BIOSTOP, BETAGUARD, DUALGUARD 20 and BETA-Q, which also have Quaternary Ammonium Compounds as active ingredients

Halogen Compounds

Iodine compounds such as IODOX

Phenolic Derivatives

Oxidizing Agents

Such as hydrogen peroxide



Property	QACs	Aldehyde	Halogen		Phenol
			Iodine	Chlorine	
Activation against organisms	Fair	Good	Poor-fair	Very bad	Excellent
Effect of hard water	Slow activation	No effect	No effect unless alkaline water	No effect unless alkaline water	No effect
Effect of heat	No	No	Decomposes over > 40°C	Decomposes over > 40°C	No
pH that provides best result	Alkaline	Alkaline	Alkaline	Acidic	Acidic
Time used for disinfection (minutes)	10-30	10-30	10-30	5-30	10-30

Property	QACs	Aldehyde	Halogen		Phenol	Oxidizing
			Iodine	Chlorine		
Gram-positive bacteria	●●●	●●●	●	●	●●●	●
Gram-negative bacteria	●	●●●	●	●	●●●	●
Bacterial spore	●	●	●	●	●	●/●
Enveloped viruses	●	●	●	●	●	●
Non-enveloped viruses	●	●	●	●	●	●
Fungi	●	●	●	●	●	●
Chlamydia	●	●	●	●	●	●
Microplasma	●	●●●	●●●	●●●	●●●	●●●
Coccidia	●	●	●	●	●	●

Note : ●●● = excellent performance ● = good performance
 ● = fair performance ● = unusable

Disinfectants												
Product	Vehicle	Equip-ment	Human In/out	Floor /Wall	Clothing	Egg tray	Cage	CaCO >400 ppm	Dust /grease removal	Hand washing	Farm	Pave meet
BIOSTOP	●	●	●				●				●	●
IODOX		●	●			●	●					
QUALGUARD 20	●	●	●				●	●			●	●
BIOCLEAN		●		●	●	●						
SANITECH		●		●	●	●						
BETATOP 200		●		●	●	●		●				
BETA-Q	●	●	●				●				●	●
BETAQUARD	●	●	●				●				●	●

Note : It is required that any disinfectant be applied on the surface for at least 10 minutes before washing out with water.

Cleaning and washing Agents												
CLEAN-UP 201		●		●					●			
HANDY-CLEAN 101										●		
ALKA-FOAM 101				●			●		●			

