USDA United States Department of Agriculture
Foreign Agricultural Service

GAIN Global Agricultural Information Network

Voluntary Report – Voluntary - Public Distribution **Date:** February 27, 2023

Report Number: CH2023-0029

Report Name: Guidelines for Applications for Plant-Extracted Feed Additives

Country: China - People's Republic of

Post: Beijing

Report Category: FAIRS Subject Report, Exporter Guide, MISC-Commodity, Sanitary/Phytosanitary/Food Safety

Prepared By: FAS China Staff

Approved By: Adam Branson

Report Highlights:

On February 2, 2023, the Ministry of Agriculture and Rural Affairs (MARA) published a notice on the "Guidelines for Applications for New Plant-Extracted Feed Additives" along with revisions on approved additives. This report provides an unofficial translation of the MARA notice.

Summary:

On February 2, 2023, MARA released new guidelines related to applications for the approval of plant-extracted feed additives. The guidelines apply to applications for the registration of plant-extracted feed additives, expansion of the applicable scope of approved feed additive products, changes to major production processes for approved products, and when the minimum content specification is lowered from what is stipulated by safe usage standards. The guidelines include definitions and applicable scope, required materials that show product names, categories, components, functions, usage, processing, and relevant testing procedures and quality standards for applications for new plant-extracted feed additives or revisions to currently approved feed additive registrations.

This report provides an unofficial translation of the MARA notice and guidelines. The original Chinese version was published online at http://www.moa.gov.cn/govpublic/xmsyj/202302/t20230208_6420156.htm.

BEGIN TRANSLATION

Notice on Printing and Distributing the Guideline for Application for Plant-Extracted Feed Additives from the General Office of the Ministry of Agriculture and Rural Affairs

To All Whom It May Concern,

In order to further standardize the technical review of new feed and new feed additives, the Ministry formulated the Guideline for the Application for New Plant-Extracted Feed Additives in accordance with the Administrative Regulations on Feed and Feed Additives and the Measures for the Administration for New Feed and New Feed Additives. The Guideline is hereby printed and distributed, please comply with it.

The General Office of the Ministry of Agriculture and Rural Affairs

Date: February 2, 2023

Guidelines for Application for Plant-Extracted Feed Additives

1 Application Scope

1.1 The Guideline specifies the basic principles, terms and definitions, classifications, and requirements of materials to apply for new plant-extracted feed additives.

1.2 The Guideline is applicable to applications for new feed additive certificates, the expansion of scope of approved feed additives, lower content specification of feed additives compared to the requirements of normative documents such as the safe use of feed additives (except for those formulated by feed additives and carriers or dilutants in a certain proportion), major changes in the production process, and inclusion into the Catalog of Feed Additives, etc.

1.3 Application for the importation of plant-extracted feed additive products that have not been approved for use in China shall be implemented according to this Guideline.

2 Basic Principles

2.1 The development of plant-extracted feed additives shall follow the principles of science, safety, effectiveness, and environmental protection to ensure the quality and safety of products.

2.2 The development of plant-extracted feed additives shall be based on current scientific understanding, combined with the specific characteristics of plant extracts, and use physical, chemical, and (or) biological technology and methods to establish evaluation approaches that can effectively reflect the quality of plant-extracted feed additives in order to ensure controlled quality.

2.3 The products for application shall be developed by the applicant organization and produced in pilot workshops or a production line. The test substance used in the evaluation experiment, examination, and testing shall be consistent with the product in the application.

2.4 When applying for approval of products derived from genetically modified plants, the agricultural biosafety certificates for the genetically modified plants shall be provided.

2.5 Researchers are encouraged to develop and create plant-extracted feed additives from the three dimensions of “different parts, different components, and different functional mechanisms.” If a new feed additive certificate is issued for a new plant-extracted feed additive, an application for the new feed additive certificate for the same product will not be accepted, nor will an application for a product whose content specification is lower than that of the same product within the monitoring period be accepted. The same product refers to the product that is extracted from the same part of the same plant by the same process and has similar effective components and similar content specification. A plant-extracted feed additive product whose content specification of the effective component is 50% higher than that of the current approved products (if the effective components include multiple substances, the total content shall be adopted) shall be considered a different product.

