Application of modified fulvic acid in preparation of anti-arthritis medicament

Abstract

The invention discloses application of modified fulvic acid in preparation of an anti-arthritis medicament. The method comprises the following steps: (1) directionally degrading a fulvic acid-containing raw material or fulvic acid in water with HNO3 and H2SO4 to prepare a fulvic acid degradation product; (2) reacting the fulvic acid degradation product prepared in the step (1) with kojic acid or a kojic acid-containing extract under a microwave condition. According to the application, the modified fulvic acid is applied to preparation of an anti-arthritis medicine; compared with an existing treatment medicament, the anti-arthritis medicament has the advantages that firstly, the modified fulvic acid is extracted by utilizing a turf resource, the resource is sufficiently utilized, and the environment is protected; raw material medicine resources are rich, the curative effect of the anti-arthritis medicament is the same as that of existing treatment medicines, but the medicament is higher in cost performance; compared with other western medicines, the curative effect of the anti-arthritis medicament is good, but adverse responses are few. The modified fulvic acid formulation has excellent economical benefit and social benefit.

CN103720717A

China

Download PDF Find Prior Art Similar

Other languages: Chinese

Inventor: 吕伟东, 陈为, 刘强

Current Assignee : GUANGZHOU DONGSONG ENERGY GROUP Co Ltd

Worldwide applications

2013 CN

Application CN201310711900.2A events

2013-12-20	Application filed by GUANGZHOU DONGSONG ENERGY GROUP Co Ltd
2013-12-20	Priority to CN201310711900.2A
2014-04-16	Publication of CN103720717A
Status	Pending

Info: Patent citations (2), Non-patent citations (1), Cited by (1), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Claims (8)

Hide Dependent

1. modification yellow humic acid is in the application of preparing in arthritis medicament, and the preparation method of described modification yellow humic acid comprises the following steps: (1) will be containing raw material or the yellow humic acid of yellow humic acid, in water through $HNO_3$and H_2SO_4directed degraded, makes yellow humic acid degradation products; (2), under microwave condition, the yellow humic acid degradation products that step (1) is made, reacts with kojic acid or containing the extract of kojic acid, obtains.

2. modification yellow humic acid according to claim 1, in the application of preparing in arthritis medicament, is characterized in that: the dosage form of described medicament is peroral dosage form.

3. modification yellow humic acid according to claim 1, in the application of preparing in arthritis medicament, is characterized in that: in described step (1), containing the raw material of yellow humic acid, be peat, brown coal or the weathered coal containing yellow humic acid.

4. modification yellow humic acid according to claim 1, in the application of preparing in arthritis medicament, is characterized in that: in described step (1), and $HNO_3$and H_2SO_4mass ratio be 5:1 ~ 3:1.

5. modification yellow humic acid according to claim 1, in the application of preparing in arthritis medicament, is characterized in that: in described step (1), and degradation agent $HNO_3$and H_2SO_4consumption be 20 ~ 30%, percentage ratio is the mass concentration percentage ratio of degradation agent in water.

6. modification yellow humic acid according to claim 1 is in the application of preparing in arthritis medicament, it is characterized in that: in described step (1), directed degraded is carried out under Ultrasonic Conditions, and ultrasonic frequency is 100 ~ 200KHz, temperature is 90-120 ℃, 100 ~ 140 minutes time.

7. modification yellow humic acid according to claim 1, in the application of preparing in arthritis medicament, is characterized in that: in described step (2), described microwave condition is microwave frequency 2450Hz, under microwave power 450 ~ 550W, and reaction 25 ~ 35min.

8. modification yellow humic acid according to claim 1, in the application of preparing in arthritis medicament, is characterized in that: in described step (2), yellow humic acid degradation products and kojic acid or the mol ratio containing the extract of kojic acid are 1:1 ~ 1:2.

