



## Method for extracting garlic essential oil produced with garlic polysaccharide and garlic powder

### Abstract

The invention provides a method for extracting garlic essential oil and cogenerating garlic amylose and garlic powder. The garlic essential oil is extracted by the static extraction of an extraction kettle and by the dynamic extraction of a second class separation kettle by supercritical CO<sub>2</sub>, the garlic amylose is extracted from garlic residues continuously, and finally, the garlic residues are processed into the garlic powder. A cogenerating production technology is used for producing three products of the garlic essential oil, the garlic amylose and the garlic powder at the same time by just feeding once, which changes the current situation that the products produced in the fine and further processing of the garlic is single; the invention uses a raw material comprehensively and realizes the production of the garlic with high added value; the key technical points are controlled during the production process, so the yield is high, the utilization of the raw material is approximately 100 percent, the yield is high, the oil yield is 0.5 to 0.7 percent, 98 percent of the garlic amylose in the raw material is recovered, and all the garlic residues are used. The production process does not relate to toxic or harmful reagent, which solves the problem of serious pollution in the current production and realizes the clean production without waste materials and waste water discharge.

CN101278723A

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Worldwide applications

2008 [CN](#)

Application CNA2008100160471A events

2008-05-14 Application filed by [任宪君](#)

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### Claims (3)

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1, a kind of method of extracting garlic essential oil produced with garlic polysaccharide and garlic powder is characterized in that: clean up after garlic is undressed, smash into mashed garlic to pieces, mashed garlic is put into supercritical CO<sub>2</sub> in the extraction kettle of abstraction instrument, feed CO<sub>2</sub>, by high-pressure pump pressure being elevated to 10-35MPa, temperature is set at 32-50 °C, static extracting 1-3 hour; Extraction kettle connection separating still carries out dynamic extraction then, keeps temperature, pressure and the CO<sub>2</sub> of static extracting consumption is set one-level separating still pressure 5-12MPa, temperature 30-50 °C, secondary separating still pressure 4-7MPa, temperature 30-50 °C, extracts 2-4 hour; After extraction finishes, from the secondary separating still, emit galic essential oil, get the galic essential oil product; From extraction kettle, emit the garlic slag, in the garlic slag, add entry, making the feed liquid mass ratio is 1: 2-3, regulator solution pH value is 5-6, 90 °C of design temperatures, leave standstill 30-60min, filter with 150-180 order nylon cloth, and then in the garlic slag that leaches, add entry and keep above-mentioned reaction condition, 2-3 time repeatedly, the garlic slag that the lixiviate filtration is obtained is put in addition and is deposited, the filtrate that will at every turn obtain is put together then, in filtrate, add relative feed liquid cumulative volume successively and be 0.04% 1g/100ml tanning solution, 0.03% 1g/100ml gelatin solution leaves standstill behind the 12-24h superpressure and filters, and the

concentrated filtrate that reduces pressure afterwards is to the 1/6-1/9 volume, the absolute ethyl alcohol that in filtrate, adds 3-5 times of volume, the precipitation garlic polysaccharide filters to such an extent that garlic polysaccharide precipitates then, gets the finished product garlic polysaccharide after the drying; Obtain garlic powder after the garlic slag drying that lixiviate filters, the pulverizing.

2, the method for extraction garlic essential oil produced with garlic polysaccharide and garlic powder according to claim 1 is characterized in that: filter the garlic polysaccharide precipitation that obtains, constant temperature 5-6 below 60 °C hour, be lower than at 5% o'clock to water content and get the finished product garlic polysaccharide.

3, the method for extraction garlic essential oil produced with garlic polysaccharide and garlic powder according to claim 1, it is characterized in that: the garlic slag that lixiviate is filtered is placed in the low temperature drying case dry, is lower than 5% to water content, pulverizes with pulverizer, cross 80 ~ 120 mesh sieves, obtain garlic powder.