3 Terms and Definitions

The following terms and definitions are applicable to the Guideline.

3.1 Plants for feed

It refers to the plants included in the Catalog of Feed Ingredients.

In the Catalog of Feed Ingredients, the edible mushrooms and algae, the traditional edible foods, the substances that are both traditional food and traditional Chinese medicine, and source plants of new food ingredients can refer to plant for feed to submit application materials.

3.2 Other plants

It refers to plants other than plants for feed.

3.3 Plant-extracted feed additives

The small or trace amount of substances added in the process of feed processing, formulation and usage; it was made from taking a specific part or the whole of a single plant as the ingredient, acquiring and concentrating one or more components of the plant through extraction and/or separation without changing the structural characteristics of the original components of the plant. It includes purified extract, component extract and simple extract in the forms of solid, liquid and paste.

3.4 Purified extract

It refers to the single component product of the plant obtained through extraction, separation, purification and other processes. The content of a single component shall account for 90% (on dry basis) or more of the extract.

3.5 Component extract

It refers to the qualitative and effective component mixture product of the plant obtained through extraction, separation and/or purification, which is marked with similar components or multiple effective components for quantitative quality control.

3.6 Simple extract

It refers to the product of the plant obtained through extraction, concentration and/or drying without separation and purification, which is marked with representative quality indicators for quantitative quality control.

3.7 Effective component

A single component in the plant extract that has specific biological activity and can represent its applied effect.

3.8 Active groups

Multiple active constituents, or one or more groups of similar components in the plant extract that has specific biological activity and can represent its applied effect.

3.9 Similar groups

It refers to a mixture composed of a group of structurally similar compounds.

3.10 Quality indicator

It refers to the characteristic components or similar groups of components used for the quality control of simple extract, which can be used for qualitative identification and quantitative determination. One or more main components can be selected from the characteristic peak in the plant extract characteristic chart as quality indicators.

4 Requirements for Application Materials

The materials for an application for plant-extracted feed additive products shall be provided in accordance with the following requirements and the Table for the Classification and Data Requirements for Application for Plant-extracted Feed Additive (see appendix). A simple plant extract that has passed review shall be published by the Ministry of Agriculture and Rural Affairs as a feed additive for production and use, while no new feed additive certificate will be issued.

4.1 Summary of application materials

It shall briefly summarize the product's safety, effectiveness, quality controllability, production process, and its environmental impacts. The content of the summary can be made public.

4.2 Product name, basis, and category

4.2.1 Product common name and its basis

The common name shall reflect the real properties of the product and shall be used uniformly in the application materials. Generally, it shall contain such relevant information as effective components or similar groups of components, and source plants, etc.

The names of effective components shall conform to the naming principles of relevant domestic standards (such as pharmacopeia, national standards, and industrial standards) or standards of international organizations (such as the International Union of Pure and Applied Chemistry). Where applicable, the registration number of Chemical Abstracts Service (CAS) shall be provided.

(1) Purified extract

It shall be named after the effective components, and the Chinese name of the source plant shall be indicated, such as chlorogenic acid (from Shan Yin Hua).

(2) Component Groups extract

It shall be named with the Chinese name of the source plant (the part can be indicated if necessary) plus "extract", and the ~2-3 main effective components and/or groups of similar components shall be indicated, such as “Zisuzi extract (effective components groups: α- linoleic acid, linolenic acid, flavonoids).”

(3) Simple extract

It shall be named with the Chinese name of the source plant (the part can be indicated if necessary) plus "extract", without indicating the effective groups of components, such as “Duzhongye extract.”

4.2.2 Product commodity name

The commodity name is the name to be used when the product is sold in the market. It may not be provided if it is not applicable.

4.2.3 Product category

The category of “plant extract” is added in the Catalog of Feed Additives. The product can either be included in this category or be filled in according to the category name set up in the Catalog of Feed Additives according to its actual function.

4.3 Product development purpose

This part shall focus on the development background, research progress, development objectives, product functions, approved use status in feed and related industries domestically and abroad, advance and application prospects of the product.

4.4 The groups of components and determination reports, physicochemical properties, and safety protection information of the product

4.4.1 Groups of components for the product

It refers to all or main components of the product, including effective components (effective components or quality indicators) and other groups of components.

