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Roadmap to China Challenging New Feed Regulatory System

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Report Highlights:
China is in the process of implementing a revised regulatory and registration system for imported feed and feed additives. Under this system, companies need to complete the following three steps before they can export feed ingredients or additives to China: 1) obtain an import registration license from the Ministry of Agriculture (MOA), 2) apply for market access with the General Administration for Quality Supervision, Inspection and Quarantine (AQSIQ), and 3) have their manufacturing facility be registered by AQSIQ. This process can include an audit, which China requires the exporter to pay for. Products considered to be "traditionally traded" by AQSIQ can continue to be exported to China while they complete steps two and three. MOA's registration process typically takes several months, while the market access and registration with process AQSIQ can take two or more years.

Executive Summary:
China is in the process of implementing a revised regulatory and registration system for imported feed and feed additives. Under this system, companies need to complete the following three steps before they can export feed ingredients or additives to China: 1) obtain an import registration license (进口登记证) from MOA, 2) apply for market access with AQSIQ, and 3) have their manufacturing facility be registered by AQSIQ. This process can include an audit, which China requires the exporter to pay for. Products considered to be "traditionally traded" by AQSIQ can continue to be exported to China while they complete steps two and three. MOA's registration process typically takes several months, while the market access and registration with process AQSIQ can take two or more years.

Exporters should take care to ensure they have: 1) an import registration license from MOA, and 2) confirm that the specific manufacturing facility is listed on AQSIQ's website (or that the product is considered "traditionally traded") *before* shipping feed ingredients or feed additives to China. Failure to do so will likely result in shipments being refused entry at the Chinese port of inspection.

General Information:
Basic Regulatory Structure

The Department of Animal Husbandry and National Feed Management Office under MOA and the Department for Supervision of Animal and Plant Quarantine under AQSIQ are charged with regulating the importation and marketing of feed and feed additives in China.

In general, companies need to complete the following three steps before they can export feed ingredients or additives to China: 1) obtain an MOA import registration license (进口登记证), 2) apply for market access with AQSIQ, and 3) have their manufacturing facility be registered by AQSIQ. Products considered to be "traditionally traded" by AQSIQ can continue to be exported to China while they complete steps two and three.

Ministry of Agriculture

MOA is responsible for managing a catalogues of feed materials, feed additives, and "medical feed additives" (primarily antibiotics). Only those substances included in the catalogues are permitted to be used in animal feed production. MOA is also responsible for issuing import registration licenses (进口登记证) for feed ingredients and additives.

Licensing System of Import Feed and Feed Additives

Under MOA regulations, the following feed ingredients and additives are subject to import registration licensing: pre-mixture, concentrate, compound, supplementary feed, "single feed ingredients" (see Appendix I), and feed additives (see Appendix II). Overseas manufacturing facilities wishing to export these products to China are required to apply for an import registration license through a China-based agent.

Application Process:

1. The overseas manufacturing facility designates a China-based agent and works with them to apply to MOA for an import registration license.
2. MOA evaluates application within 10 working-days
3. The agent delivers samples of the product to an MOA designated laboratory
4. The laboratory notifies MOA of the test results within three months and sends a copy to the facility's agent
5. MOA prepares the license and notifies the agent to collect license

Relevant Laws and Regulations for MOA Requirements

Administrative Measures for Feed and Feed Additives, Decree 609 of State Council, enforced on May 1, 2012

Regulation on Feed and Feed Additive Import Registration, MOA Decree No.2, 2014, enforced on July 1, 2014;

Feed Ingredient Catalogue, MOA Decree No. 1773 (Enforced on January 1, 2013) and No. 2038 (Enforced on December 29, 2013);

Feed Additive Catalogue, MOA Decree No. 2045 (Enforced on February 1, 2014);

Medical Feed Additive Catalogue, MOA Notice No. 168;

Mandatory National Standards

Feed Label, GB 10648-2013

Feed Hygiene Standard, GB 13087-2001

Complementary Measures to the Regulations

Administrative Measures of Production License for Animal Feed and Feed Additives, MOA Decree No. 3;

Administrative Measures of New Feed and New Feed Additives, MOA Decree No.4;

Administrative Measures of Product Approval Number for Feed Additives and Pre-mixture; MOA Decree No.5;

Practice for Safety Usage of Feed Additive, MOA Notice No.1224;

General Administration for Quality Supervision, Inspection and Quarantine

AQSIQ is responsible for approving market access applications for feed ingredients and additives (by category or product) to be exported to China for the first time and registering all overseas feed ingredient and additive manufacturing facilities that export to China. Products to be exported to China for the first time must complete both of these steps before they can be shipped to China. These requirements are laid out in Decree 118, which came into effect September, 2009. Under this decree, AQSIQ is required to:

1. Conduct risk analysis and review the feed safety regulatory systems of countries and regions exporting feed ingredients and additives to China for the first time, and perform retrospective inspections on countries and regions that have exported or are exporting these products to China

2. Based on the results of the risk analysis or the retrospective inspection, formulate, adjust and make public a list of approved countries and facilities for categories of feed ingredients and additives.