Description

Modification yellow humic acid is in the application of preparing in arthritis medicament

Technical field

The invention belongs to drug world, particularly the medicinal usage of the modification yellow humic acid in peat extract.

Background technology

Peat is the atmospheric swamp ground product that a kind of process forms for several thousand, is the coal that degree of coalification is minimum, is also the most original state of humic coal series.Peat is piled up formation in peat bog, under the pressure and further fungi degradation condition of overlying sediments thing, through

compression and dehydration, become firmer later, become brown coal, while continuing to be again subject to subsurface temperature and pressure-acting, through incoalation, form bituminous coal or anthracite.Organic matter in peat is mainly cellulose, hemicellulose, lignin, humic acid, bituminous material etc.In peat, content of humic acid is often that 10 ~ 30%, Gao Zheke reaches more than 70%.Peat is of many uses, can be used for agricultural, as organic fertilizer with grow seedlings and the soil matrix of flower cultivating, also can be used for industry, as fuel power generation function, chemical industry (therefrom extracting plurality of raw materials), wine brewing, medicine, potting and construction material etc.Peat and main effective ingredient humic acid substance thereof, have multiple use at field of medicaments, has part report for gastroenteropathy, arthritis etc., to have convergence, antiinflammatory, pain relieving, removing the necrotic tissue and promoting granulation effect, and dermatosis, eczema etc. is had to certain curative effect.

Chinese patent (patent No. 200810205110.6) " a kind of method of modifying of yellow humic acid and products obtained therefrom and the application in preparation raising immunity or control HIV medicine thereof " discloses a kind of method of modifying of yellow humic acid, it comprises the steps: that (1) is by raw material or yellow humic acid containing yellow humic acid, in water, under the effect of degradation agent, through orientation degraded, make yellow humic acid degradation products; Described degradation agent is HNO_3, $HNO_3$and H_2SO_4, or acetic acid and H_2O_2; (2), under microwave condition, the yellow humic acid degradation products that step (1) is made, reacts with kojic acid or containing the extract of kojic acid, makes yellow humic acid modifier of the present invention.This invention also relates to the yellow humic acid modifier being made by said method and improves the application in the medicine of immunity or the medicine of control HIV in preparation.The yellow humic acid modifier tool of this invention immunity that increases significantly, especially improve the effect of HIV patient's immunity, and toxic and side effects is little, and drug resistance is little, and targeting is clear and definite, and preparation method is simple, and cost is low.

Arthritis general reference occurs in the inflammatory diseases of human synovial and surrounding tissue thereof, can be divided into tens of kinds.The arthritic of China has more than 100,000,000, and number is in continuous increase.Clinical manifestation be joint red, swollen, hot, bitterly, dysfunction and joint deformity, severe patient causes joint deformity, affects patients ' life quality.Different arthritis, its cause of disease, clinical manifestation, treats and lapses to all and differ.Arthritic cause of disease complexity, mainly relevant with the factor such as inflammation, autoimmune response, infection, metabolism disorder, wound, degeneration.

Ancient medicine thinks that the damp and hot heresy of wind and cold is this pathogenetic exopathogenic factor more, and it is the important endogenous cause of ill of primary disease that insufficiency of vital energy and blood, battalion defend imbalance.As < < Plain Questions numbness opinion > > day: " wet three gas of wind and cold are mixed extremely, combined into numbness also." < < Huatuo's Zhongzang classic opinion numbness > > says: " and numbness person, in the wet gas of wind and cold in people's internal organs for also.Enter sick simple and easy controlling of internal organs, enter dirty sick dark refractory." < < Medical Treasures of the Golden Chamber apoplexy severe and migratory arthralgia abnormal pulse demonstrate,proved and control the 5th > > day " pulse at CUN KOU being deep and weak, therefore day severe and migratory arthralgia."

China's Chinese medicine researcher is controlled in arthritic typing opinion, Stages, is continued to use the aspects such as classical prescription treatment, single medicinal material treatment and carried out the further investigation of system in recent years.From natural product, find that new arthritis medicine has good economic benefit and social benefit.