(1) Active groups of components and their contents

The content shall be calculated in percent (%), g/kg, mg/kg and other international units.

Purified extract: the effective components and their contents shall be provided. The common names, chemical names, CAS registration numbers (if required), molecular

formulas, chemical structural formulas, and molecular weights of effective components shall be provided.

Components extract: the effective components or similar groups of components in the active groups of components and their contents shall be provided. The components of active groups of components or similar components shall be chemically definable substances and be described with reference to the purified extract; for substances which cannot be described by a single chemical formula or cannot be completely identified, the components category shall be given or appropriate means shall be adopted for representation.

Simple extract: the quality indicator and its content shall be provided. The quality indicator shall be described with reference to the extract of the groups of components.

(2) Other groups of components and their contents

Other components and their contents except for the effective groups of components shall be provided. If the carrier is added, the name and formula quantity shall be provided.

For the mixture of other groups of components that cannot be described by a single chemical formula or cannot be completely identified, the component category (such as flavonoids) shall be specified, and the specific groups component content may not be provided.

4.4.2 Identification reports

The effective components in the purified extract, the active groups of components in the extract and the quality indicators in the simple extract shall be chemically definable substances that can be accurately identified. The main instruments and test methods used in the identification test shall be described, such as the characteristic reaction identification results of infrared spectrum, ultraviolet spectrum, chromatography, mass spectrum, nuclear magnetic resonance or chemical functional groups.

The characteristic charts including the above-mentioned active groups of components and other groups of components shall be provided for the component extract and simple extract; If necessary, the characteristic charts of the trace components shall be provided for the purified extract.

4.4.3 Appearance and physical properties

For solid products, such data as color, smell, particle size distribution, bulk density or unit weight, etc. shall be provided; for liquid products, such data as color, smell, viscosity, density and surface tension, etc. shall be provided; for paste products, the description of color, smell and taste, etc. shall be provided.

4.4.4 Physicochemical properties of effective groups of components

According to the nature of the product, the effective components in the purified extract, the effective groups of components in the component extract and the quality indicators in the simple extract shall be chemically definable substances, and their boiling points, melting points, densities, vapor pressures, refractive indexes, specific rotations, solubilities in common solvents, stabilities to light or heat, ionization constants, electrolytic performances, pKa and other data shall be provided. The relevant information can come from the data published by international authorities or the actual data measured by the applicant; for the extract of groups of components and simple extract, the solubility in common solvents shall be provided.

4.4.5 Product safety protection information

According to the nature of the product, the hazard description, leakage emergency treatment, operation disposal and storage, contact control and personal protection, first aid measures, waste disposal and other information shall be provided.

4.5 The function, scope of application, and method of use

4.5.1 Product function

The functional mechanism of the product shall be described, and its main functions shall be clarified. The product functions include improving feed quality (such as anti-oxidation, anti-mildew and antisepsis, acidity adjustment, feed attractant seasoning, coloring, etc.), increasing the output of animal products, improving the quality of animal products, improving the utilization rate of nutrients, promoting animal growth, improving animal health, etc., which shall be supported by test data or published literatures.

Those whose main function is to prevent or treat animal diseases, such as antiviral, antibacterial and anti-inflammatory, do not belong to the category of feed additives.

4.5.2 Scope of application and method of use

The scope of application and method of use shall specify the applicable animal species, production stage, recommended dosage, and precautions for usage. When

necessary, the recommended maximum addition amount of the product alone or together with other feed additives into the compound feed or total mixed ration shall be provided. The relevant contents shall be supported by the safety and effectiveness evaluation test data.

4.6 Production process, manufacturing method and product stability test report

4.6.1 Production technology and manufacturing methods

The production process flow chart and process description of products shall be provided. The flow chart shall be described in the form of a brief equipment diagram, reflecting the whole process of product production in details; the process description shall correspond to the flow charts one by one, focusing on ingredients, equipment, methods, and technical parameters used in each step of the production process (such as extraction solvent, extraction times, extraction time, temperature, pressure, and pH value), and if applicable, the control indicators of intermediate products shall also be provided.

4.6.2 Product stability test report

The stability test includes influencing factor tests, accelerated tests, and long-term stability tests. If puffing or pellet feed processing is involved, it is necessary to carry out the stability test of the product during puffing or pelletization and provide reports on conducting the stability test according to the relevant technical guidelines of the Ministry of Agriculture and Rural Affairs (MARA).