The risk analysis and food safety system regulatory review are conducted by product category. AQSIQ then conducts market access reviews and facility registration by category, sub-category, or product. It is unclear what process AQSIQ uses to determine how it will handle facility registration for different categories. Processed aquatic animal protein (fish meal) was registered together as one category. To date, AQSIQ has worked to separately register each individual product under processed plant protein (rice bran, DDGS, sugar beet pulp). AQSIQ is currently considering registering feed additives by sub-categories. AQSIQ has typically required audits as part of the market access and registration processes. The exporters are required to pay all of AQSIQ's audit expenses.

Products with a record of export to China considered to be "traditionally traded" by AQSIQ can continue to be exported to China while facilities complete the registration process. AQSIQ may require a "traditionally traded" product to also undergo a second market access review if it determines that the existing protocol does not meet current regulations, although trade can continue while this is completed. Products that have had intermittent or low volume trade with China have sometimes had trouble getting recognized as "traditionally traded."

The current market access and registration process is relatively new and is still evolving. So far it has taken applicants roughly two years to complete both the market access and registration process. The U.S. government and other exporting countries are engaging AQSIQ on ways to make this process more streamlined and less duplicative of MOA's review process.

The Food and Drug Administration (FDA) is the competent authority for most feed ingredients and additives in the United States. The U.S. Department of Agriculture (USDA) Animal and Plant Health Service (APHIS) handles issues related to animal and plant health, including phytosanitary certificates. The USDA Agricultural Marketing Service (AMS) assists U.S. facilities in requesting registration with AQSIQ under an agreement with FDA. The USDA Foreign Agricultural Service works with the foreign governments to address unnecessary barriers to trade and provides public reports on foreign regulations and markets.

AQSIQ's Market Access Procedures

AQSIQ's website outlines the following market access procedures for feed and feed additive products to be imported to China for the first time:

1. The official quarantine/inspection authority of the exporting country shall, according to the trade interest, submit an official application in written form to AQSIQ for exporting feed products to China with the name, variety, use and information of importers and exporters.

2. AQSIQ will, according to the application, deliver a questionnaire concerning the Import Risk Analysis (IRA) to the exporting country for reply.

3. After receiving the reply to the questionnaire, AQSIQ will organize the relevant specialist to initiate the IRA process. If necessary, AQSIQ will ask the exporting country for more information during the evaluation period. Based on the assessment of the above information, AQSIQ will decide whether it is necessary to send a specialist group to the exporting country to have an on-the-spot inspection.

4. After finishing the IRA, AQSIQ will decide whether or not to provide inspection/quarantine and hygiene requirements for the feed product to be imported, and consult with the official authority of the exporting country on these requirements.

5. After having reached agreement on the sanitary requirement, 50 copies of the certificate samples shall be sent to AQSIQ by official authority of the exporting country, and get AQSIQ's approval. The trade can be commenced once the above mentioned steps are finished.

As shown in Table 1, AQSIQ breaks feed products into eight categories for market access procedures. However, AQSIQ may opt to conduct market access approval by product if AQSIQ believes that the category includes several different products for which a separate market access procedure is justified.

Table 1--Feed and Feed Additive Categories Defined by AQSIQ and Status

Category	Market Access	Facility Registration	Trade
Processed aquatic animal protein (fat)	Yes	Yes	Yes
Processed terrestrial animal protein (fat)	Yes	Yes**	Yes
Processed plant protein	In progress*	Yes***	Rice bran and traditionally traded products.
Pet food	Yes	Yes	Yes
Forage	Yes	Yes	Yes
Bait live animals	In progress	No	Traditionally traded products only
Compound feed (including pre-mix feed additives)	In progress	No	Traditionally traded products only
Feed additives	In progress	No	Traditionally traded products only

* In November 2015 AQSIQ conducted an audit for the market access request for sugar beet pulp. The

market access process for rice bran is complete.
** Dairy feed product (whey) facility registration is in progress.
***Facility registration completed for rice bran only. Registration process for sugar beet pulp is near completion.
Source: AQSIQ Website and correspondence

Registration of Manufacturing Facilities

AQSIQ typically requests the regulatory agency of the exporting country to recommend a list of manufacturing facilities prior to an "audit trip." When the above mentioned AQSIQ's market access procedures are fully completed, AQSIQ conducts an audit of facilities based on the list. Audit topics can include quarantine, safety, and product quality. When the list of facilities is small, AQSIQ often audits most or all of the facilities. When the list is long, it has generally opted to audit a substantial sampling of facilities. AQSIQ develops a list of approved facilities based on the audit which it then places on its website. Facilities listed on the website for a specific product are eligible to export that product to China.

