

COMMONWEALTH OF AUSTRALIA

Patents Act 1952-1969

CONVENTION APPLICATION FOR A PATENT

617175

(1) Here  
Insert (in  
full) Name  
or Names of  
Applicant or  
Applicants,  
followed by  
Address (es).

~~xx~~ (1) MORISHITA TECHNICAL LABORATORY  
We  
of 2-1-15, Jinnai, Minamata-shi, Kumamoto-ken, Japan

(2) Here  
Insert Title  
of Invention.

hereby apply for the grant of a Patent for an invention entitled: (2)  
FOOD PROCESSING ASSISTANT HAVING TASTE IMPROVING EFFECT

(3) Here insert  
number (s)  
of basic  
application(s).

which is described in the accompanying complete specification. This application is a  
Convention application and is based on the application numbered (3)

122053/88

(4) Here insert  
Name of basic  
Country or  
Countries, and  
basic date or  
dates

for a patent or similar protection made in (4) Japan  
on 25th May 1988 20.5.88

~~xx~~ My address for service is Watermark Patent & Trademark Attorneys  
Our 50 Queen Street, Melbourne, Victoria, Australia.

DATED this 23rd day of May 1989

(5) Signa-  
ture (s) of  
Applicant (s)  
or  
Seal of  
Company and  
Signatures of  
its Officers as  
prescribed by  
its Articles of  
Association.

(5) MORISHITA TECHNICAL LABORATORY

by

Stephen K. Plymin

Registered Patent Attorney

To:

THE COMMISSIONER OF PATENTS.



100072363

24/05/89

## COMMONWEALTH OF AUSTRALIA

Patents Act 1952-1969

# DECLARATION IN SUPPORT OF A CONVENTION APPLICATION FOR A PATENT OR PATENT OF ADDITION

(1) Here  
insert (in  
full) Name of  
Company.

In support of the Convention Application made by<sup>(1)</sup>.....  
MORISHITA TECHNICAL LABORATORY.....

(2) Here  
insert title  
of Invention.

(hereinafter referred to as the applicant) for a patent for an invention entitled:<sup>(2)</sup>.....  
FOOD PROCESSING ASSISTANT HAVING TASTE IMPROVING EFFECT.....

(3) Here  
insert full Name  
and Address,  
of Company  
official  
authorized  
to make  
declaration.

I,<sup>(3)</sup> TADAO MORISHITA.....  
of 1-15 Jinnai 2-chome Minamataashi, Kumamoto 867, Japan.....

do solemnly and sincerely declare as follows:

1. I am authorised by the applicant for the patent to make this declaration on its behalf.

2. The basic application as defined by Section 141 of the Act was.....  
made in<sup>(4)</sup>..... Japan.....

on the..... 20th..... day of..... May..... 1988....., by.....  
MORISHITA TECHNICAL LABORATORY.....  
~~on the~~..... ~~day of~~..... ~~19~~....., ~~by~~.....

(4) Here  
insert basic  
Country or  
Countries  
followed by  
date or dates  
and basic  
Applicant or  
Applicants.

3.<sup>(5)</sup> TADAO MORISHITA, 1-15 Jinnai 2-chome Minamataashi,.....  
Kumamoto 867, Japan.....

is ~~not~~ the actual inventor of the invention and the facts upon which the applicant is entitled to  
make the application are as follows:

The applicant is the assignee of ..the..said..actual..inventor.....

4. The basic application referred to in paragraph 2 of this Declaration was.....  
.....the first application made in a Convention country in respect of the invention  
the subject of the application.

DECLARED at..... Minamataashi.....  
this..... 11th..... day of..... Feb..... 1991.....

(6) Signature,

(6)..... Tadaso Morishita.....  
TADAO MORISHITA

To: THE COMMISSIONER OF PATENTS.