### Description

Extract the method for garlic essential oil produced with garlic polysaccharide and garlic powder

Technical field:

The present invention relates to a kind of offy from garlic, extract galic essential oil, and the method for produced with garlic polysaccharide and garlic powder.

Background technology:

Garlic contains rich nutrient contents, especially has unique bioactive sulfur-containing compound and functional components such as superoxide dismutase and selenoprotein, has significant medical and edibility, and the market demand constantly increases, and market prospects are wide. Galic essential oil is a kind of volatile essential oil of extracting from garlic; contain the extremely precious natural materials of kind more than 140; modern medicine man, biologist, medical scholar; confirm that by the test of a large amount of scientific experimentations and clinical medicine galic essential oil has antibacterial, sterilization, kills the virus; the sclerosis of

reducing blood lipid, prevention of arterial, prevention and treatment cardiovascular and cerebrovascular disease, hypoglycemic, protection liver, suppress tumour, improve immunity of organisms, anti-ageing, strengthen effects such as muscle power, lowering blood-fat and reducing weight, be widely used in fields such as medicine, food, health products and cosmetics. Garlic polysaccharide has multiple efficacies such as health care, increase immunity to human body, be the preferable additives of food, health products. Garlic powder has extensive use equally and is worth, function such as very strong antibiotic, anti-inflammatory, sterilization, antiviral, hypotensive, reducing blood lipid, anti-curing cancers and tumour, enhancing immunity merit are arranged, delay senility has been applied to fields such as medicine, food, flavouring, health products, feed, fertilizer. China's planting garlic area is wide, output is high, but is mainly used in outlet primary product and raw material. Owing to restrictions such as anti-dumping that is subjected to the overseas market and quota restrictions, and the influence of domestic market disorderly competition, the garlic price fluctuation is very big, and market is extremely unstable. The sound development in garlic market is needed high efficiency badly, is cleaned, the garlic intensive processing enterprise of scale, produce easy to use, be easy to store, the product salable in the international market. Launch along with galic essential oil extracts with using gradually, the domestic beginning starts the upsurge of producing galic essential oil, but the output of China's galic essential oil compares with domestic and international demand, is still an utterly inadequate amount. It is predicted that only the actual demand of China just reaches 1000 tons, 1500 tons of North America demands, 1500 tons of European demands, 1000 tons of Japanese demands. For the China that abounds with garlic, develop the very wise selection beyond doubt of this project, prospect is very wide.

Up to now, the simple processing of all existing both at home and abroad fragmentary technology and single product is seen in report, the formation scale but the intensive processing of garlic is far from, overall integrated technology system, architectonical and the comprehensive processing and utilization technology of still lacking, cause in this area, occur always and can play the garlic production leading enterprise of regulating and controlling effect and the scale processing enterprise of high added value, drive that the garlic industry continues, healthy, stable development market. Production with galic essential oil is example, mainly takes traditional water vapor distillation method or solvent extraction at present, and these two kinds of method operations are numerous and diverse, loss is big, oil yield is low, and product purity is low, and needs proper temperature, advanced supercritical CO<sub>2</sub> appears in loss effective active component recently extremely easily. Abstraction technique extracts galic essential oil, has avoided above-mentioned drawback. But above-mentioned every technology is less to waste water, garlic slag research and utilization, is difficult to realize the process systems of comprehensive high added value, cause the business economic benefit not good enough in addition be difficult to existence.

Summary of the invention:

The purpose of this invention is to provide a kind of method of extracting galic essential oil produced with garlic polysaccharide, garlic powder, solve and use supercritical CO<sub>2</sub> Abstraction technique utilizes less technical problem to waste water, garlic slag after extracting galic essential oil.