As discussion above, AQSIQ is currently allowing trade of "traditionally traded" products to continue. However, AQSIQ has stated that eventually only trade from registered facilities will be permitted to enter China.

Status of U.S. Feed and Feed Additive Market Access and Facility Registration
AQSIQ maintains a table of approved products and facilities by country on its website. A translation of products approved for the United States as of November 24, 2015 is provided in Table 2. Links to approved facility lists are provided for products that have completed the registration process.

Table 2-- Product category approved for export to China (updated November 24, 2015)

Country/Region	Product	Status
USA	Dairy feed product	Approved. Complete facility registration gradually
	Pet food	Approved imports from the registered facility (list)
	Non-ruminant feed ingredients & fat	Approved imports from the registered facility (list)
	Processed aquatic animal protein (fat)	Approved imports from the registered facility (list)
	Brine shrimp eggs and larva	Approved. Complete facility registration gradually
	DDGS (Dried Distillers Grains)	Approved. Complete facility registration gradually
	Forage alfalfa	Approved imports from the registered facility (list)
	Rice bran	Approved imports from the registered facility (list)

Below is the registration status for the above categories as of November 24, 2015.

Processed aquatic animal protein products
AQSIQ approved market access based on a protocol with the U.S. Department of Commerce National Oceanic and Atmospheric Administration (NOAA). AQSIQ maintains a list of approved registered facilities on its website.

Dairy feed products
AQSIQ approved market access for dairy feed products (whey) and will phase in facility registration gradually.

Pet food
AQSIQ approved market access based on a protocol with the U.S. Department of Agriculture Animal and Plant Health Inspection Service (APHIS). AQSIQ maintains a list of approved registered facilities on its website.

Forage alfalfa
AQSIQ approved market access based on a protocol with APHIS. AQSIQ maintains a list of approved registered facilities on its website.

Brine shrimp eggs and larva
AQSIQ approved market access and will phase in registration of facilities.

Processed terrestrial animal protein (fat)
AQSIQ approved market access based on a protocol with APHIS. AQSIQ maintains a list of approved registered facilities on its website. The current list of registered facilities is set to expire soon an AQSIQ has requested to conduct an audit as part of a re-registration process. Discussions between U.S. and Chinese regulatory authorities are ongoing.

Processed plant protein feed materials
AQSIQ has completed its review of the U.S. regulatory questionnaire for processed plant protein feed materials. It has requested a separate market access and registration process for each product under this category.

- AQSIQ has approved market access for rice bran and trade is approved from the list of registered facilities.
- AQSIQ conducted an audit of sugar beet pulp facilities in November 2015 and is currently evaluating the results.
- The registration process for dried distillers grains (DDGS) was initiated in 2014, but later suspended following wide-spread trade-disruptions due to detections of MIR 162, a variety of biotech corn that China had not yet approved. (MIR 162 received final approval in China in December 2014.) AQSIQ intends to restart the registration process for DDGS at some point in the future.

Facilities in the United States wishing to export processed plant protein feed materials to China should initiate the process by following the instructions on the USDA Agricultural Marketing Service website. The registration process can be lengthy and could potentially require an audit by AQSIQ.

Feed Additives
AQSIQ is currently reviewing the U.S. Government response to the regulatory questionnaire "Export Feed Additive and Feed Premixed with Additives." AQSIQ informed the U.S. Embassy that "in consideration of the urgency of market access for U.S. feed additives and given the relatively low risk of feed additives, AQSIQ is planning to establish different market access procedures based on the risk level of feed additives. For low risk feed additives, a streamlined market access procedure will be adopted to expedite market access of feed additives". AQSIQ is considering defining feed additives into the following four sub-categories:

- Feed additives with animal-derived ingredients
- Feed additives with plant ingredients
- Feed additives with micro bio-organism
- Feed additives with no animal and plant ingredients and micro bio-organisms

Facilities in the United States wishing to export feed additives to China should initiate the process by following the instructions on the USDA Agricultural Marketing Service website. The registration process can be lengthy and could potentially require an audit by AQSIQ.