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**(12) PATENT ABRIDGMENT (11) Document No. AU-B-35092/89**  
**(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 617175**

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- (54) Title  
FOOD PROCESSING ASSISTANT HAVING TASTE IMPROVING EFFECT
- International Patent Classification(s)  
(51)<sup>4</sup> A23L 001/221
- (21) Application No. : 35092/89 (22) Application Date : 24.05.89
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63-122053 20.05.88 JP JAPAN
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- (71) Applicant(s)  
MORISHITA TECHNICAL LABORATORY
- (72) Inventor(s)  
TADAO MORISHITA
- (74) Attorney or Agent  
WATERMARK PATENT & TRADEMARK ATTORNEYS, Locked Bag 5, HAWTHORN VIC 3122

- (57) Vegetable humus referred to herein is botanical fermented product which was accumulated and deposited for a long period of time in water of bottom of sea or lake in recent years or in the past.

**CLAIM**

1. A method of improving the taste of food by adding to it a food taste improving assistant produced by grinding vegetable humus containing 50 to 80% by weight of water, contacting the said ground powder sufficiently with air to activate said ground powder, extracting the said activated powder with water and removing solid matter by filtration.
2. A method of improving the taste of food by adding to it a food taste improving assistant prepared according to claim 1, further characterised in that said filtration is carried out in two steps consisting of a first stage large scale filtration and a second stage membrane filtration, said second stage not allowing materials greater than 0.5 microns to pass.

COMMONWEALTH OF AUSTRALIA

Form 10

PATENTS ACT 1952-69

# COMPLETE SPECIFICATION

(ORIGINAL)

# 617175

Class

Int. Class

Application Number:  
Lodged:

Complete Specification Lodged:

Accepted:

Published:

Priority:

Related Art:

Name of Applicant: MORISHITA TECHNICAL LABORATORY

Address of Applicant: 2-1-15, Jinnai, Minamatashi, Kumamotoken, Japan

Actual Inventor: TADAO MORISHITA

Address for Service: ~~EDWD. WATERS & SONS~~ Watermark Patent & Trademark Attorneys  
50 QUEEN STREET, MELBOURNE, AUSTRALIA, 3000.

Complete Specification for the invention entitled:

FOOD PROCESSING ASSISTANT HAVING TASTE IMPROVING EFFECT

The following statement is a full description of this invention, including the best method of performing it known to the inventor.

## Specification

### Title of the invention

Food processing assistant having taste-improving effect

### Background of the invention

#### (Field of Art)

This invention relates to a taste-improving agent for foods which is obtained by subjecting vegetable humus to activation treatment.

Vegetable humus referred to herein is botanical fermented product which was accumulated and deposited for a long period of time in water of bottom of sea or lake in recent years or in the past.

#### (Prior Art)

The inventor of the present application filed in Japan a patent application for an invention relating to adsorbing, deodorizing and sterilizing composition obtained by oxidizing vegetable humus with air and drying the product. This application was published (as Japanese patent publication Sho 62-1362) and registered (as a patent No. 1393474).

Various kinds of application fields of this composition are now being developed. Their forms are diverse for example, they are powder, aqueous extracted liquid granules, etc. depending upon the application field.

This invention relates to the application field of aqueous extract form among the above-mentioned forms. Hereinafter, this aqueous extract will be referred to as Hyumaselurabin (or simply Elurabin) (Trademark J1588035)

The inventor of this application advanced his research work with an object of producing composition having further powerful sterilizing power, deodorizing and gas adsorbing properties in the air treatment of vegetable humus and filed an application for an invention entitled "a method for activating vegetable humus"; Japanese patent application ~~Sho 57-144615~~ No. 1431877 (date 7.7.1989).

The gist of this invention can be summarized as follows.