Summary of the invention

The object of this invention is to provide modification yellow humic acid in the application of preparing in arthritis medicament.

Technical scheme of the present invention is achieved in that modification yellow humic acid is in the application of preparing in arthritis medicament, the preparation method of described modification yellow humic acid comprises the following steps: (1) will be containing raw material or the yellow humic acid of yellow humic acid, in water through $HNO_3$and H_2SO_4directed degraded, makes yellow humic acid degradation products; (2), under microwave condition, the yellow humic acid degradation products that step (1) is made, reacts with kojic acid or containing the extract of kojic acid, obtains.

The dosage form of described medicament is peroral dosage form.

In described step (1), containing the raw material of yellow humic acid, be peat, brown coal or the weathered coal containing yellow humic acid.

In described step (1), $HNO_3$and H_2SO_4mass ratio be 5:1 ~ 3:1.

In described step (1), degradation agent $HNO_3$and H_2SO_4consumption be 20 ~ 30%, percentage ratio is the mass concentration percentage ratio of degradation agent in water.

In described step (1), directed degraded is carried out under Ultrasonic Conditions, and ultrasonic frequency is 100 ~ 200KHz, and temperature is 90-120 ℃, 100 ~ 140 minutes time.

In described step (2), described microwave condition is microwave frequency 2450Hz, under microwave power 450 ~ 550W, and reaction 25 ~ 35min.

In described step (2), yellow humic acid degradation products and kojic acid or the mol ratio containing the extract of kojic acid are 1:1 ~ 1:2.

The present invention is applied to modification yellow humic acid to prepare arthritis medicine, and it has the advantage of three aspects compared with existing medicine: be first 1) to utilize peat Resource Access modification yellow humic acid, take full advantage of resource, protected environment; 2) material medicine aboundresources, to compare curative effect identical with existing medicine, but cost performance is higher; 3) compared with other Western medicine, good effect but untoward reaction is few.Modification yellow humic acid preparation of the present invention has good Social benefit and economic benefit.

The specific embodiment

The present invention is that modification yellow humic acid is in the application of preparing in arthritis medicament, described modification yellow humic acid is the product that the open preparation method of Chinese patent 200810205110.6 makes, concrete preparation method is: (1) will be containing raw material or the yellow humic acid of yellow humic acid, in water through $HNO_3$and H_2SO_4directed degraded, makes yellow humic acid degradation products; (2), under microwave condition, the yellow humic acid degradation products that step (1) is made, reacts with kojic acid or containing the extract of kojic acid, obtains.Preferably, in step (1), containing the raw material of yellow humic acid, be peat, brown coal or the weathered coal containing yellow humic acid.$HNO_3$and H_2SO_4mass ratio be 5:1 ~ 3:1.Degradation agent $HNO_3$and H_2SO_4consumption be 20 ~ 30%, percentage ratio is the mass concentration percentage ratio of degradation agent in water.Directed degraded is carried out under Ultrasonic Conditions, and ultrasonic frequency is 100 ~ 200KHz, and temperature is 90-120 ℃, 100 ~ 140 minutes time.In step (2), described microwave condition is microwave frequency 2450Hz, under microwave power 450 ~ 550W, and reaction 25 ~ 35min.Yellow humic acid degradation products and kojic acid or be 1:1 ~ 1:2 containing the mol ratio of the extract of kojic acid.

Modification yellow humic acid of the present invention is the active component of peat, according to conventional preparation process, can be take modification yellow humic acid as main active, add the excipient substances such as conventional excipient, flavoring agent, antiseptic, lubricant, wetting agent, adhesive, thickening agent, solubilizing agent, make any peroral dosage form that is suitable for using clinically, as capsule, tablet, electuary etc.General, the oral modification yellow humic acid dosage of preparation is 4.5 grams of every days, day takes 3 times, each serving with 1.5 grams.