Compound feed
The U.S. Government has requested AQSIQ to provide a regulatory questionnaire on the "Export of Compound Feed," but has not yet received one.

Facilities in the United States wishing to export processed plant protein feed materials to China should initiate the process by following the instructions on the USDA Agricultural Marketing Service website. The registration process can be lengthy and could potentially require an audit by AQSIQ.

Relevant Laws and Regulations for AQSIQ Requirements

The Supervision and Management Measures for the Inspection and Quarantine of Import and Export Feed and Feed Additives; AQSIQ Decree No. 118 (approved on February 23, 2009 and enforced on September 1, 2009)

Notice on Issues Concerning the Implementation of Administrative Measures for Inspection, Quarantine and Supervision on Exports/Imports of Feeds and Feed Additives; AQSIQ Announcement 372 on August 24, 2009

The Law on the Entry and Exit Animal and Plant Quarantine (enforced on April 1, 1992 and amended in 2009)

The Law on Import and Export Commodity Inspection

Special Regulations of the State Council on Enhancing the Supervision and Management of the Safety of Food and Other Products

Appendix I:

MOA Catalogue of "Single Feed Ingredient" Subject to Registered License
(Updated as of December 29, 2013)

No.	Name	Common Name
1.1.3	Barley albumen powder	
1.2.6	Rice albumen powder	
1.2.8	Rice enzymatic protein	
1.5.1	Dried distilled grain/liquor	
1.5.2	Dried distilled grain/yellow wine	
1.5.3	Distillers dried grains	[DDG]
1.5.4	Distillers dried soluble	[DDS]
1.5.5	Distillers dried grains/beer	
1.5.6	Distillers dried grains with soluble	[DDGS]
1.11.3	Gluten meal	[Wheat albumen powder, vital wheat gluten]
1.11.15	Wheat water soluble gluten	
1.13.2	Pengjiang Corn skin	
1.13.7	Corn protein power	
1.13.10	Dried Corn syrup power	
1.13.11	Corn enzymatic protein	
2.2.3	Rapeseed protein	
2.2.5	Rapeseed meal	[Rapeseed meal]
2.2.9	Double low rapeseed meal	[Double low rapeseed meal]
2.3.2	Separated protein of soybean	
2.3.4	Soybean enzymatic protein	
2.3.5	Soybean condensed protein	
2.3.10	soybean molasses	
2.3.14	Soybean meal	
2.3.18	Extrusion meal	[Soybean structure protein]
2.3.19	Extrusion Soybean meal	
2.9.3	Peanut protein	
2.9.6	Peanut meal	[Peanut kernel meal]
2.12.4	Cottonseed protein	
2.12.6	Cottonseed enzymatic protein	

2.12.7	Cotton seed meal	
2.12.9	De-gossypol cottonseed protein	[De-toxic cottonseed protein]
3.3.2	Broad bean protein powder	
3.7.2	Green bean protein powder	
3.8.5	Pea protein powder	
4.7.2.	Potato protein powder	
7.5.2	Alga powder	
7.5.3	Liehu alga powder	
7.5.4	Spiral alga powder	
7.5.5	Niwei green alga powder	
7.5.6	Micro alga meal	
7.5.7	Little alga powder	
9.1.1	Oil	
9.1.2	Oil cake	
9.3.1	Intestine and velum albumen powder	
9.3.3	Animal visceral meal	
9.3.5	Animal water soluble	
9.3.6	Expanded feather meal	
9.3.9	Hydrolyzed hoof and horn meal,	
9.3.10	Hydrolyzed animal hair meal,	
9.3.11	Hydrolyzed feather meal,	
9.4.1	Egg powder	
9.4.2	Egg yolk powder	
9.4.3	Egg shell powder	
9.4.4	Egg white powder	
9.6.2	Bone meal (pellet)	
9.6.7	Meat meal	
9.6.8	Bone and meat meal	
9.6.9	Acid bone meal	[Bone phosphate]
9.6.10	De-gum bone powder	
9.7.1	Spray dried blood protein powder	
9.7.2	Spray dried blood cell protein powder	
9.7.3	Hydrolyzed blood powder	
9.7.4	Hydrolyzed blood protein powder	
9.7.5	Hydrolyzed pearl protein powder	
9.7.6	Blood meal	
9.7.7	Heme Protein powder	
10.2.2	Phosphate shrimp powder	
10.2.3	Shrimp powder	
10.4.2	White fish meal	
10.4.3	Hydrolyzed fish protein meal	
10.4.4	Fish meal	
10.4.7	Fish bone meal	