~~The activation of vegetable humus is a collective expression of reinforcement of deodorizing action, gas adsorbing property, and bacteriostatic action, etc. By inferring that in the activation of vegetable humus, the action of microorganisms, particularly, the action of~~



Throughout this specification, the term "activation" of vegetable humus is intended to mean altering the vegetable humus so as to have deodorizing action, gas adsorbing properties, and bacteriostatic action, etc. For such activation of vegetable humus, the action of microorganisms, particularly, the action of aerobic microorganisms together with oxidation action of oxygen in air plays a significant role. The inventor has found that such activation of vegetable humus can be attained by contacting the vegetable humus with air at a temperature and a humidity such that reactions caused by microorganisms proceed as smoothly as possible. This is an important part of the activation process which has been described in JP1431877 (24.3.88). More particularly vegetable humus having a moisture content in the range of 50 to 80% is ground to a particle size such that 60 to 80% of particles is from 80 mesh on to 10 mesh pass, sufficiently contacting the ground vegetable humus with air by standing it in a 20-30cm layer with optional agitation to exchange upper and lower portions thereof, and then aging the humus until it's pH is 3 or below and it's Brix degree is 0.4 or higher while maintaining the moisture content of 50 to 80%

By way of the abovementioned treatment, activated vegetable humus greatly improves its own gas absorbing property, deodorizing power and bacteriostatic action, but at the same time, unexpected effectiveness have been discovered one after another.

During the course of development of application



fields for Hyumaselurabin, the inventor of the present application found that it had a property which improves water raising of cut flowers and superior effectiveness for keeping flowers alive, and he filed an application for preserving agent for cut flowers, (Japanese patent, <sup>Trial No. sho 59-15729</sup> ~~ap~~

~~lication, Sho 57-14776~~). Later, while the inventor of this application paid attention to the physiologically active effectiveness of Hyumaselurabin, he found that it has superior effectiveness of a foliar spraying agent and filed a Japanese  <sup>laid open specification NO. Hei 1-153605</sup> ~~application No. Sho 62-313140~~. Each of the above-mentioned application relates to the application in which unique physiologically active effectivenesses of Hyumaselurabin are effectively utilized.

Utility of Hyumaselurabin started at first from deodorizing agent and even now it is used for deodorizing purpose in a large amount.

By chance, the inventor of the present application tried to boil rice after adding a small amount of Hyumaselurabin with a thought that he may remove a bad smell of old rice at the time of cooking of old rice. As a result, as expected, it was possible to boil rice having no bad smell of old rice. It was unexpected, and





astonishing enough, and thus he noticed the effectiveness of Hyumaselurabin for improving taste of rice. Then investigating for various kinds of foods superior taste improving effect was confirmed and he completed the present invention.

(Summary of the Invention)

- 1) Food taste improving assistant obtained by grinding vegetable humus containing 50 - 80 % by weight of water, contacting the ground powder sufficiently with air to activate it, extracting the activated powder with water, followed by filtration.
- 2) Food taste improving assistant defined in the above-mentioned item 1) in which filtration is carried out in two steps consisting of a first step industrial filtration and a second step membrane filtration which does not allow materials greater than 0.5 micron to pass.

(Description of the Preferred Embodiments)

Hyumaselurabin is an extracted liquid obtained by immersing activated vegetable humus in hot water, followed by stirring and filtering and shows usually a pH = 3 or less and a Brix degree of 0.4 or less.

Since those obtained by filtering through a membrane

of pore diameter of 0.5 micron are freed from not only molds, yeast but also from almost all bacteria, they are suitable to food processing and useful for drinking. Those which are diluted with city water (tap water) to 50 - 100 times provides feeling of a spring water issuing from rocks when one drinks it after slightly cooling. Accordingly, it is preferable as mineral water.

It is well known that if tap water or spring water issuing from rocks is left to stand after being put in a vessel, it begins to rot within a few days. In contrast, such a mineral water with Hyumaselurabin does not rot even when it is left to stand for several months. This is a notable characteristics which is entirely different from general drinking water. Further, an original liquor of Hyumaselurabin is colorless and transparent, but when it is left to stand at a bright space for several months, it often happens that white dregs precipitate out though they are in a slightest amount, and white color gradually turns to pale brown color. It seems to be mainly aluminum and/or iron hydroxide. When an original liquor of Hyumaselurabin is heated at first 70 - 80°C, forming of dregs is promoted, but if formed dregs are removed by a

membrane filter, the filtered liquor does not produce dregs any more even when left to stand for a long time and maintains colorless transparency. Such dregs do not show influence upon point of hygiene and flavor but may give influence upon value as a commodity. Thus it is recommended to be removed. In case of brewing of refined sake, for the purpose of removal of dregs, it has been heretofore carried out to cause to form dregs by allowing sake to ferment in a tank for a long time. This is an operation having the same meaning. However, in the case of Hyumaselurabin, it is possible to promote the forming of dregs by heating at 70 - 80°C, contrary to the case of refined sake, treatment can be completed by a treatment within a short period of time.