The objective of the invention is to realize as follows: clean up after garlic is undressed, smash into mashed garlic to pieces, mashed garlic is put into supercritical CO<sub>2</sub>. In the extraction kettle of abstraction instrument, feed CO<sub>2</sub>, by high-pressure pump pressure being elevated to 10-35MPa, temperature is set at 32-50 °C, static extracting 1-3 hour; Extraction kettle connection separating still carries out dynamic extraction then, keeps temperature, pressure and the CO<sub>2</sub> of static extracting. Consumption is set one-level separating still pressure 5-12MPa, temperature 30-50 °C, secondary separating still pressure 4-7MPa, temperature 30-50 °C, extracts 2-4 hour; After extraction finishes, from the secondary separating still, emit garlic oil, get the galic essential oil product.

To the garlic slag of emitting, add entry from extraction kettle, making the feed liquid mass ratio is 1: 2-3, regulator solution pH value is 5-6, 90 °C of design temperatures, leave standstill 30-60min, filter with 150-180 order nylon cloth, and then in the garlic slag that leaches, add entry and keep above-mentioned reaction condition, 2-3 time repeatedly, lixiviate is filtered the garlic slag obtain put in addition and deposit, the filtrate that will at every turn obtain is put together then, adds relative feed liquid cumulative volume successively and be 0.04% 1g/100ml tanning solution in filtrate, 0.03% 1g/100ml gelatin solution, superpressure is filtered after leaving standstill 12-24h, concentrated filtrate reduce pressure afterwards to the 1/6-1/9 volume, in filtrate, add the absolute ethyl alcohol of 3-5 times of volume, the precipitation garlic polysaccharide, filter to such an extent that garlic polysaccharide precipitates then, get the finished product garlic polysaccharide after the drying; Obtain garlic powder after the garlic slag drying that lixiviate filters, the pulverizing.

The garlic polysaccharide precipitation dry run that filtration obtains is: constant temperature 5-6 below 60 °C hour, be lower than at 5% o'clock to water content and get the finished product garlic polysaccharide.

Garlic slag drying, crushing process that lixiviate filters are: the garlic slag that lixiviate is filtered is placed in the low temperature drying case dry, is lower than 5% to water content, pulverizes with pulverizer, crosses 80 ~ 120 mesh sieves, obtains garlic powder.

The invention has the beneficial effects as follows: with this Joint Production technology, once feed intake, simultaneously output galic essential oil, garlic polysaccharide and three kinds of products of garlic powder, change the present situation of producing single product in the garlic intensive processing, realized the production of garlic high added value the raw material comprehensive utilization; By the key technology point in the control production process, the yield rate height, prepared using is close to 100%, the yield rate height, oil yield reaches 0.5-0.7%, and 98% garlic polysaccharide utilizes whole garlic slags in the recovery raw material. And production process do not relate to poisonous harmful reagent, solved seriously polluted ground problem in the present production, realized the production that cleans of no waste material, discharge of wastewater, meets the industrial policy guiding of " recycling economy, save society ".

The specific embodiment:

Embodiment one:

Select 50kg high-quality garlic to undress, clean up, smash into mashed garlic to pieces with peeling machine. Mashed garlic is put into supercritical CO<sub>2</sub>. In the extraction kettle of abstraction instrument, feed carbon dioxide, by high-pressure pump pressure is elevated to 10-35MPa, temperature is set at 32-50 °C, static extracting 1 hour; The temperature, pressure and the CO<sub>2</sub> that keep static extracting. Consumption, 30 ~ 50 °C of one-level separating still pressure 5 ~ 12MPa, temperature; 30 ~ 50 °C of secondary separating still pressure 4 ~ 7MPa, temperature, dynamic extraction 2 hours after extraction finishes, is emitted galic essential oil 0.25kg from the secondary separating still; To the garlic slag of emitting, add 150L water from extraction kettle, regulator solution pH5.5, 90 °C of design temperatures, leave standstill 30min, filter 2 times with 150-180 order nylon cloth, lixiviate is filtered the garlic slag obtain puts in addition and deposits, the filtrate that will at every turn obtain is put together then, 1g/100ml gelatin solution to the 1g/100ml tanning solution that wherein adds 0.12L successively, 0.09L, superpressure is filtered after leaving standstill 12-24h, and the concentrated filtrate that reduces pressure afterwards adds the 150L absolute ethyl alcohol to 50L in filtrate, the precipitation garlic polysaccharide filters to such an extent that garlic polysaccharide precipitates then.

