

3. CN112210085 - HUMIC ACID/FULVIC ACID TRITERPENOID SAPONIN COPOLYMER TABLET OR POWDER



National Biblio. Data Description Claims Documents

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[ZH]

Humic acid/fulvic acid triterpene saponin copolymer tablet or powder

TECHNICAL FIELD

The present invention relates to one kind of triterpenoid saponin copolymer which adopts mineral source humic acid, fulvic acid and camellia plant seeds to form a "humic acid/fulvic acid triterpenoid saponin copolymer", and then is prepared into tablets or powder and belongs to the field of biochemistry

BACKGROUND OF THE INVENTION

Humic acid (HA), fulvic acid (FA), is a multi-element aromatic carboxylic acid organic mixture extracted from lignite, mud charcoal and weathered coal containing HA, and has obvious effects and effects on livestock and poultry intestine gastritis, Larva/chick, diarrhea, mastitis, dyspepsia, retardation, improvement of organism immunity and the like.

In the 1990s, the Heilongjiang has approved the "sodium humate" preparation for livestock at the first time; the "sodium humate" feed additive was approved at the administration of Shanghai Animal Animal at Shanghai.. Therefore, the application of humic acid/fulvic acid in the field of animal husbandry/veterinary has a formal trend market, and its medical effect is positive.

However, a single humic acid, fulvic acid, is not ideal for inhibiting and killing pathogenic microorganisms when treating livestock and poultry diseases. In order to develop an antibiotic-substituted humic acid traditional Chinese medicine preparation, a natural active substance "triterpenoid saponin [or saponins]" is found in the camellia plant seeds for many years, and tests show that the product has an inhibition or killing effect on various disease-source microorganisms, and after being condensed and copolymerized with humic acid, the disease-resistant effect of a single variety is improved, and the traditional Chinese medicine preparation is a multifunctional plant-derived veterinary drug preparation, which can replace common antibiotics.

The "fulvic acid triterpenoid saponin copolymer" developed by Shanghai General Microbiological Technology, Inc. is superior to antibiotics, and is superior to antibiotics, and is superior to antibiotics; moreover, long-term advanced, disease-resistant, feed-to-meat ratio, survival rate and the like are superior to common chemical drugs; and research results have reached domestic leading level, belong to domestic first, and obtain high-new technical result conversion projects of the oversea, and also obtain the jackpot of the present invention.

Humic acid and triterpenoid saponin are subjected to decarboxylation condensation at a certain temperature to form a "humic acid saponin copolymer", which has complementary advantages, medicinal and health-care value multiplication, and has great significance in replacing antibiotics, treating common diseases of livestock and poultry, replacing antibiotics and treating common diseases of livestock and poultry.

SUMMARY OF THE INVENTION

According to the invention, mineral source humic acid or fulvic acid and-- triterpenoid saponin in camellia seeds are condensed and co-polymerized to generate a "humic acid triterpene saponin copolymer"; the triterpenoid saponin copolymer is used for treating common diseases of livestock and poultry, can replace antibiotics, greatly improves the healthcare effect of a single variety, and innovates a multifunctional veterinary drug biological preparation for China.

The present invention is realized by the following technical solutions:

A "humic acid/fulvic acid triterpenoid saponin copolymer tablet or powder" is a purified humic acid (HA), or fulvic acid (FA) obtained by "alkali extraction and acid precipitation" [conventional method], or fulvic acid (FA), a molecular formula R-COOH, a molecular weight of 1000 --5,000, and an aromatic carboxylic acid mixture having a complex molecular structure;

The above purified humic acid R-COOH is added with sodium hydroxide NaOH 10%, the addition water is 5 times that of HA, and the mixture is heated and stirred for 30-40 minutes at 80-90 DEG C to generate sodium humate R-COOH; then, two solutions of fulvic acid FA and humic acid HA are separated by an "acid precipitation method" and a PH of less than 2, and two [HA and FA] triterpene saponin copolymers can be prepared;

The method comprises the following steps: crushing, crushing, adding 5 times of deionized water, stirring and pulping, heating for 80-90 C degrees, stirring and activating for 2-3 hours, and extruding and deslagging to obtain 60% triterpene saponin and oligosaccharide mixed solution [further containing other active substances];

50% of humic acid or fulvic acid solution, 50% of triterpenoid saponin extraction solution [1: 1, adjustable], heated to 80-90 C, 0.1% formaldehyde as promoter and 0.5% NaOH as solubilizer, stirring and condensation reaction for 2-3 h, and dehydration condensation of R-COOH on HA with aldehyde hydroxyl or carboxyl in triterpene saponin to form a composite solution of humic acid or fulvic acid condensation copolymer and other various active ingredients. And then concentrated and dried to prepare a tablet or powder.