Step 1

Removing waste from farms



Step 2

Cleaning and disinfecting movable equipment and utensils



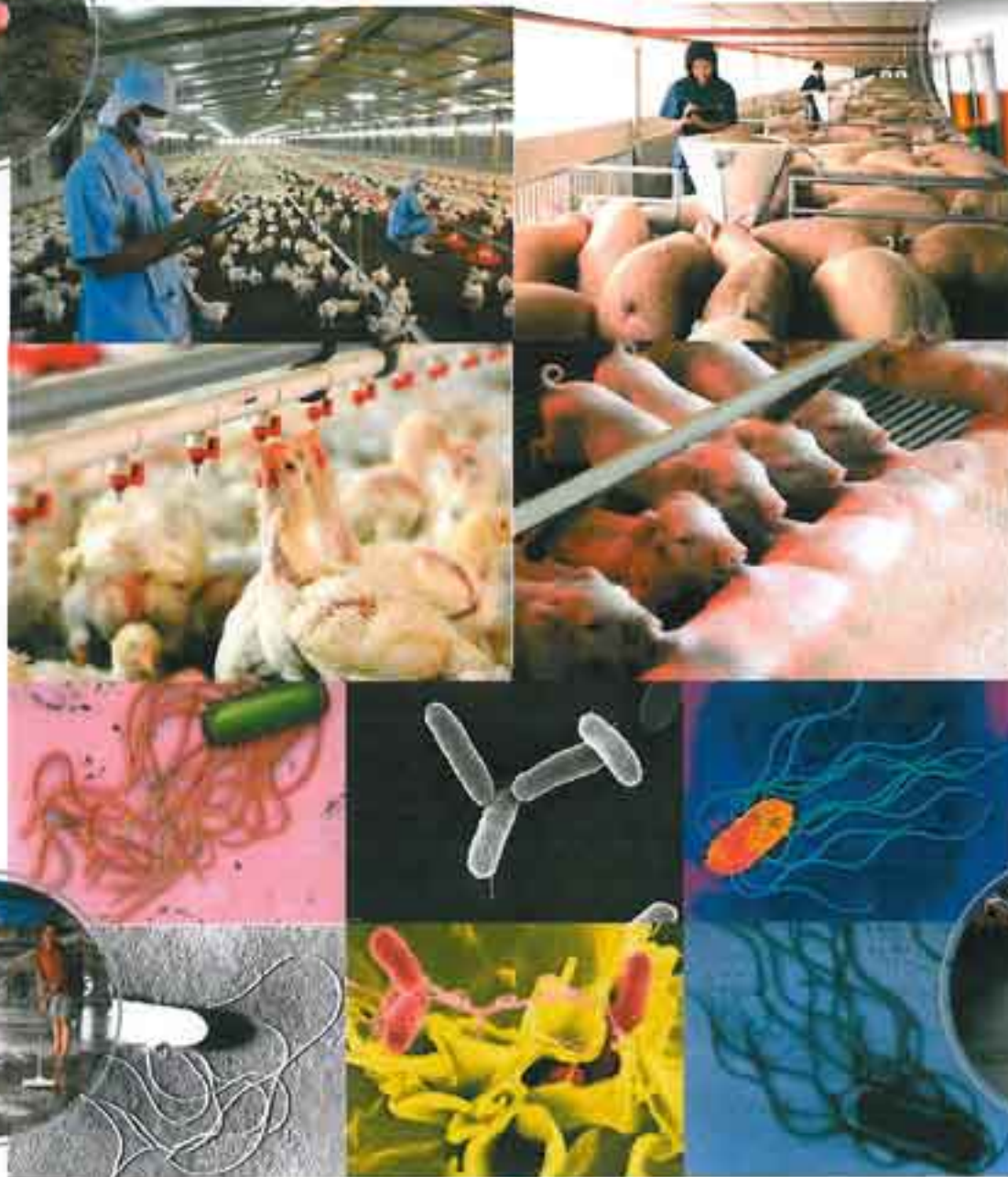
Step 3

Sanitizing and disinfecting water system



Step 4

Cleaning surface within the farm and immovable equipment



Step 8

Biological disinfection assessment



Step 7

Letting the surface dry



Step 6

Disinfecting inside the farm



Step 5

Letting the surface dry



Step 1 Removing wastes from farms

After moving herds out of the farm, completely remove the residue of animal feeds and dung from the surface and other parts of the farm as well as cobwebs and dust from walls, ceilings, fans and air honeycomb panels. Pour or drain any residual water from all equipment and clean using low pressure water (20-40 bar) and clean surrounding areas of the farm.

Step 2 Cleaning and disinfecting movable equipment and utensils

Move all movable equipment and utensils to the washing area. Remove residue from the surface using **CLEAN-UP 201** at a ratio of 1: 50-100 to improve the cleaning effectiveness.

Let the equipment and utensils dry after being disinfected using recommended disinfectants such as **BIOCLEAR** at a ratio of 1: 222 or **IODOX** at 1: 300. (All disinfected equipment should be allowed to dry in a controlled area to prevent repeated contamination.)



Step 3 Sanitising and disinfecting the water system

Clean the inside and outside walls of all water tanks. Look for possible damage and leaks that may cause contamination by infectious diseases. Repair any defects. Remove rust stains and other deposits in water pipes and then wash these out with clean water and disinfect the entire water system by adding disinfectants such as **BIOCLEAR** or **IODOX** in the water tanks and water supply systems. Allow disinfectant to stand for at least 30 minutes before draining off. Flush again with clean water.