Because the present invention discloses modification yellow humic acid first in the application of preparing in arthritis medicine.By modification yellow humic acid separately or coordinates and make medicament with other active constituent or adjuvant, need only this medicament and be used for the treatment of arthritis, no matter with which kind of administering mode, all belong to protection scope of the present invention.

The present invention confirmed first modification yellow humic acid there is antiinflammatory, especially to the good therapeutical effect of rat assist agent arthritis.

Below in conjunction with specific embodiment, the present invention is described further, but the present invention is not limited to this specific examples.

Embodiment 1

By 100g natural peat yellow humic acid, containing degradation agent $HNO_3$and H_2SO_4aqueous solution (100ml, degradation agent total concentration 25wt%, $HNO_3$and H_2SO_4mass ratio be 4:1) in, at 110 ℃ of temperature, under the ultrasound wave of 150KHz, directed degradation reaction 120min, obtains mean molecule quantity and is 140 yellow humic acid degradation products.By 1mol yellow humic acid degradation products and kojic acid extract (containing 1.5mo1 kojic acid) at microwave frequency 2450Hz, under microwave power 500W, reaction 30min, then through medical activated carbon absorption roguing, make the yellow humic acid modifier powder of the present embodiment.

The preparation of embodiment 2 modification yellow humic acid capsules

Preparation method: modification yellow humic acid, starch and L-HPC are mixed to mix homogeneously; Add starch slurry soft material processed in right amount, with 16 orders, granulate, be dried and granulate, add micropowder silica gel, magnesium stearate mix homogeneously, make 1000.

Oral dose is for day taking 3 times, each serving with 3.

The preparation of embodiment 3 modification yellow humic acid tablets

Formula: the modification yellow humic acid 450g of embodiment 1 gained

Magnesium stearate 5g

DEXTRIN g

Preparation method: get principal agent modification yellow humic acid and dextrin and fully mix rear mistake 60 mesh sieves, make soft material, 24 mesh sieves are granulated, dry, and granulate, adds magnesium stearate fully to mix before tabletting, measure granule content qualified after, tabletting and get final product, makes 1000.

Oral dose is for day taking 3 times, each serving with 3.

Experimental example 1 modification yellow humic acid xylol causes the impact of mice ear

1. experiment material

1.1 laboratory animal SPF level KM mices, male, body weight 18 ~ 22g, 72 (control 20 ~ 25 ℃ of receptacle room temperatures, humidity 40 ~ 70%, freely drinks water, and ingests.

1.2 Experimental agents modification yellow humic acids (FA).The accurate modification yellow humic acid powder 2.32g that takes embodiment 1 gained respectively, 4.64g, 9.28g, dissolves, and is settled to 100ml, as the basic, normal, high concentration liquid of FA, freezing standby respectively.

1.3 reagent dimethylbenzene; Aspirin Enteric-coated Tablets.

1.4 Instrumental Analysis balances; 9mm diameter card punch.

2. experimental technique

2.1 grouping and administrations

Mice is divided into 5 groups at random.Be blank group, aspirin group, the basic, normal, high dosage group of modification yellow humic acid.Blank group is with distilled water gavage, and dosage is 25ml/kg; Aspirin group gastric infusion, dosage is 0.234g/kg; The basic, normal, high dosage group of modification yellow humic acid gastric infusion, dosage is respectively: 0.55g/kg, 1.1g/kg, 2.2g/kg.Each group mice is administered once every day, successive administration 7 days.

2.2 animals are processed and index determining

After last administration 1h, in mouse right ear two sides, be coated with dimethylbenzene 20 μ l, left ear is not painted with normal ear, after 20min, de-cervical vertebra is put to death mice, with diameter, is that 9mm card punch is laid left ear and the same position of auris dextra, on analytical balance, weigh, record the auris dextra of every mice, the weight of left ear, with formula calculating swelling and inhibitory rate of intumesce below.