10.4.8	Fish paste	
10.4.9	Fish paste powder	
10.4.10	Fish and shrimp powder	
10.4.11	Fish oil	
11.1.11*2	sodium humate	
12.1.1	Fermented soy meal	
12.1.2	Fermented fruit residue	
12.1.3	Fermented cotton seed protein	
12.1.4	Yeast fermented distilled grain	
12.2.1	Yeast protein	
12.2.2	Beer yeast powder	
12.2.4*2	Food yeast powder	
12.2.5*2	Yeast hydrolysate	
12.2.6*2	Saccharomyces cerevisiae culture	
12.2.7*2	Saccharomyces cerevisiae extract	
12.2.8*2	Saccharomyces cerevisiae cell wall	
12.3.1	L-Glutamic Acid residue	
12.3.2	Glutamic acid residue	
12.3.3	Lysine residue	
12.4.3	Citric acid residue	
12.4.5*2	Condensed liquid of fermented yeast of sugar beet molasses	
12.4.7*2	Glucosamine hydrochloride	

Appendix II: MOA Approved Feed Additives（Enforced on February 1, 2014）

MOA defines feed additives as substances added to feed during the processing, formulation or use of feed in a small or minimal volume, including nutritional feed additives and common feed additives.

Class	**Common name of feed additive**	**Usage**
Amino Acids,their salts and analogues	L-Lysine, Liquid L-Lysine (L-Lysine: min. 50%), L-Lysine Monohydrochloride, L-Lysine Sulfate and its by-products from fermentation (Source: *Corynebacterium glutamicum*, *Brevibacterium lactofermentum*, L-Lysine: min. 51 %), DL-Methionine, L-Threonine, L-Tryptophan, L-Arginine, L-Arginine Monohydrochloride, Glycine, L-Tyrosine, L-Alanine, Aspartic Acid, L-Leucine, Isoleucine, L-Proline, Phenylalanine, Serine, L-Cysteine, L-Histidine, Glutamic Acid, Glutamine, Valine, Cystine, Taurine	All species or categories of animals
	Cysteamine Hydrochloride	Livestock,

		poultry
	Methionine Hydroxy Analogue, Methionine Hydroxy Analogue Calcium	Swine, chicken , cattle or aquaculture animals
	N-Hydroxymethyl Methionine Calcium	Ruminant
	1-Aminocyclopropane-1-Carboxylic Acid	Chicken
Vitamins,provitamins, chemically well defined substances having a similar biological effect to vitamins	Vitamin A, Vitamin A Acetate, Retinol Palmitate, beta-Carotene, Thiamin Hydrochloride (Vitamin B_1), Thiamin Mononitrate (Vitamin B_1), Riboflavin (Vitamin B_2) , Pyridoxine Hydrochloride (Vitamin B_6), Cyanocobalamin (Vitamin B_{12}), L-Ascorbic Acid (Vitamin C), Calcium L- Ascorbate, Sodium L-Ascorbate, L- Ascorbyl-2-Phosphate, 6-Palmityl-L-Ascorbic Acid, Vitamin D_2, Vitamin D_3, Nature Vitamin E, dl-alpha-Tocopherol, dl-alpha-Tocopherol Acetate, Menadione Sodium Bisulfite (Vitamin K_3), Menadione Dimethylpyrimidinol Bisulfite, Menadione Nicotinamide Bisulfite, Nicotinic Acid, Niacinamide, D- Pantothenyl Alcohol, D-Calcium Pantothenate, DL-Calcium Pantothenate, Folic Acid, D-Biotin, Choline Chloride, Inositol, L-Carnitine, L-Carnitine Hydrochloride, Betaine, Betaine Hydrochloride	All species or categories of animals
	25-Hydroxyl cholecalciferol (25-Hydroxy Vitamin D_3)	Swine, poultry
	L-Carnitine- L-Tartrate	Pets
Minerals and Their Complexes (or Chelates) [1]	Sodium Chloride, Sodium Sulfate, Monosodium Phosphate, Disodium Phosphate, Monopotassium Phosphate, Dipotassium Phosphate, Calcium Carbonate, Calcium Chloride, Dicalcium Phosphate, Monocalcium Phosphate, Tricalcium Phosphate, Calcium Lactate, Calcium Gluconate, Magnesium Sulfate, Magnesium Oxide, Magnesium Chloride, Ferrous Citrate, Ferrous Fumarate, Ferrous Lactate, Ferrous Sulfate, Ferrous Chloride, Ferric Chloride, Ferrous Carbonate, Copper Chloride, Copper Sulfate, Basic Copper Chloride, Zinc Oxide, Zinc Chloride, Zinc Carbonate, Zinc Sulfate, Zinc Acetate, Basic Zinc Chloride, Manganese Chloride, Manganese Oxide, Manganese Sulfate, Manganese Carbonate, Manganese Phosphate	All species or categories of animals