4.7 The draft of product quality standards, compilation instructions and testing reports

4.7.1 The draft of product quality standards

Compilation shall be made in accordance with the requirements of the Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents (GB/T 1/1), the Rules for Drafting Standards - Part 4: Test Method Standards (GB/T 20001.4), and the Rules for Drafting Standards - Part 10: Product Standards (GB/T 20001.10).

Product quality standards shall include basic information such as the scope, normative reference documents, terms and definitions, chemical names and molecular formulas (for pure substances), technical requirements (including product appearance and properties, identification indicators, physical and chemical indicators, etc.), sampling,

test methods, examination rules, labels, packaging, transportation, storage, shelf life, and appendices.

Identification indicators: The purified extracts shall provide identification indicators of effective components, and provide specific characteristics charts of other trace of groups of components when necessary; extract of groups of components shall include but not be limited to specific characteristics charts, which shall include effective groups of components and other groups of components; simple extracts shall include but not limited to specific characteristics charts, which shall include quality indicators and other components.

Physical and chemical indicators: They shall include but be not limited to the content of effective components (similar groups of components or quality indicators); necessary health indicators, such as heavy metals, mycotoxins and other toxic and harmful substances and microbial limits.

The specific detection methods of product quality standards can adopt the technical guidelines, national standards, and industry standards issued by the MARA, or the detection methods specified in publicly released group standards that have been determined to be widely acceptable and authoritative by a panel of experts from the National Feed Review Committee. For the case without regulations for the time being, new testing methods shall be established.

4.7.2 Compilation instructions

The basis for setting indicators in quality standards shall be explained. The setting of technical indicators shall meet the requirements of relevant laws and standards and be consistent with actual testing. If domestic and foreign standardized testing methods are cited, the international standards shall be provided with original text and Chinese translation, and the domestic standard shall be provided with the original Chinese text. For newly established testing methods, it shall be provided with the basis for determining the main technical contents of the methods according to the requirements of method formulation, including qualitative and quantitative analysis methods, pre-sampling handling methods, and methodological investigation.

4.7.3 Method verification reports

Verification reports shall be provided by at least three third-party institutions with testing qualifications for newly established testing methods (including specific characteristics charts). The verification of quantitative analysis methods shall examine the linear range, detection limit, quantitative limit, accuracy and precision. The

method for verification of specific characteristics charts shall examine the repeatability, the number and the relative retention time of characteristic peaks.

4.7.4 Test reports

Test reports for three batches of products shall be created and issued by the applicant, or an authorized institution with testing qualifications. The testing items shall be consistent with the quality standards, and the specified testing methods shall be adopted.

4.7.5 Testing methods of effective groups of components in feed products

For products with the maximum limit requirements, the testing methods of effective groups of components in compound feed or fully mixed daily rations, concentrate, concentrate supplement, and feed additives and premixes shall be provided according to the applicability.

4.8 Requirements for safety evaluation

The target animal tolerance evaluation reports, toxicology safety evaluation reports, and metabolism and residue evaluation reports are included in the materials for safety evaluation. The evaluation tests shall be carried out in accordance with technical guidelines or national standards and industry standards issued by MARA. In case of no guidelines issued by MARA or no national standards and industrial standards for the time being, technical specifications or guidelines issued by international authoritative organizations such as the World Health Organization (WHO) and the Organization for Economic Cooperation and Development (OECD) may be used. The target animal tolerance evaluation reports, toxicology safety evaluation reports, and metabolism and residue evaluation reports shall be issued by the evaluation testing institution designated by MARA. The organization issuing the evaluation reports shall not be the research organization or production enterprise of the product for the application and shall not have a relationship with the research organization or production enterprise.

Purified extracts, extracts from groups of components, and simple extracts shall be provided with safety evaluation materials by classification. See the annex for specific requirements.

4.8.1 Target animal tolerance evaluation reports

4.8.2 Toxicology safety evaluation reports

The toxicology safety evaluation reports include acute toxicity tests, genotoxicity tests (mutagenicity tests), 28-day oral toxicity tests, sub-chronic toxicity tests, teratogenic tests, reproductive toxicity tests, chronic toxicity tests (including carcinogenic tests), and other toxicity evaluations.