For the taste improvement of boiled rice effected by Hyumaselurabin, parallel with sensuous testing by eight panellors, degree of  $\alpha$ -starch and texture of cooked rice were measured and compared with those of Koshihikari and Sasanishiki. It is a fixed theory that good taste of cooked rice depends on  $\alpha$ -starch, and texture is an objective evaluation data which represent feeling of teeth and tongue of cooked rice.

According to the result of sensuous testing, lustre, brightness, feeling of eating, taste, all of these were clearly improved by the addition of Hyumaselurabin.

The measurement of degree of  $\alpha$ -starch was carried out according to a method disclosed in "Handbook Food Analysis" (edited by Kenpakusha). By the addition of Hyumaselurabin it has been found that degree of  $\alpha$ -starch can be promoted.

According to the measurement of Texturometer, it has been revealed that addition of Hyumaselurabin improves texture greatly (to the same extent of Koshihikari and Sasanishiki) and the texture of low quality rice was improved to the extent of good quality rice.

Thus, it can be said that subjective practical evaluation has been guaranteed by objective evaluation of texture.

It is not clear from what taste improving effect of Hyumaselurabin is derived, but Hyumaselurabin contains a proper amount of minerals such as sodium, potassium, calcium, magnesium, aluminum, iron, or the like and the existence of various kinds of amino acid as well as various kinds of vitamins were confirmed therein. Further, it is

inferred that various kinds of components which are not confirmed, but probably derived from microorganism, are included. The taste-improving effect of Hyumaselurabin seems to be the collective effect of such various kinds of components.

Successively to the taste-improvement test of cooked rice, the effectiveness of Hyumaselurabin to various other kinds of Japanese and foreign foodstuffs were investigated, and preferable effect more than expected has been obtained in all case. Namely, in case of fried foods, adhered state of coating was good and fried foods product having surface of nice color and lustre from which oil was removed was obtained. In case of vinegar-containing-dish or dish dressed with salad dressing, taste of vinegar became rounded. In case of cooked food, soaking of taste was good providing boiled product having round taste. Baked eggs and hamburger, etc. had moisture-holding property and dampish taste was persistent. As for vegetables seasoned in rice bran paste, odor of rice bran paste and saltish taste disappeared resulting good colored and lustrous goods. As for Japanese and foreign cakes, in case of steamed bean jam bun, action of wheat gluten was

suppressed providing product of smooth skin, and of fine grained, lustrous dampish feeling. Skin and bean-jam were fit to each other nicely and finished product were agreeable to tongue and teeth.

As for baked cakes, adaptations of raw materials were good, and finished products of fine delicate and moist skin could be produced. Rice cake and quality rice flour products, rice cake stuffed with bean paste, dumpling, Turkish delight, etc. were rich in moisture retaining property and elastic property products having no stickiness, no tendency of hardening or crack forming were obtained. Further, separation of bean jam from honey was few. Oozing tendency of sugar was slow, so it gave dampish feeling. Sweet taste was round and elegant finishing was provided. As for sponge cakes, product having wet feeling, soft and elastic product giving nice color and lustre was produced. Creampuff formed dampish skin and this state lasted for several days. Adaptness to cream was extremely nice. In addition, for bean-jam pancake, rice cake wrapped in an cherry blossom leaf, rice cake wrapped in an oak leaf, a bean-jam bun containing chestnut, doughnut, rice dumpling, rice steamed together

with red beans, similar results were obtained.