The weight (mg) of weight (the mg)-left ear of mice of swelling (mg)=mouse right ear

The average swelling of inhibitory rate of intumesce (%)=(the average swelling of the average swelling one administration group of blank group)/blank group

2.3 date processing

This tests all mean ± standard deviations for result represent.Adopt SPSS13.0 statistical software, with relatively group difference of one factor analysis of variance method (One-Way ANOVA), between group, significance relatively adopts LSD method between two, using 0.05 or 0.01 as significant difference sign.

3. experimental result

Experimental result (in Table 1) shows, compared with blank group, and aspirin group, all there is significant difference in modification yellow humic acid low dosage and high dose group.

The modification yellow humic acid xylol of table 1. various dose causes the impact of mice ear

With the contrast of blank group, * $p<0.05$, * * $p<0.01$

4. conclusion

The features such as the swollen experimental technique of mouse ear is usually used in screening anti-inflammatory drug, and the method is simple, does not need special equipment, and has instant effect, and dosage is few, so adopting said method the has carried out comparative study antiinflammatory action of modification yellow humic acid.Experimental result shows, in, the mice ear due to the modification yellow humic acid xylol of high dose has significant inhibitory action, and the inhibitory action of high dose is slightly better than positive control drug aspirin.

Experimental example 2 impacts of modification yellow humic acid on rat assist agent arthritis

1. experiment material

1.1 laboratory animal SPF level SD rats, male, body weight 180 ~ 220g, 72,20 ~ 25 ℃ of receptacle room temperatures processed, humidity 40 ~ 70%, freely drinks water, and ingests.

1.2 Experimental agents modification yellow humic acids (FA).The accurate modification yellow humic acid powder 2.32g that takes embodiment 1 gained respectively, 4.64g, 9.28g, dissolves, and is settled to 100ml, as the basic, normal, high concentration liquid of FA, freezing standby respectively.

1.3 reagent Freund's complete adjuvants; Tripterygium wilfordii Polyglycosidium Tablets.

1.4 instrument rat foot volume testers; Electronic balance; Centrifuge; Syringe; Disposable vein is got blood pin; The common venous blood collection pipe of 5ml; Rat oral gavage pin.

2, experimental technique

The preparation of 2.1 rat assist agent arthritis (AA) model

Except blank group, all the other group Rat Right metapedes do after routine disinfection, in right back toes intradermal injection Freund`s Freund's complete adjuvant 0.1ml, cause inflammation.

2.2 impacts on constitutional pedal swelling and Secondary cases foot Shi swelling

Select 60 of SD rats, body weight 200 ± 20g, male and female half and half, 20 ℃ of room temperatures, the Animal House of humidity 70% left and right is raised.Be divided at random blank group, model group, positive controls, Chinese medicine high dose group, 6 groups of middle dosage group and low dose group, 10 every group.Cause scorching rear the 25th day gastric infusion, and detect respectively and cause scorching side and non-ly cause scorching parapodum volume with sufficient sole of the foot capacity measurer in administration the 1st, 4,7,10,14 days, calculate constitutional pedal swelling suppression ratio and Secondary cases pedal swelling swelling rate, to observe the variation of AA rat primary and Secondary cases pedal swelling.Computing formula is as follows:

2.3 statistical method

This tests all mean ± standard deviations for result represent.Adopt SPSS13.0 statistical software, with relatively group difference of one factor analysis of variance method (One-Way ANOVA), between group, significance relatively adopts LSD method between two, using 0.05 or 0.01 as significant difference sign.

3. experimental result

The impact (in Table 2) of modification yellow humic acid on AA rat Secondary cases pedal swelling (left back foot swelling rate).