Step 4 Cleaning surfaces within the farm and immovable equipment

Clean the surface and remove residue and deposits from the farm or immovable equipment, including walls, using recommended cleaning solutions such as **CLEAN-UP 201**. For areas that cannot be reached such as ceilings, cages, farm masts and upper walls, simply use grease-removing alkaline cleaning foams such as **ALKA-FOAM 101** at a ratio of 1-3: 100. This can be applied by using spraying equipment and leaving foam for 10-15 minutes. Then flush out the cleaning solution using low-pressure water (20-40 bar) to clean from upper to lower parts (to prevent repeated contamination and possible spread to other areas). Next, for thorough cleaning, flush again using 70-bar pressure water aimed especially at slats, nooks and confined areas that cannot be cleaned by brushing.



Step 5 Letting the surface dry

To achieve the maximum cleaning and disinfection, let the cleaned areas dry for 12-48 hours. This also helps to improve the effectiveness of the next step.

Step 6 Disinfecting inside the farm

Spray disinfectants throughout the farm using high-performance disinfecting solution that has been approved and certified by relevant authorities and educational institutes. Sample of suggested disinfectants against swine foot and mouth disease (FMD), chicken Gumboro's disease and bird flu are **DUALGUARD 20**, **BETAGUARD**, **BETA-Q** or **BIOSTOP**. Use any of these at a dilution ratio as directed on the label. Leave for 15-30 minutes.



Step 7 Letting the surface dry

Again, let the farm area dry for 24 hours, and then reinstall the cleaned and disinfected equipment.

Step 8 Biological disinfection assessment

The assessment of biological disinfection can be conducted by conducting a Surface Swab Test applied various surfaces. Collected samples are then submitted for laboratory examination to establish the count of remaining bioorganisms in comparison with established standards. In the event that the biological assessment result is not up to standard, repetition of Step 2 to Step 7 is essential. Reassess the count of remaining bioorganisms before returning the livestock to the farm.

The standard for the total count of bacteria after disinfection is <math><500\text{ CFU/cm}^2</math>



Disinfection product
Cleaning Product

DUALGUARD 20



Active ingredients : Glutaraldehyde 10.0 % WV
n-Octyl decyl dimethyl ammonium chloride 5.0 % WV
Di-n-Octyl dimethyl ammonium chloride 2.5 % WV
Di-n-Dactyl dimethyl ammonium chloride 2.5 % WV

Efficacy claim :
Effective against bacteria and viruses, including bird flu H5N1, Gumboro's disease, and foot and mouth disease (FMD). It is ideal for use as a disinfectant for surfaces, walls and equipment in slaughter houses, meat processing facilities, animal feed factories, and breeder farms. It can also be mixed with water for disinfection ponds. Use the product at a dilution of 1:200.
Sizes : 1, 20, 200 litre container
Certificate of Registration of Hazardous Substance No. 01 03 49 0042



BIOCLEAN



Active ingredients : Alkyl benzyl dimethyl ammonium chloride 10.0 % WV

Efficacy claim :
The product is effective against bacteria and ideal for use as disinfectant for surfaces, walls, equipment and tools used in farm buildings, livestock farms, slaughter houses, meat processing facilities and animal feed factories. It can also be mixed with water for disinfection ponds. The dilution rate is 30cc: 15 litres of water.

Sizes : 500ml, / 5 and 20 litres container
Certificate of Registration of Hazardous Substances No. 01 02 50 0216



BIOSTOP



Active ingredients : Glutaraldehyde 10.0 % WV
Alkyl benzyl dimethyl ammonium chloride 10.0 % WV

Efficacy claim :
The product is ideal for both cleaning and disinfection of surfaces, walls, equipment and tools in slaughter houses, meat processing facilities, animal feed factories and breeder farms as well as for mixing with water in disinfection ponds. It is effective against bacteria and viruses, including bird flu H5N1, Gumboro's disease, and foot and mouth disease (FMD). Use a dilution of 1:300.