As for the amount of Hyumaselurabin used in these applications, about 0.5 to 0.6 % by weight (weight % of Hyumaselurabin original liquid relative to a raw material such as rice, wheat, etc.) is standard, but depending on material, even 0.2 % is allowable and if necessary it is possible to increase up to 0.8 to 1.0 %.

#### Example

At the time of cooking of standard price rice, taste improving effectiveness was estimated by sensuous examination, ratio of  $\alpha$ -conversion measurement, and texture measurement.

#### (1) Raw material and equipment

Standard price rice: \*class 3: 80 % or more

\*class 4 and class 5: 20 % or less

(\*Rice grade designation defined by Kanagawa prefecture)

Hyumaselurabin pH = 3.42

Rice-cooking vessel: Electronic rice cooking vessel

(Trademark National)

micro computer controlled

direct heating cooker (SP-K10M)

1.0 litre cooking capacity

(2) Cooking condition

rice 450 g/batch

amount of water: 550 g of water to 450 g of rice  
(before washing)

washing method: after rough washing 3 times, draining off  
completely

water: city water

Hyumaselurabin: 2.7g (0.6 % by weight/450 g rice)

(3) Sensual examination

Sensual examination was carried out immediately after cooking. Appearance characteristic properties, fragrance characteristic properties, were principal points of examination. Partly, feeling of eating such as agreeability to the palate and teeth were also examined.

panelors: 8 persons (2 women and 6 men). Result is shown in Table 1.



Table 1. Result of sensual examination  
immediately after cooking

		bad	common	good
skin (lustre,glass)	no addition	3	5	0
	Hyumaselurabin 0.6%	1	3	4
shape (collapse)	no addition	0	5	3
	Hyumaselurabin 0.6%	0	4	4
taste	no addition	0	8	0
	Hyumaselurabin 0.6%	0	5	3
agreeability to palate to teeth	no addition	3	5	0
	Hyumaselurabin	0	5	3

#### 4. $\alpha$ -conversion ratio

For measuring extent of  $\alpha$ -conversion (pastifying),  $\alpha$ -conversion degree is used. But this time, checking of  $\alpha$ -conversion of starch in rice itself by way of enzyme and heat is not an object, but since checking of difference between a case of Hyumaselurabin addition and another case of no addition is an object, a testing method (Foodstuff analysis handbook edited by Kenpakusha) for measuring  $\alpha$ -conversion degree was modified and hydrochloric acid addition operation which deactivates enzyme, was adopted.  $\alpha$ -conversion degree was compared by titration amount of the proportion consumed in the reaction of iodine, by sodium thiosulfate solution. Accordingly, terms " $\alpha$ -conversion ratio" herein was used for convenience' sake. It is not technical term.

#### Testing method

Three 100 ml Erlenmeyer flasks fitted with stopper were prepared for testing. One of them used for blank test. In other two, sample (about 2.5 g + 0.5 g) ground in mortars was taken up, 50 ml of water was added and shaking was conducted at room temperature (22°C) and 2 ml of 1N hydrochloric acid was added immediately. To this, 25 ml

of N/10 iodine solution was added. Then, by using a stopwatch, for keeping equal interval, aliquots of 18 ml of N/10 sodium hydroxide solution were added. After sealing tightly and shaking, the flask was allowed to stand exactly 15 minutes. In the same order, and at the same interval, each 2 ml of 10 % sulfuric acid was quickly added upon opening the stopper. These solutions were titrated with N/10 sodium thiosulfate solution and differences from blank test were compared and  $\alpha$ -conversion ratio was calculated. As a reference, a case of addition of 1.2 % by weight of Hyumasekurabin was added and result are shown in Figure 1. Each of these are  $\alpha$ -conversion ratio of sample immediately after rice cooking.

#### (5) Texture

By using a texturometer (made by Zenken GTX-2-1N type) measured values were plotted in texture evaluation charts developed by Zenken.

In chart, A area shows evaluation of texture superior, B area shows somewhat superior, C area shows slightly inferior, D area shows inferior and E area most inferior.

