Republic of the Philippines

INTELLECTUAL PROPERTY
OFFICE OF THE PHILIPPINES

BUREAU OF PATENTS

REGISTRATION NO. 2-2018 050105

Having complied with the provisions law and regulations, this Office registers this

UTILITY MODEL

the specification and claim/s of which as hereunto annexed and made part hereof.

This **REGISTRATION** grants unto the applicant/s or assign/s the exclusive right throughout the Philippines to make, use, sell or import the utility model, for a term of **SEVEN (7) YEARS** from the date of filing, unless sooner terminated or cancelled as provided for by law and the regulations.

IN WITNESS WHEREOF, I have hereunto affixed my hand and the seal of the Intellectual Property Office at Taguig City, Philippines.

ATTY. LOLIBETH R. MEDRANO
Director of Patents

INTELLECTUAL PROPERTY OFFICE OF THE PHILIPPINES
BUREAU OF PATENTS
Intellectual Property Center
No. 28 Upper McKinley Road,
McKinley Hill Town Center,
Fort Bonifacio, Taguig City
Tel. No. (02) 238-6300
Website: http://www.ipophil.gov.ph

ACCRA LAW OFFICES
22nd Floor, ACCRA Law Tower, 2nd Ave.
cor. 30th St., Crescent Park West, Bonifacio
Global City, Taguig, Metro Manila,
Philippines

IPAS FORM NO.	IPOPHL-BOP-PUBREG-00	01.07.2016
IPAS AGENT CODE	0114	
IPO BOX NO.		
DOCUMENT NO.	2019/2471	

MAILED
25 JAN 2019

Registration Type/No:	Utility Model 2/2018/050105	Filing Date:	8 March 2018
Registrant:	ONGO, Emelda A. [PH]		
Title:	A METHOD OF COFFEE QUALITY ANALYSIS BY EXTRACTING VOLATILE COMPOUNDS IN COFFEE		
Issue Date:	21 November 2018		

NOTICE OF ISSUANCE OF CERTIFICATE

This is to inform you that the Registration Certificate for the above-identified application has been prepared and is now ready for release.

Said Registration Certificate will be released to you or to your authorized representative upon presentation of this letter to this office.

Please be informed that no Registration Certificate shall be released by the Office unless a documentary stamp(s) worth P20.00 is affixed on the face thereof as required under R.A. 7660 date December 23, 1993 and R.A. 9243 dated February 7, 2004, more particularly Title VII, Sections 173 and thereof.

As per IPOPHL Memorandum Circular No. 16-012 series of 2016, the applicant is required to pay the amount of Php 606.00 for small entity OR Php 1,212.00 for big entity for issuance of certificate.

Likewise, as per BOP Memorandum Circular No. 17-001 series of 2017, the applicant is required to pay the amount of Php 929.20 for small entity or Php 969.60 for big entity for second publication.

THE BUREAU OF PATENTS

Note: this is a system-generated notice. No signature is necessary.

UTILITY MODEL REGISTRATION [11] Registration No.: 2/2018/050105

[45] Issue date: 21 November 2018

Title: A METHOD OF COFFEE QUALITY ANALYSIS BY EXTRACTING VOLATILE COMPOUNDS IN COFFEE

Maker(s): ONGO, Emelda A. [Taguig City, Metro Manila, PH]; SEVILLA III, Fortunato [Manila, Metro Manila, PH]; ANTONELLI, Andrea [Reggio Emilia, IT]; MONTEVECCHI, Giuseppe [Reggio Emilia, IT] and SBERVEGLIERI, Veronica [Reggio Emilia, IT]

Applicant(s): ONGO, Emelda A. [Taguig City, Metro Manila, PH]

Filing Date: 8 March 2018

Publication date: 21 November 2018

Application No.: 2/2018/050105

Foreign Application Priority Data: NONE

International Class : A23F 5/48; G01N 30/04

ABSTRACT

The utility model relates to coffee quality analysis through its volatile compounds, comprised of placing coffee beans in a sealed vial; the vial allowing the insertion of a material suitable for headspace analysis; heating roasted coffee beans inside the vial to produce volatile compounds which will occupy a headspace area in the vial; heating of the roasted coffee beans is done until headspace equilibrium is reached; inserting the material into the vial and within the headspace to extract the volatile compounds; and thermally desorbing the material to release the absorbed volatile compounds into a GCMS machine.

iption: 6 page(s). Drawings: 1 sheet(s)

iner: C. S. MARQUEZ

ey/Agent: ACCRA LAW OFFICES

ABSTRACT OF THE DISCLOSURE

The utility model relates to coffee quality analysis through its volatile compounds, comprised of placing coffee beans in a sealed vial; the vial allowing the insertion of a material suitable for headspace analysis; heating roasted coffee beans inside the vial to produce volatile compounds which will occupy a headspace area in the vial; heating of the roasted coffee beans is done until headspace equilibrium is reached; inserting the material into the vial and within the headspace to extract the volatile compounds; and thermally desorbing the material to release the absorbed volatile compounds into a GCMS machine.