	(Dibasic), Potassium Iodide, Sodium Iodide, Potassium Iodate, Calcium Iodate, Cobalt Chloride, Cobalt Acetate, Cobalt Sulfate, Sodium Selenite, Sodium Molybdate, Copper Methionine Complex (or Chelate), Ferric Methionine Complex (or Chelate), Manganese Methionine Complex (or Chelate), Zinc Methionine Complex (or Chelate), Copper Lysine complex (or Chelate), Zinc Lysine Complex (or Chelate), Copper Glycine Complex (or Chelate), Ferrous Glycine Complex (or Chelate), Copper Yeast Complex, Ferrous Yeast Complex, Manganese Yeast Complex, Selenium Yeast Complex, Copper Amino Acid Complex (anion of any amino acid derived from hydrolysed plant protein), Iron Amino Acid Complex (anion of any amino acid derived from hydrolysed plant protein), Manganese Amino Acid Complex (anion of any amino acid derived from hydrolysed plant protein), Zinc Amino Acid Complex (anion of any amino acid derived from hydrolysed plant protein)	
	Copper Proteinate, Iron Proteinate, Zinc Proteinate, Manganese Proteinate	All species or categories of animals, not including ruminant
	Zinc Methionine Hydroxy Analogue Complex (or Chelate), Manganese Methionine Hydroxy Analogue Complex (or Chelate), Copper Methionine Hydroxy Analogue Complex (or Chelate)	Dairy cow, beef cattle, poultry or swine
	Chromium Nicotinate, Chromium Yeast Complex, Chromium Methionine Chelate, Chromium Tripicolinate	Swine
	Chromium Propionate, Zinc Glycinate	Swine
	Zinc Propionate	Swine, cattle or poultry
	Potassium Sulfate, Iron Oxide, Copper Oxide	Ruminant
	Cobalt Carbonate	Ruminant, dog or cat
	Lathanum/Cerium Chintosan Chelates	Poultry , livestock ,fish or shrimp
	Zinc Lactate (α-Hydroxy Propionic Acid Zinc)	Growing- Finishing swine, poultry

Enzymes[2]	Amylase (Source: *Aspergillus niger*, *Bacillus amyloliquefaciens*, *Bacillus licheniformis*, *Bacillus subtilis*, *Trichoderma longibrachiatum*[3], *Aspergillus oryzae*, Barley malt, *Bacillus acidopullulyticus*)	Corn silage, corn, corn gluten feed, soybean meal, wheat, wheat middlings, barley, grain sorghum, oat, pea,tapioca, millet, rice
	α-Galactosidase (Source: *Aspergillus niger*)	Soybean meal
	Cellulase (Source: *Trichoderma longibrachiatum*[3], *Aspergillus niger*, *Humicola insolens*, *Penicillium funiculosum*)	Corn, barley, wheat, wheat bran, rye, grain sorghum
	β-Glucanase (Source: *Aspergillus niger*, *Bacillus subtilis*, *Trichoderma longibrachiatum*[3], *Penicillium funiculosum*, *Bacillus amyloliquefaciens*, *Aspergillus aculeatus*)	Wheat, barley, canola meal, wheat bypro- duct, oat groats, rye, triticale, grain sorghum
	Glucose Oxidase (Source: *Penicillium notatum*, *Aspergillus niger*)	Glucose
	Lipase (Source: *Aspergillus niger*, *Aspergillus oryzae*)	Plant and ani- mal sources of fats and oils
	Maltase (Source: *Bacillus subtilis*)	maltose
	β-Mannanase (Source: *Bacillus lentus*, *Aspergillus niger*, *Trichoderma longibrachiatum*[3])	Corn, soybean meal, guar meal
	Pectinase (Source: *Aspergillus niger*, *Aspergillus aculeatus*)	Corn, wheat
	Phytase (Source: *Aspergillus niger*, *Aspergillus oryzae*, *Trichoderma longibrachiatum*[3], *Pichia pastoris*)	Vegetable seeds which contain phytic acids such as Corn and soybean
	Protease (Source: *Aspergillus niger*, *Aspergillus oryzae*, *Bacillus subtilis*, *Trichoderma longibrachiatum*[3])	Plant and ani- mal proteins
	Keratinase (Source:*Bacillus licheniformis*)	Plant and ani- mal proteins
	Xylanase (Source: *Aspergillus oryzae*, *Humicola insolens*, *Trichoderma longibrachiatum*[3], *Bacillus subtilis*, *Penicillium funiculosum*, *Aspergillus niger*, *Pichia pastoris*)	Corn, barley, rye, wheat, grain sorghum, triticale, oats
Live Micro-organisms	*Bacillus licheniformis*, *Bacillus subtilis*, *Bifidobacterium bifidum*, *Enterococcus faecalis*,	All species or categories of