4.8.3 Metabolism and residue evaluation reports

Purified extracts from other plants shall be subject to metabolic and residual evaluation, except for the following effective components or metabolic residues, those which are:

- naturally present in feed substances and have a higher content;

- normal components of animal fluids or tissues;

- demonstrably excreted in their original form or not absorbed;

- absorbed in the physiological mode and physiological level of compounds in the body;

- data extrapolation stipulated in the technical guidelines, national standards or industry standards of MARA.

4.8.4 Relevant literature

The relevant literature includes safety evaluation reports issued by domestic and foreign authoritative institutions for the product, data on the safety of this product in the domestic and foreign authoritative publications, and other reports or literature data that can prove the safety of this product through the data review from domestic and international literatures.

4.9 Requirements of materials for evaluation of effectiveness

4.9.1 Effectiveness evaluation test report

The test report issued by the effectiveness evaluation institution designated by the MARA shall be provided. The effectiveness test of target animals shall be carried out in accordance with the technical guidelines or national standards and industry standards issued by MARA, except in cases where data extrapolation can be used as stipulated by the technical guidelines or national standards and industry standards of MARA.

4.9.2 Characteristic effectiveness test report

According to the usage of products, characteristic effectiveness test reports determined according to the technical specifications or recognized methods shall be provided, such as in vitro antioxidant and antivirus efficacy tests. The tests shall be conducted with representative products in the feed categories applicable to the application products. The test reports shall be issued by institutions of higher education, scientific research units, or testing institutions at the provincial ministerial level and above.

4.9.3 Relevant literature documentation

Relevant literature documentation includes the test reports or evaluation reports on the effectiveness or characteristic effectiveness of the target animal for the product issued by domestic and foreign authoritative institutions, the literature data on effectiveness or characteristic effectiveness of the target animal for the product by domestic and foreign authoritative publications, and other reports or literature data that can provide information for effectiveness or characteristic effectiveness of target animal for the product shall be provided by conducting domestic and foreign literature review.

The organization issuing evaluation reports shall not be the research and development organization of the application product, or the endorsement organization, production enterprise and organization with interest of conflicts with the research or production enterprise.

4.10 Analysis report on the possible impact on human health

The report should be developed according to the literature review and data of safety, effectiveness, metabolic residues and related product information, evaluated on the possible impact of feed additives on human health with reference to the risk assessment method.

The analysis report is not required for the source plants which are from groups of component extracts and simple extracts.

4.11 Labeling style, packaging requirements, storage conditions, shelf life and precautions

The labeling style shall comply with the regulations on the Administrative Regulations for the Management of Feed and Feed Additives and the national standard for Feed Labels (GB 10648). The determination of packaging requirements, storage conditions, and shelf life shall be based on the data of the stability test.

4.12 Summary of pilot production and report on the disposal of “three wastes”

4.12.1 Summary of pilot production

It shall include the time and location of the pilot test, the numbers of batches (at least five consecutive batches), batch number, and batch volume of products produced, the detailed production and test reports of each batch of the pilot products, the problems found in the pilot test ,and the disposal measures.

4.12.2 Report on disposal of “three wastes”

The “three wastes” generated in the production process and the disposal measures shall be described.

4.13 Joint application agreement

For a joint application made by two or more organizations (the applicants shall be the research organizations or production enterprises that jointly participate in product research and development), a joint declaration agreement signed by all joint application organizations shall be provided to clarify the ownership of intellectual property rights, ranking of applicants, scope of responsibilities, etc., and promise not to make duplicate applications for the same product. The agreement shall be signed by the legal representatives of each organization and stamped with their official seals.

4.14 Other materials

Other supporting documents and necessary materials that shall be provided. For example, a test report that shall further prove the safety of the product for application.

4.15 Reference materials

The main references in the product research, development and production shall be provided. The quotation shall be marked, the important documents shall be attached with full texts, and important documents in foreign languages shall be provided with translation. It is necessary to indicate whether the effective groups of components mentioned in the reference materials are consistent with the varieties of feed additives under application, and explain the detailed sources of relevant information such as databases, standards, research reports, literature periodicals, and books.