2016 DEC 21 PM 4:56

SUMMARY OF THE UTILITY MODEL

It is therefore the main object of the present utility model to provide a solution that will overcome the obvious drawbacks apparent and inherent to the known processes. The present utility model provides for a method of coffee quality analysis by extracting volatile compounds in coffee comprising the following features:

1. placing roasted coffee beans in a sealed vial;
2. the vial allowing the insertion of a material suitable for headspace analysis;
3. heating roasted coffee beans inside the vial to produce volatile compounds which will occupy a headspace area in the vial;
4. heating of the roasted coffee beans is done until headspace equilibrium is reached;
5. inserting the material into the vial and within the headspace to extract the volatile compounds; and
6. thermally desorbing the material to release the absorbed volatile compounds into a GCMS machine.

Another object is to provide the optimum method of extraction, by determining the best heating or roasting time; the best extraction time; and the best thermal desorbing time.

These and other objects and advantages of the present utility model will become more apparent upon a reading of the ensuing detailed description taken in conjunction with the appended drawing.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

FIG. **1** is the process flow of the method for coffee analysis by extracting volatile compounds in coffee.

DETAILED DESCRIPTION

Before describing the present utility model in detail, it is to be understood that the phraseologies and terminologies used herein are for the purposes of description and should not be regarded as limiting.

Referring now to the drawing, wherein like reference numerals designate the components or elements throughout the ensuing enabling description, the present utility model provides for A Method of Coffee Quality Analysis by Extracting Volatile Compounds in Coffee.

As seen in Fig. 1, roasted coffee beans are placed in a vial and heated until headspace equilibrium is reached. When headspace equilibrium is reached, volatile compounds occupy the headspace in the vial.

The vial is sealed but allows for the insertion of a material, such as a Solid Phase Micro Extraction fiber (SPME fiber), to allow the conduct of headspace analysis.

The volatile compounds are extracted by inserting the SPME fiber into the vial and exposing it in the headspace above the coffee.

The SPME fiber is then thermally desorbed in a Gas Chromatography-Mass Spectrometer (GCMS machine) for Gas Chromatography-Mass Spectrometry (GCMS) analysis. Through the GCMS analysis, the volatile compounds of the coffee were identified by comparing the mass spectral data with the National Institute of Standards and Technology (NIST) spectral database (MS library) and confirmed using reference standards.

The quality of the aroma of the coffee and, consequently, the coffee beans itself, can then be determined by comparing the concentration of the volatile compounds to a user specified coffee quality database, such database being based on the desired concentration of volatile compounds.

In a preferred embodiment, the heating of the roasted coffee beans in the vial to reach headspace equilibrium and before the SPME fiber is to be inserted ranges from 60 to 80 degrees Celsius, wherein 70 degrees Celsius is the best condition in which a maximum extraction efficiency of volatile compounds can be obtained.

In another preferred embodiment, the SPME fiber is kept in the headspace to extract the volatile compounds can be between 10 to 30 minutes. The optimum time for such extraction is 20 minutes since 10 minutes is more suited for more volatile compounds while 30 minutes is more favorable for some semi-volatile compounds.

In another preferred embodiment, the thermal desorption from the SPME fiber to the GCMS machine can be between 5 to 10 minutes at an injection port temperature of 250 degrees Celsius.

CLAIMS:

1. A method of coffee quality analysis by extracting volatile compounds in coffee comprising:

placing roasted coffee beans in a sealed vial;
the vial allowing the insertion of a material suitable for headspace analysis;
heating roasted coffee beans inside the vial to produce volatile compounds which will occupy a headspace area in the vial;
heating of the roasted coffee beans is done until headspace equilibrium is reached;
inserting the material into the vial and within the headspace to extract the volatile compounds; and
thermally desorbing the material to release the absorbed volatile compounds into a GCMS machine.

2. The method as claimed in claim 1 wherein the heating of the roasted coffee beans is between 60 to 80 degrees Celsius.

3. The method as claimed in claim 1 wherein the material is within the headspace for 10 to 30 minutes.

4. The method as claimed in claim 1 wherein the thermal desorption is between 5 to 10 minutes.

5. The method as claimed in claim 1 wherein the roasted coffee beans is civet coffee.

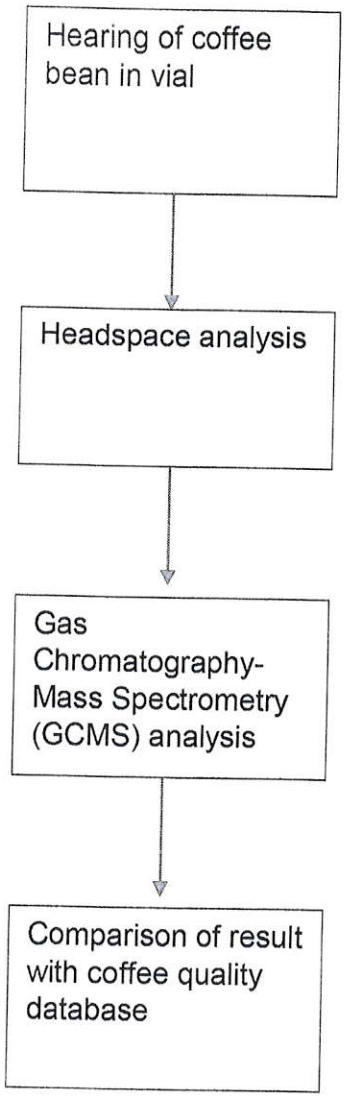

Fig. 1

For the applicant: EMELDA A. ONGO

JOSE EDUARDO T. GENILO