Sizes : 1, 20, 200 litres container
Certificate of Registration of Hazardous Substance No. 01 03 49 0041



IODOX



Active ingredients : Iodine 3.0 % WV

Efficacy claim :
Effective against bacteria and ideal for use as a disinfectant for surfaces, walls and equipment in farm buildings, breeder farms, enclosures within slaughter houses, animal transporting vehicles, and can be combined with water to form a disinfectant mixture. The recommended dilution is 1:500.

Sizes : 500 ml / 20 litres container
Certificate of Registration of Hazardous Substance No. 01 02 50 0170



BETAGUARD








Active ingredients : Glutaraldehyde 15.0 % WV
Alkyl benzyl dimethyl ammonium chloride 10.0 % WV

Efficacy claim :
The product is active against bacteria and viruses, including bird flu H5N1, Gumboro's disease, and foot and mouth disease (FMD). It is ideal for use as a disinfectant for surfaces, walls and equipment in slaughter houses, meat processing facilities, animal feed factories, and breeder farms. It can also be mixed with water in disinfection ponds at a dilution of 1:330.

Sizes : 1, 20, 200 litres container
Certificate of Registration of Hazardous Substance No. 01 03 49 0040



		Disinfection product	Cleaning Product
BETA-Q 	Active ingredients : Formaldehyde 10.4 % WV Glutaraldehyde 5.0 % WV Alkyl benzyl dimethyl ammonium chloride 6.0 % WV Efficacy claim : The product is active against bacteria and viruses, including bird flu H5N1, Gumboro's disease, and foot and mouth disease (FMD). It is ideal for use as a disinfectant for surfaces, walls and equipment in slaughter houses, meat processing facilities, animal feed factories, and breeder farms, and can be mixed with water in disinfection ponds at a dilution of 1:200. Sizes : 1, 20, 200 litres container Certificate of Registration of Hazardous Substance No. 01 03 49 0039	●	
SANITECH 	Active ingredients : Alkyl benzyl dimethyl ammonium chloride 10.0 % WV Efficacy claim : This product is effective against most classes of bacteria, and is suitable for use as disinfectant in farm buildings, breeder farms, slaughter houses, meat processing facilities, and animal feed factories. It can also be mixed with water in disinfection ponds. Sizes : 20 litres container Certificate of Registration of Hazardous Substance No. 01 02 50 1069	●	
CLEAN-UP 201 	Active ingredients : Sodium lauryl ether sulfate 6.0 % WV Linear alkyl benzene sulfonate sodium salt 8.0 % WV Efficacy claim : This product is ideal for cleaning utensils and equipment in slaughter houses, animal feed factories, and raising farms. The recommended dilution is 1-2:100. Sizes : 5, 2, 1000 kilograms Registration No. 8 (3-2-5/2550)		●
ALKA-FOAM 101 	Active ingredients : Sodium lauryl ether sulfate 0.94 % WV Linear alkyl benzene sulfonic acid, sodium salt 10.0 % WV Propylene glycol monomethyl ether 4.0 % WV Efficacy claim : This cleaning foam comes with proven effectiveness for removing stains on surfaces, walls and equipment in farm buildings, breeding farms, slaughter houses, meat processing facilities and animal feed factories. Apply at a dilution rate of 1:100. Effective against bacteria and viruses, including bird flu H5N1, Gumboro's disease, and foot and mouth disease (FMD). It is ideal for use as disinfectant for livestock farms. It can also be mixed with water in disinfection ponds. Use the product at a dilution of 1:200. Sizes : 20, 1000 kilograms Certificate of Registration of Hazardous Substance No. 01 01 52 0492		●
HANDY-CLEAN 101 	Active ingredients : Sodium lauryl ether sulfate 3.0 % WV Efficacy claim : This total antiseptic solution is a convenient shortcut for sanitising hands. Sizes : 5, 20 kilograms Registration No. 2 (02 51 0030)		●

1 Growing together with customers for more than 30 years

Better Pharma's guiding principles are integrity, great attention to every detail and commitment to developing Thailand's livestock industry to the fullest.