Low temperature drying garlic polysaccharide precipitation, 60 °C of constant temperature 5 hours is lower than at 5% o'clock to water content and gets finished product garlic polysaccharide 8.5Kg.

The garlic slag that lixiviate is filtered is placed in the low temperature drying case dry, is lower than 5% to water content, pulverizes with pulverizer, crosses 80 ~ 120 mesh sieves, obtains garlic powder 4kg.

Embodiment two:

Select 100kg high-quality garlic to undress, clean up, smash into mashed garlic to pieces, mashed garlic is put into supercritical CO with peeling machine 2In the extraction kettle of abstraction instrument, feed carbon dioxide, by high-pressure pump pressure is elevated to 10 ~ 35MPa, temperature is set at 32 ~ 50 °C, static extracting 2 hours; The temperature, pressure and the CO that keep static extracting 2Consumption, 30 ~ 50 °C of one-level separating still pressure 5 ~ 12MPa, temperature; 30 ~ 50 °C of secondary separating still pressure 4 ~ 7MPa, temperature, dynamic extraction 3 hours.After extraction finishes, from the secondary separating still, emit galic essential oil 0.6kg, to the garlic slag of emitting, add 400L water from extraction kettle, regulator solution pH6, extract 90 °C of temperature, leave standstill 60min, filter 2 times with 150-180 order nylon cloth, lixiviate is filtered the garlic slag that obtains put in addition and deposit, the filtrate that will at every turn obtain is put together then, to wherein adding 0.36L 1g/100ml tanning solution successively, 0.27L 1g/100ml gelatin solution, superpressure is filtered after leaving standstill 1224h, and the concentrated filtrate that reduces pressure afterwards adds the 400L absolute ethyl alcohol to 100L in filtrate, the precipitation garlic polysaccharide filters to such an extent that garlic polysaccharide precipitates then.

Low temperature drying garlic polysaccharide precipitation, 55 °C constant temperature 5-6 hour, be lower than at 5% o'clock to water content and get finished product garlic polysaccharide 18.2Kg.

The garlic slag that lixiviate is filtered is placed in the low temperature drying case dry, is lower than 5% to water content, pulverizes with pulverizer, crosses 80 ~ 120 mesh sieves, obtains garlic powder 10kg.

Embodiment three:

Select 200kg high-quality garlic to undress, clean up, smash into mashed garlic to pieces, mashed garlic is put into supercritical CO with peeling machine 2In the extraction kettle of abstraction instrument, feed carbon dioxide, by high-pressure pump pressure is elevated to 10 ~ 35MPa, temperature is set at 32 ~ 50 °C, static extracting 1 hour; Set extracting pressure 10 ~ 35MPa, 32 ~ 50 °C of extraction temperature, 30 ~ 50 °C of one-level separating still pressure 5 ~ 12MPa, temperature; 30 ~ 50 °C of secondary separating still pressure 4 ~ 7MPa, temperature, dynamic extraction 4 hours.After extraction finishes, from the secondary separating still, emit galic essential oil 1.3kg, to the garlic slag of emitting, add 900L water from extraction kettle, regulator solution pH5.8, extract 90 °C of temperature, leave standstill 90min, with 150-180 order nylon cloth filter 23 time, lixiviate is filtered the garlic slag that obtains put in addition and deposit, the filtrate that will at every turn obtain is put together then, to wherein adding the 1L1g/100ml tanning solution successively, 0.8L 1g/100ml gelatin solution, superpressure is filtered after leaving standstill 12-24h, and the concentrated filtrate that reduces pressure afterwards adds the 900L absolute ethyl alcohol to 300L in filtrate, the precipitation garlic polysaccharide filters to such an extent that garlic polysaccharide precipitates then.