Found that, after Rat Right toes intradermal injection not formula Freund's complete adjuvant 0.1ml cause scorching after the 28th day and the 31st day, the left back foot swelling rate of model group rat, all apparently higher than blank group, is pointed out rat assist agent arthritis secondary symptom modeling success ($P < 0.05$).Cause scorching rear the 28th day (administration the 4th day), the left back foot swelling rate of the middle and high dosage group of FA rat is starkly lower than model group ($P < 0.05$).Cause scorching rear the 31st day (administration the 7th day), the left back foot swelling rate of the middle and high dosage group of FA and positive group rat is all starkly lower than model group ($P < 0.01$), and the left back foot swelling rate of FA low dosage rat is all starkly lower than model group ($P < 0.05$).Illustrate that modification yellow humic acid has stronger mitigation to AA rat Secondary cases pedal swelling, onset time is faster than positive control drug.The left back foot swelling rate of table 2 each group different observing time of rat changes (n=10)

Compared with model group, * $P < 0.05$, * * $P < 0.01$

The impact (in Table 3) of modification yellow humic acid on AA rat primary pedal swelling (right back sufficient suppression ratio).Found that, after Rat Right toes intradermal injection not formula Freund's complete adjuvant 0.1ml cause scorching after the 28th day and the 31st day, the right back sufficient suppression ratio of model group rat is all apparently higher than blank group, and prompting rat assist agent arthritis primary symptom is ($P < 0.05$) in rehabilitation progressively.Cause scorching after the 31st day (be after administration the 7th day) right back sufficient suppression ratio of FA low dose group rat all apparently higher than blank group, point out low, middle dosage group to have the effect that promotes the rehabilitation of rat primary arthritis.

The variation of the each group of table 3 different observing time of Rat Right metapedes suppression ratio (n=10,)

Compared with model group, * $P < 0.05$, * * $P < 0.01$.

Patent Citations (2)

Publication number	Priority date	Publication date	Assignee	Title
CN1213665A *	1998-08-25	1999-04-14	祝亚勤	Prepn. method of medicinal-grade peat sodium fulvic acid
CN101475605A *	2008-12-30	2009-07-08	华东理工大学	Modification method of yellow humic acid, product obtained therefrom, and use thereof in preparation of immunity improving or HIV preventing medicaments
Family To Family Citations				

* Cited by examiner, † Cited by third party

Non-Patent Citations (1)

Title
谢晓锐等。: "医用腐植酸类物质的研究展望", 《腐植酸》, no. 4, 31 August 2006 (2006-08-31), pages 1 - 2 *

* Cited by examiner, † Cited by third party

Cited By (1)

Publication number	Priority date	Publication date	Assignee	Title
CN105106235A *	2015-08-18	2015-12-02	河南科技大学	Sodium fulvate pharmaceutical composition, and sodium fulvate capsule preparation and preparation method thereof