The invention also discloses a preparation method of the humic acid/fulvic acid triterpene saponin copolymer tablet or powder

[1] Crushing the raw materials (lignite, weathered coal or peat) containing HA to < 40 meshes, adding water for 5 times, adding hoA (total amount) 10%, heating to 80-90 C degrees, and extracting to obtain total HA; adjusting the pH value of HCl by HCl to be less



than or equal to 2, and centrifuging to remove precipitate [brown and black HA] to obtain FA liquid; and if not, treating the total HA sodium solution.

[2] crushing the cake residue after oil pressing, crushing, adding 5 times of deionized water, pulping by using a beater, heating for 80-90 C degrees, stirring and extracting for 2-3 hours, and squeezing to remove slag to obtain 60% triterpene saponin and oligosaccharide mixture [also containing other active substances];

[3] The above composite solution and the phenolic hydroxyl group [R-OH] or carboxyl group [R-COOH] in the two humic acid solutions are subjected to dehydration condensation copolymerization under the catalysis of 80-90 C and 0.1% formaldehyde and 0.5% NaOH, so as to obtain 2 "humic acid or fulvic acid/triterpene saponin co-composite liquid", and the powder can be obtained by spray drying, and then the powder can be prepared into a tablet after being subjected to tableting treatment.

The " humic acid/fulvic acid triterpene saponin copolymer tablet or powder prepared by the present invention is brown grey, has a pH of 7 to 8, and is soluble in water.

The raw materials and reagents involved in the present invention are commercially available or processed.

The beneficial effects of the present invention are as follows:

[1] improving the molecular weight and polymerization degree of HA and FA molecules, and generating a new macromolecular humic acid/oligosaccharide/saponin polymer, and has a good treatment or repair effect on animal intestines, gastric mucosa ulcers, livestock and poultry red/white dysentery, enteritis, diarrhea and the like;

[2] The multifunctional property of a single variety is improved, and the medical and health-care effects of livestock and poultry are greatly improved.

[3] Widely used in the prevention and treatment of common diseases of livestock and poultry, replacing antibiotics for feed additives, improving immunity and the like, and has a good effect.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is further described below with reference to the embodiments; these embodiments are only used to illustrate the present invention and are not intended to limit the scope of protection of the present invention.

Example 1

Preparation of humic acid/triterpene saponin copolymer tablets or powders

An HA raw material selection: The present invention is a lignite containing humic acid or fulvic acid, weathered coal, peat (or turf) as a raw material, wherein the weathered lignite is the best; the HA or FA content should be more than 50% as a high-quality raw material;

2. Selection of camellia seed raw materials: The camellia oleifera seed is used as a raw material, and wild or artificial cultivation in the south of south China can be used

3. Preparation Process:

[1] a humic acid extracting solution, using a weathered lignite containing 50% or more of HA, adding 5 times of deionized water and 10% of hoA, heating to 80-90 C degrees, stirring for reaction for 30 minutes, precipitating for centrifugation, and removing water insoluble substances to obtain a total HA sodium solution;

[2] using a camellia oleifera cake, crushing (< 3 mm), adding water for 5 times, pulping, heating for 80-90 C degrees for X3 h, extruding, and filtering to obtain a triterpene saponin composite solution;

[3] mixing the above two solutions according to a ratio of 1: 1 (adjustable), adding 0.1% formaldehyde catalyst and 0.5% NaOH solubilizer, heating to 80-90 C degrees, dehydrating and condensing/copolymerizing 2-3 h in a norm of pH 7.2-7.5, spray drying to obtain triterpenoid saponin copolymer powder, and granulating by tableting to obtain tablets or granules.