Low temperature drying garlic polysaccharide precipitation, 60 °C constant temperature 5-6 hour, be lower than at 5% o'clock to water content and get finished product garlic polysaccharide 37.5Kg.

The garlic slag that lixiviate is filtered is placed in the low temperature drying case dry, is lower than 5% to water content, pulverizes with pulverizer, crosses 80 ~ 120 mesh sieves, obtains garlic powder 22kg.

Cited By (5)

Publication number	Priority date	Publication date	Assignee	Title
CN103404851A *	2013-07-24	2013-11-27	新疆庄子实业有限公司	Garlic oil soft capsules and preparation method thereof
CN104004591A *	2014-05-22	2014-08-27	河南三利食品有限公司	Extraction and purification method of garlic essential oil
CN104177507A *	2014-07-22	2014-12-03	江苏伟楼生物科技有限公司	Preparation method of garlic polysaccharide
CN106544150A *	2016-10-11	2017-03-29	江西南大硒谷农业科技有限公司	Preparation method of the selenium-enriched garlic quintessence oil as the selenium enriched rapeseed oil of antioxidant
CN107674764A *	2017-10-30	2018-02-09	徐州光明生物科技有限公司	The carbon dioxide method for extracting of galic essential oil
Family To Family Citations				

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

Similar Documents

Publication	Publication Date	Title
CN102212597B	2013-06-05	Method for producing collagen polypeptide, natural pigment and fish oil by using fish skin and fish scale
CN101278723A	2008-10-08	Method for extracting garlic essential oil produced with garlic polysaccharide and garlic powder
CN102551028A	2012-07-11	Method for preparing suaeda salsa biogenetic salt
CN102199486B	2013-03-20	Method for integrated utilization for sunflower seeds
CN103601655A	2014-02-26	Method for extracting natural taurine from squid viscera
CN110584130A	2019-12-20	Preparation method of fructus cannabis protein powder containing water-soluble cannabidiol
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CN102516041A	2012-06-27	Method for extracting quebrachitol from natural rubber whey
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CN1075056C	2001-11-21	Process for extracting all amino acid powder from plant
CN101664187B	2012-08-15	Deer essence nutritional composition

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
CNA2008100160471A	2008-05-14	2008-05-14	Method for extracting garlic essential oil produced with garlic polysaccharide and garlic powder

Applications Claiming Priority (1)

Application	Filing date	Title
CNA2008100160471A	2008-05-14	Method for extracting garlic essential oil produced with garlic polysaccharide and garlic powder

Legal Events


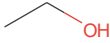
Date	Code	Title	Description
2008-10-08	PB01	Publication	
2008-10-08	C06	Publication	
2008-12-03	SE01	Entry into force of request for substantive examination	
2008-12-03	C10	Entry into substantive examination	
2011-05-11	WD01	Invention patent application deemed withdrawn after publication	Open date: 20081008
2011-05-11	C02	Deemed withdrawal of patent application after publication (patent law 2001)	

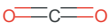
Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
Allium sativum		title,claims,abstract,description	101	0.000

garlic	title,claims,abstract,description	101	0.000
volatile oil	title,claims,abstract,description	26	0.000
GARLIC POWDER	title,claims,abstract,description	19	0.000
glycans	title,claims,description	32	0.000
polysaccharide	title,claims,description	32	0.000
polysaccharide	title,claims,description	32	0.000
polysaccharides	title,claims,description	32	0.000
extraction	claims,abstract,description	28	0.000
static	claims,abstract,description	10	0.000
cleaning	claims,abstract,description	7	0.000
slag	claims,description	24	0.000
product	claims,description	18	0.000
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chemical reaction reagent	abstract,description	2	0.000
waste material	abstract,description	2	0.000
Amylose	abstract	4	0.000
separation method	abstract	1	0.000
toxic	abstract	1	0.000
toxic	abstract	1	0.000

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