	Enterococcus faecium, *Enterococcus lactis*, *Lactobacillus acidophilus*, *Lactobacillus casei*, *Lactobacillus delbrueckii subsp. Lactis (also known as Lactobacillus lactis)* , *Lactobacillus plantarum*, *Pediococcus acidilactici*, *Pediococcus pentosaceus*, *Candida utilis*, *Saccharomyces cerevisiae*, *Rhodopseudomonas palustris*, *Bifidobacterium infantis*, *Bifidobacterium longum*, *Bifidobacterium breve*, *Bifidobacterium adolescentis*, *Streptococcus thermophilus*, *Lactobacillus reuteri*, *Bifidobacterium animalis*, *Aspergillus niger*, *Aspergillus Oryzae*, *Bacillus lentus*, *Bacillus pumilus*, *Lactobacillus cellobiosus*, *Lactobacillus fermentum*, *Lactobacillus delbrueckii subsp. Bulgaricus (also know as Lactobacillus bulgaricus)*	animals
	Propionibacterium acidipropionicis, *Lactobacillus buchneri*	Silage, cattle
	Lactobacillu paracasei	Silage
	Bacillus coagulans	Broiler, growing-finishing swines or aquaculture animals
	Brevibacillus laterosporus (also known as *Bacillus laterosporus)*	Broiler, duck for fattening, swine or shrimp
Non-protein Nitrogen	Urea, Ammonium Bicarbonate, Ammonium Sulfate, Liquid Ammonia, Mono Ammonium Phosphate, Diammonium Phosphate, Isobutylidene Diurea, Urea Phosphate, Ammonium Chloride, Ammonium Hydroxide	Ruminant
Antioxidants	Ethoxyquin, Butylated Hydroxyanisole (BHA), Butylated Hydroxytoluene (BHT), Propyl Gallate, Tertiary Butyl Hydroquinone (TBHQ), Tea Polyphenol, alpha-Tocopherol (Vitamin E), 6-Palmityl-L-Ascorbic Acid	All species or categories of animals
	Rosemary Extract	Pets
Preservatives and Acidity Regulators	Formic Acid, Ammonium Formate, Calcium Formate, Acetic Acid, Sodium Diacetate, Propionic Acid, Ammonium Propionate, Sodium Propionate, Calcium Propionate, Butyric Acid, Sodium Butyrate, Lactic Acid, Benzoic Acid, Sodium Benzoate, Sorbic Acid, Sodium Sorbate, Potassium Sorbate, Fumaric Acid, Citric Acid, Potassium Citrate, Sodium	All species or categories of animals

	Citrate, Calcium Citrate, Tartaric Acid, Malic Acid, Phosphoric Acid, Sodium Hydroxide, Sodium Bicarbonate, Potassium Chloride, Sodium Carbonate		
	Calcium Acetate		Livestock, poultry
	Sodium Pyrophosphate, Sodium Tripolyphosphate, Sodium Hexametaphosphate, Sodium Metabisulphite, Trisodium Monohydrogen Diphosphate		Pets
	Potassium Diformate		Swine
	Ammonium Chloride		Ruminant
	Sodium Sulphite		Silage
Coloring Agents	beta-Carotene, Capsanthin, beta-Apo-8'-Carotenal, beta- Apo-8'-Carotenoic Acid Ethyl Ester, beta, beta-Carotene- 4,4- Diketone (Canthaxanthin)		Poultry
	Natural Xanthophyll (Marigold Extract)		Poultry, aquaculture animals
	Astaxanthin, *Xanthophyllomyces dendrorhous* (Anamorph *Phaffia rhodozyma*)		Aquaculture animals, ornamental fish
	Tartrazine, Sunset Yellow, Allura Red, Ponceau 4R, Indigotine, Titanium Oxide, Caramel Colour class Ⅳ, Erythrosine		Pets
	Amaranth, Brilliant Blue		Pets, ornamental fish
Flavouring and Appetising Substances	Sweetening Substances	Saccharin, Calcium Saccharin, Neohesperidin Dihydrochalcone	Swine
		Sodium Saccharin, Sorbitol	All species or categories of animals
	Flavoring Substances	Approved Food Flavoring Agents[4], Oregano Carvacrol (Origanum aetheroleum)	
	Others	Sodium Glutamate, Disodium 5'- Inosinate, Disodium 5'- Guanylate, Garlicin (Allimin)	
Binders, Anticaking, Stabilizing and Emulsifying agents	alpha- Starch, Aluminum Oxide, Calcium Salt of Edible Fatty Acid, Mono- /di-glycerides of Edible Fatty Acids, Calcium Silicate, Sodium Silico Aluminate, Calcium Sulfate, Calcium Stearate, Glycerine Fatty Acid Ester, Polyacrylic Resin II, Sorbitan Monostearate, Polyoxyethylene(20) Sorbitan Mono- oleate,		All species or categories of animals