2 World-class manufacturing facilities

We operate world-class animal health products and supplements manufacturing facilities. These are totally compliant with recognised international standards such as GMP, HACCP, ISO 9001:2008, ISO 14001:2004, ISO/IEC 17025 and FAMI-QS as well as GMP PICs. We attach importance to ensuring the most advanced technology is available. Every stage of production is meticulously monitored to ensure products are free from contamination or cross-contamination and harmful additives. Driven by this commitment, Better Pharma's products have become as reliable as those of leading American and European manufacturers.



3 Transferable knowledge base at Betagro

With years of experience and expertise, Betagro Group is ready to transfer practical knowledge to customers, ranging from animal raising and farm management, slaughter houses, domestic and international marketing, international quality assurance such as GMP, HACCP, ISO, etc, as well as operational management and efficiency improvement systems such as TQM, TPM, BPR, BQM.



4 A dedicated team of more than 100 veterinary and animal husbandry specialists

At Betagro, a dedicated team of more than 100 veterinary and animal husbandry specialists are ready to take care of, and deliver the best possible services to customers nationwide.



5 Innovative biosecurity solutions for more than 70% of swine population

More than 700,000 swine and more than 10 million of the fattening type, or 70% of the total swine population in Thailand, benefit from Better Pharma's animal health products. All of these products come with proven quality and efficacy.



6 Innovative biosecurity solutions for more than 60% of poultry population

More than 600 million meat chickens and more than 10 million egg-laying breeds, or 60% of the total chicken population in Thailand, benefit from Better Pharma's animal health products. All of these products come with proven quality and efficacy.



7 Consultative service specialists

We have a dedicated team of swine and poultry health specialists who share more than 30 years of experience in husbandry and solving problems on a nationwide basis.



8 Total product solutions

We deliver a complete range of products for every stage of animal husbandry. This involves protection against and treatments for diseases caused by bacteria, mycoplasma and parasitic microorganisms in all animal organs.



9 Food safety

With state-of-the-art technology up to globally recognised standards, our products benefit from proven safety, and are certified free from dangerous substances and contaminants.



10 e-Traceability system

Real-time e-Traceability system enables immediate backward and forward tracking that ensures quality compatible with recognised world food safety standards.



11 A world leading OEM

Better Pharma is widely recognised as a world leading OEM among leading global companies. This guarantees our manufacturing, inspection and quality assurance standards across the entire process.



12 Raw material selection process (AVL)

Our selection and inspection process ensures consistent quality of raw materials from leading manufacturers worldwide, resulting in high acceptance and positive feedback for our animal health products and supplements globally.



13 100% active ingredients guarantee

We guarantee 100% exact quantity of active ingredients in every product. This ensures maximum efficacy.



14 Continuous protection for more than 2,000 farms

Farms nationwide rely on Better Pharma's products for continuous animal health care.



15 Ceaseless R&D

Better Pharma is committed to continuous product research and development by specialists in their respective fields. This means the quality and efficacy of our products are increasingly enhanced, while innovative products are consistently introduced to the market worldwide.



16 Test & Trial

The efficacy of each product is always optimised by a broad spectrum of invitro laboratory tests and invivo animal trials.



17 Export to more than 10 markets

Better Pharma exports its high quality products to more than 10 countries. Both domestic and overseas customers can be certain that they benefit from products of the same standard.



18 Bioavailability form

We use only active substances that have truly effective structural formulas and which are readily absorbed by animal organs in order to provide the best possible physiological effect after application.



19 Stability guarantee

We guarantee the stability and efficacy of active substances throughout a product's life as specified by expiry date.