Family To Family Citations

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
CN103768308B	2016-05-04	A kind of pharmaceutical composition that is used for the treatment of the infection of the upper respiratory tract and preparation method thereof
CN105169096B	2018-11-13	A kind of pharmaceutical composition for treating gout or/and hyperuricemia
CN102793741A	2012-11-28	Beautiful millettia root extract and application thereof
CN105504076A	2016-04-20	Tetrastigma hemsleyanum Diels et Gilg root tuber polysaccharide with anti-pyretic and anti-inflammatory functions and application of Tetrastigma hemsleyanum Diels et Gilg root tuber polysaccharide
CN101347495B	2011-11-23	Preparation of Glabridin dispersible tablets and use of the tablets in reducing blood sugar as medicament active composition
CN107669991A	2018-02-09	A kind of pharmaceutical composition for reducing serum uric acid level and preparation method thereof
CN101732668A	2010-06-16	Preparation method of Chinese medicinal composition for treating urinary system infection
CN101991811B	2012-02-22	Traditional Chinese medicine composition for treating rheumatism arthralgia, cold headache, abdominal cavity pain and chilblain and preparation method thereof
CN103720717A	2014-04-16	Application of modified fulvic acid in preparation of anti-arthritis medicament
CN101926896B	2012-05-30	Traditional Chinese medicinal preparation for treating gout and preparation method thereof
CN104162058A	2014-11-26	Traditional Chinese medicine compound preparation for treating gout and preparation method thereof
CN105434802A	2016-03-30	Pharmaceutical composition for treating diabetes, and preparation method and application thereof
CN103341057B	2014-11-26	Chinese patent medicine pill for treating calculus, nephritis and cholecystitis
CN101254186A	2008-09-03	Medicament use of myricetin
CN105232759B	2016-07-13	A kind of pharmaceutical composition treating rhinitis and preparation method thereof
CN1212143C	2005-07-27	Medicine for treating coronary disease and its preparation method
CN103720716A	2014-04-16	Application of modified fulvic acid in preparation of antitumor drugs
CN103316166A	2013-09-25	Tibetan medicine for treating hemorrhoids and preparation method thereof
CN103191243B	2014-11-05	Application of medicament composition composed of coptis chinensis and fructus evodiae and preparation method of medicament composition
CN1569085A	2005-01-26	Pharmaceutical composition for treating rheumatic arthritis and rheumatoid arthritis
CN103880913A	2014-06-25	Compound with liver protection effect and application thereof
CN101485717B	2011-12-14	Oral medication for treating pyogenic skin infection
CN101940778B	2011-11-30	Medicinal composition for treating heart failure and preparation method and application thereof
CN108567753A	2018-09-25	All beam dripping pill and its preparation process
CN102423323B	2013-03-13	Compound medicine for treating rheumatism and preparation method thereof

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
CN201310711900.2A	2013-12-20	2013-12-20	Application of modified fulvic acid in preparation of anti-arthritis medicament

Applications Claiming Priority (1)

Application	Filing date	Title
CN201310711900.2A	2013-12-20	Application of modified fulvic acid in preparation of anti-arthritis medicament

Legal Events

Date	Code	Title	Description

2014-04-16	C06	Publication	
2014-04-16	PB01	Publication	
2014-05-14	C10	Entry into substantive examination	
2014-05-14	SE01	Entry into force of request for substantive examination	
2017-07-07	RJ01	Rejection of invention patent application after publication	
2017-07-07	RJ01	Rejection of invention patent application after publication	**Application publication date**: 20140416

Concepts

machine-extracted

Download Filter table

Name	Image	Sections	Count	Query match
drug		title,claims,abstract,description	45	0.000
preparation method		title,claims,abstract,description	18	0.000
3,7,8-trihydroxy-3-methyl-10-oxo-1,4-dihydropyrano[4,3-b]chromene-9-carboxylic acid		title,abstract	9	0.000
Kojic acid		claims,abstract,description	36	0.000
kojic acid		claims,abstract,description	18	0.000
degradation product		claims,abstract,description	15	0.000
raw material		claims,abstract,description	10	0.000
water		claims,abstract,description	10	0.000
humic acid		claims,description	82	0.000
modification		claims,description	45	0.000
modification reaction		claims,description	45	0.000
Arthritis		claims,description	25	0.000
chemical substances by application		claims,description	18	0.000
peat		claims,description	14	0.000
degradation reaction		claims,description	12	0.000
catabolic process		claims,description	11	0.000
degradation		claims,description	11	0.000
carbon		claims,description	7	0.000
chemical reaction		claims,description	5	0.000
dosage form		claims,description	5	0.000
coal		claims,description	4	0.000
lignite		claims,description	4	0.000
effects		abstract,description	10	0.000
drugs		abstract,description	5	0.000
mixture		abstract,description	3	0.000
fulvic acid		abstract	4	0.000
fulvic acid		abstract	4	0.000
Sulfuric acid		abstract	1	0.000
adverse effect		abstract	1	0.000
degrading		abstract	1	0.000
formulation		abstract	1	0.000
nitric acid		abstract	1	0.000
sulphuric acid		abstract	1	0.000

Show all concepts from the description section