Annex

Table of Classification and Data Requirements for Applications for Plant-extracted Feed Additives

Contents	Purified extract		Groups of Components extract		Simple extract	
	Plants used for feed	Other plants	Plants used for feed	Other plants	Plants used for feed	Other plants
Application form of feed additives	+	+	+	+	+	+
Catalog of application materials	+	+	+	+	+	+
Application materials						
I. Summary of application materials	+	+	+	+	+	+
II. Product name, naming basis and category						
(I) General product name and naming basis	+	+	+	+	+	+
(II) Trade name of the product	*	*	*	*	*	*
(III) Product category	+	+	+	+	+	+
III. Purpose of product development	+	+	+	+	+	+
IV. Product groups of components and their identification reports, physical and chemical properties and safety protection information						
(I) Groups of components						
1. Effective components and their contents	+	+	+	+	+	+
2. Other components and their contents	+	+	+	+	+	+
(II) Identification report	+	+	+	+	+	+
(III) Appearance and physical properties	+	+	+	+	+	+

(IV) Physical and chemical properties of effective groups of components	+	+	+	+	+	+
(V) Product safety protection information	+	+	+	+	+	+
V. The function, scope of application, and usage of the product						
(I) Product function	+	+	+	+	+	+
(II) Scope of application and usage	+	+	+	+	+	+
VI. Production process, manufacturing methods and product stability test report						
(I) Production process and manufacturing methods	+	+	+	+	+	+
(II) Product stability test report	+	+	+	+	+	+
VII. The draft of product quality standards, compilation instructions and test reports						
(I) The draft of product quality standards	+	+	+	+	+	+
(II) Compilation instructions	+	+	+	+	+	+
(III) Methods verification report	*	*	+	+	+	+
(IV) Test report	+	+	+	+	+	+
(V) Testing methods of effective groups of components in feed products	*	*	*	*		*

Content	Purified extract		Component extract		Simple extract	
	Plants used for feed	Other plants	Plants used for feed	Other plants	Plants used for feed	Other plants
VIII. Data requirements for safety evaluation						
(I) Target animal tolerance evaluation report	+	+	±	+		+
(II) Toxicology safety evaluation report						
1. Acute toxicity test	+	+	±	+		+
2. Genotoxicity tests (mutagenicity tests)	+	+	±	+		+
3. 28-day oral toxicity test	+	+	±	+		+
4. Sub-chronic toxicity test	+	+	±	+		+
5. Teratogenic test	*	*	*	*		*
6. Reproductive toxicity test	*	*	*	*		*
7. Chronic toxicity tests (including carcinogenic tests)	*	*	*	*		*
(III) Metabolic and residual evaluation		±		*		*
(IV) Relevant documentation	*	*	*	*	*	*
IX. Data requirements for effectiveness evaluation						
(I) Effectiveness evaluation test reports/Characteristic effect test report	+	+	+	+	±	+
(II) Relevant literature documentation	*	*	*	*	*	*
X. Analysis report on the possible	+	+		*		*

impact on human health						
XI. Labeling style, packaging requirements, storage conditions, shelf life and precautions	+	+	+	+	+	+
XII. Pilot production summary report and the disposal of “three wastes”						
(I) Summary of pilot production	+	+	+	+	+	+
(II) Report on disposal of “three wastes”	+	+	+	+	+	+
XIII. Joint application agreement	*	*	*	*	*	*
XIV. Other materials	*	*	*	*	*	*
XV. Reference materials	+	+	+	+	+	+
XVI. CD (two copies)	+	+	+	+	+	+

Notes:

(1) “+” indicates that the data must be provided.

(2) No symbol indicates that the data is not required.

(3) “±” means that the test research report can be replaced by literature data, including evaluation reports issued by domestic and foreign authoritative institutions on this product, literature data published by domestic and foreign authoritative publications that can directly demonstrate the safety and effectiveness of this product, and other reports or literature data that can demonstrate the safety and effectiveness of this product. The extraction process and effective groups of components of “the product” mentioned above shall be basically consistent with the products submitted by the applicant.

(4) “*” indicates that the data should be provided when necessary.

(5) The used parts of the plants for feed in this guideline shall be consistent with the specific parts of plants specified in the Catalogue of Feed Ingredients.

Attachments:

No Attachments.