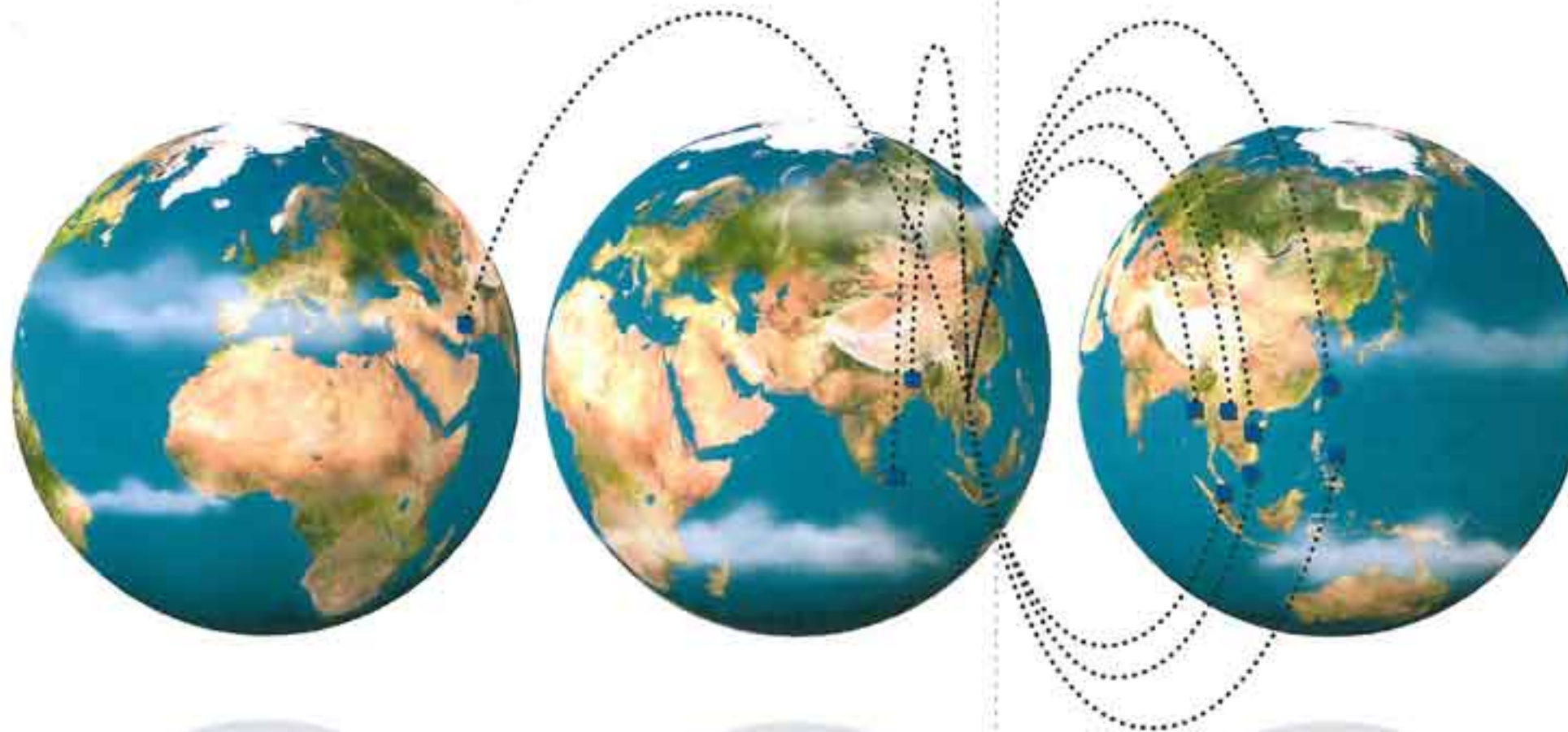


20 Legal registration

Every product of Better Pharma is legally approved and registered by relevant agencies (FDA, Department of Livestock Development and Department of Fisheries). This ensures maximum safety for users and efficacy when used in farms.



For years, Better Pharma has committed to delivering high quality products to global manufacturing standards. Our products have gained high customer confidence especially in quality now equal to that of international brands. We have become a prominent exporter of animal health products with key customers in Southeast Asia and South Asia among others in various parts of the world. Domestic customers can rest assured that all Better Pharma products are of the same quality as those shipped to overseas markets.



PAKISTAN

BANGLADESH

TAIWAN

MYANMAR

LAOS

PHILIPPINES

SRILANKA

MALAYSIA

VIETNAM

CAMBODIA