	Propylene Glycol, Silicon Dioxide, Lecithin, Sodium Alginate, Potassium Alginate, Ammonium Alginate, Agar-agar, Guar gum, Acacia, Xanthan Gum, Mannitol, Lignin Sulfonate, Sodium Carboxymethylcellulose, Sodium Polyacrylate, Sorbitol Esters of Fatty Acid, Sucrose Esters of Fatty Acid, Sodium Acid Pyrophosphate, Glyceryl Monosterate, Polyethylene Glycol 400, Lecithin, Glyceryl Polyethylenglycol Ricinoleate	
	Glycerine	Swine, chicken or fish
	Stearic Acid	Swine, cattle or poultry
	Carrageenan, Cassia Gum, Carob Bean Gum, Pectin, Microcrystallin Cellulose	Pets
Polysacchari-des and Olig- osaccharides	Xylo-oligosaccharides	Chicken, swine or aquaculture animals
	Low-molecular-weight Chitosan	Swine, chicken or aquaculture animals
	Galactomanno-oligosaccharides	Swine, broiler, rabbit or aquaculture animals
	Fructo-oligosaccharides, Manno-oligosaccharides, Galacto-oligosaccharides	All species or categories of animals
	Chitosan-oligosaccharide (oligo(beta-(1,4)-2-amino-2-deoxy-D-glucose)) (n=2~10)	Swine, chicken, duck for fattening or rainbow trout
	β-1, 3-D-glucan (Source: *Saccharomyces cerevisiae*)	Aquaculture animals
	N,O-carboxymethyl chitosan	Swine, chicken
Others	YUCCA (Yucca Schidigera Extract), Triterpenic saponins (Quillaja Saponaria Extract), Doco- sahexaenoic Acid (DHA)	All species or categories of animals
	Saccharicterpenin (Originated from Seed Cake of *Camellia L*.)	Swine, poultry
	Acetohydroxamic Acid	Ruminant
	Medicago sativa Extract (Active substance：alfalfa polysaccharide, alfalfa flavonoid, alfalfa saponin)	Piglet, growing-finishing swine, broiler
	Eucommia Ulmoides Extract (Active	Growing- finishing

	substance：Chlorogenic acid, Eucommia polysaccharide, Eucommia flavonoids)	swine, fish or shrimp
	Epimedium Extract (Active substance：Icraiin)	Chicken, swine, sheep or cow
	Conjugated Linoleic Acid	Piglet, laying hen
	4, 7-Dihydroxyisoflavone (Daidzein)	Swine, laying poultry
	The culture of *Acremonium terricola*	Swine, chicken
	Extrat of Perilla frutescens seed (Active substance:α-Linoleic Acid, Linolenic acid, Flavonoids)	Swine, broiler or fish
	Chondroitin Sulfate	Cats, dogs
	Phytosterol (Originated from soybean oil or rapeseed oil, Active substance：β-Sitosterol, Campesterol, Stigmasterol)	Poultry, growing-finishing swine

Notes:

1. All substances listed may be in anhydrous or hydrated form.
2. The usage of enzymes provides the typical substrates for guidance only and does not cover all substrates applicable.
3. *Trichoderma longibrachiatum* listed may also be called *T. resei or T. viride*.
4. “Flavouring” or “Appetising Substances” are known as products that combined one or several flavouring substances or appetising substances with carriers. “Flavouring” means one or several sweetening substances combined with carriers, and “Appetising Substances” means one or several flavouring substances combined with carriers.
5. Approved food flavoring agents are in accordance with the list of food flavoring agents in Hygienic Standards for Uses of Food Additives (GB2760).