Fourth, product analysis: The triterpenoid saponin copolymer of the present invention is characterized in that the molecular weight is increased, the viscosity is improved, and the intrinsic viscosity of the measured humic acid is increased by 2.08 times higher than the intrinsic viscosity after condensation and copolymerization with an "Kussui viscosity test method". 83.6% Of total organic matter, 35.3% of humic acid, 7.6% of humic acid, 32.7% of triterpene saponin is measured by a "colorimetric method" or "thin-layer scanning method", and the purpose of triterpenoid soap or compound copolymerization of humic acid is achieved.

Example 2

Preparation of fulvic acid/triterpene saponin copolymer tablets or powders

The humic acid raw material is changed to a fulvic acid raw material containing 50% or more, and the FA solution is extracted by a "alkali-soluble acid precipitation method" or a cationic "resin crosslinking method"; taking 100 kg of FA solution, condensing with 100 kg of triterpene saponin, adding 0.1% formaldehyde catalyst and 0.5-0.3% NaOH solubilizer according to a ratio of 1: 1, heating to 80-90 C degrees, dehydrating and condensing/copolymerizing 2-3 h in the range of pH 7.2-7.5, and spray drying or granulating to obtain the fulvic acid/triterpenoid saponin copolymer tablet or powder.

5. Product analysis: The main feature of the product according to the humic acid/triterpenoid saponin copolymer is that the molecular weight is increased, the intrinsic viscosity is improved, and the intrinsic viscosity of the fulvic acid intrinsic viscosity is increased by 2.4 times as the intrinsic viscosity of the copolymer after copolymerization is measured.. The total organic matter was 78.3% as measured according to HG/T 3278-1987, and fulvic acid \geq 34.5%; triterpene saponins were measured using "colorimetric method" or "thin-layer scanning method" \geq 32.5%, PH 7.2.. The aim of the copolymerization of the triterpene saponin of fulvic acid is achieved.

Example 3

[1] Sodium humate or fulvic acid solution extracted from Example 1 or 2 above;

[2] Using the above-mentioned Camellia Extraction Triterpene Saponin Composite Solution;

[3] mixing the above two solutions according to a ratio of 1: 1 (adjustable), not performing a condensation reaction, and directly performing mixing so as to obtain "humic acid or fulvic acid/triterpene saponin composite solution".

[4] Drying the above-mentioned composite liquid with spray or scraper to obtain "humic acid or fulvic acid/triterpene saponin" powder, and then granulating to obtain tablets or granules.

Product analysis: The main features of the present invention are the complex of humic acid/fulvic acid and triterpenoid saponin, readily soluble in water. The content of triterpene saponin was 31.8%, fulvic acid was 35.6%, PH 7.6.

Effect Test:

1. Practical effect of humic acid/fulvic acid triterpene saponin copolymer tablet or powder

2012 In August 8-12, the inventors were carried out in Shanghai Popular Words and Shanghai Arrong Group Special Aquaculture, Maple Maple Pig, Pine River Farm, and the like

Experiments were carried out; the test results were compared with fulvic acid, antibiotics (gentamicin and streptomycin), and the test results are as follows:

TABLE 1 GENERATION OF ANTIBIOTICS FOR PREVENTION AND TREATMENT OF MICE DIARRHEA



Injection: Antibiotic is streptomycin + gentamicin, which has a very low cure rate due to the commonly used/generated drug resistance

TABLE 2. Antibiotics in place of farrowing all-valence feed

TABLE 3 GENERATION OF ANTIBIOTIC FEED/MEDIUM-EFFECT PREVENTION AND TREATMENT EFFECTS

Injection: The product is added with 0.1% in the feed, and the onset effect of pigs and diarrhoea after 1 month of feeding is observed

TABLE 4 EFFECT OF ANTIBIOTIC ON VARIOUS INDICATORS OF PIG FEEDING

Note: This group test is a continuation of the test described above in Table 3

Effect of Table 5 antibiotics in broiler breeding

Note: The product was added to the feed for 0.1% and fed for 30 days

Effect of Table 6 antibiotics in chick feeding

Note: The product was added to the feed for 0.1%, and the results were fed for 30 days.