Koshihikari, Sasanishiki are in A rank. New rice

(class 5) were found to be in C rank. Old rice and very old rice are in D rank. By the addition of Hyumaselurabin, those of D rank turned to C ~ A rank. Brief explanation of the drawing

Figure 1 is a chart in which  $\alpha$ -conversion ratios were compared with each cases of no-addition of Hyumaselurabin, 0.6 % by weight addition and 1.2 % by weight addition.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A method of improving the taste of food by adding to it a food taste improving assistant produced by grinding vegetable humus containing 50 to 80% by weight of water, contacting the said ground powder sufficiently with air to activate said ground powder, extracting the said activated powder with water and removing solid matter by filtration.
2. A method of improving the taste of food by adding to it a food taste improving assistant prepared according to claim 1, further characterised in that said filtration is carried out in two steps consisting of a first stage large scale filtration and a second stage membrane filtration, said second stage not allowing materials greater than 0.5 microns to pass.

DATED this 3rd day of June 1991.  
MORISHITA TECHNICAL LABORATORY

WATERMARK PATENT & TRADEMARK ATTORNEYS  
THE ATRIUM  
290 BURWOOD ROAD  
HAWTHORN, VICTORIA 3122  
AUSTRALIA

SKP/KJS/CH (3:28)



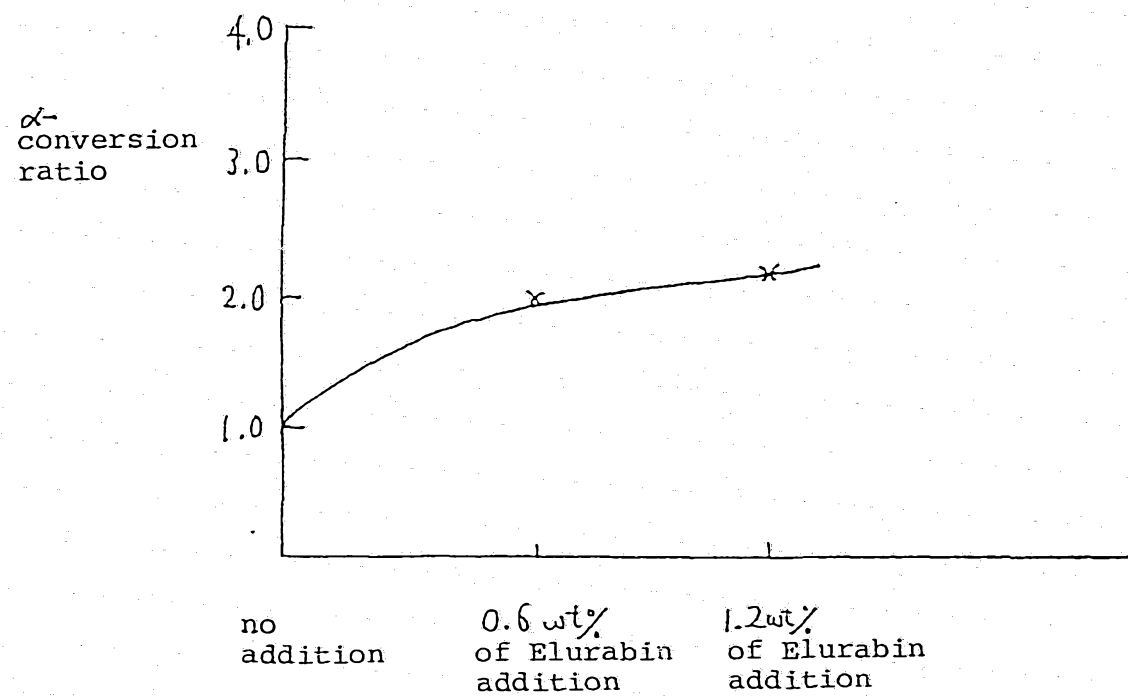


Figure 1 comparison ratio of  $\alpha$ -conversion

