



**3.4.3. Number of Patents published/awarded during the last five years.**



Office of the Controller General of Patents, Designs & Trade Marks  
Department of Industrial Policy & Promotion,  
Ministry of Commerce & Industry,  
Government of India

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INTELLECTUAL  
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GEOGRAPHICAL INDICATIONS

### Application Details

APPLICATION NUMBER	202121026089
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	11/06/2021
APPLICANT NAME	<b>DR. JAYA SINGH</b>
TITLE OF INVENTION	ETHNO VIABLE SPAWN (EVS).
FIELD OF INVENTION	MECHANICAL ENGINEERING
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	dr.jayasingh@yahoo.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	16/08/2022
PUBLICATION DATE (U/S 11A)	31/12/2021



Australian Government

IP Australia

# CERTIFICATE OF GRANT INNOVATION PATENT

**Patent number:** 2021104275

The Commissioner of Patents has granted the above patent on 25 August 2021, and certifies that the below particulars have been registered in the Register of Patents.

**Name and address of patentee(s):**

Neeraj Mishra of Professor, Department of Pharmaceutics, Amity Institute of Pharmacy, Amity University of Madhya Pradesh (AUMP Gwalior Madhya Pradesh 474005 India

Navneet Kaur of Department of Pharmaceutics, I.S.F. College of Pharmacy Moga Punjab 142001 India

Ashish Garg of Assistant Professor, Department of P.G., Studies and Research in Chemistry and Pharmacy, Rani Durgavati University Jabalpur M.P. 482003 India

Saurabh Sharma of Professor, School of Pharmaceutical Sciences, CT University (Ldh) Punjab 142024 India

Sweta Garg of Assistant Professor, Shri Ram Institute of Pharmacy Jabalpur M.P. 482002 India

Shvetank Bhatt of Professor, Department of Pharmacology, Amity Institute of Pharmacy, Amity University of Madhya Pradesh (AUMP Gwalior Madhya Pradesh 474005 India

**Title of invention:**

MORIN DIHYDRATE LOADED MICROPARTICULATE CARRIERS FOR MANAGEMENT OF HEPATOTOXICITY

**Name of inventor(s):**

Mishra, Neeraj; Kaur, Navneet; Garg, Ashish; Sharma, Saurabh; Garg, Sweta and Bhatt, Shvetank

**Term of Patent:**

Eight years from 17 July 2021

NOTE: This Innovation Patent cannot be enforced unless and until it has been examined by the Commissioner of Patents and a Certificate of Examination has been issued. See sections 120(1A) and 129A of the Patents Act 1990, set out on the reverse of this document.



Dated this 25<sup>th</sup> day of August 2021

Commissioner of Patents

## PATENTS ACT 1990

The Australian Patents Register is the official record and should be referred to for the full details pertaining to this IP Right.

This data, for application number 2021104275, is current as of 2023-02-28 21:00 AEST



Office of the Controller General of Patents, Designs & Trade Marks  
Department of Industrial Policy & Promotion,  
Ministry of Commerce & Industry,  
Government of India



(<http://ipindia.nic.in/index.htm>)

#### Application Details

APPLICATION NUMBER	202141054901
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	26/11/2021
APPLICANT NAME	1 . Mrs.M.Jyothirmai 2 . Dr. Santosh Kumar 3 . Dr.Reshma V.K 4 . Dr.Ajay Mishra 5 . Dr.B.Padmini Devi 6 . Ms.K.Makanyadevi 7 . Mrs.C.Selvarathi 8 . Dr.Harmandeep Singh Gill 9 . Mr.N MD FAIYAZ AHMED 10 . Dr. Arun Kumar Pallathadka
TITLE OF INVENTION	IOT AND CLOUD BASED INTELLIGENT HOME AUTOMATION AND CONTROL OF APPLIANCE (SMART TV) USING PYTHON LANGUAGE
FIELD OF INVENTION	COMMUNICATION
E-MAIL (As Per Record)	senanipindia@gmail.com
ADDITIONAL-EMAIL (As Per Record)	admin@senanip.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	10/12/2021

#### Application Status

APPLICATION STATUS

**Awaiting Request for Examination**



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सत्यमेव जयते

भारत सरकार  
GOVERNMENT OF INDIA

पेटेंट कार्यालय  
THE PATENT OFFICE

पेटेंट प्रमाणपत्र  
PATENT CERTIFICATE  
(Rule 74 of The Patents Rules)

क्रमांक : 022119976  
SL No :



पेटेंट सं. / Patent No. : 407201  
आवेदन सं. / Application No. : 202021011849  
फाइल करने की तारीख / Date of Filing : 19/03/2020  
पेटेंटी / Patentee : 1.Dr. (Mrs.) Mamta Gokhale 2.Dr. (Mr.) Sardul Singh Sandhu  
आविष्कारक (जहां लागू हो) / Inventor(s) : 1.Dr. (Mrs.) Mamta Gokhale 2.Dr. (Mr.) Sardul Singh Sandhu 3.Dr. (Mr.) Dayashankar Gautam 4.Ms. Radha Gupta

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित A MULTIPURPOSE HERBAL COMPOSITION AND METHOD FOR PRODUCING THE SAME नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबन्धों के अनुसार आज तारीख मार्च 2020 के उन्नीसवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदान किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled A MULTIPURPOSE HERBAL COMPOSITION AND METHOD FOR PRODUCING THE SAME as disclosed in the above mentioned application for the term of 20 years from the 19<sup>th</sup> day of March 2020 in accordance with the provisions of the Patents Act, 1970.



अनुदान की तारीख : 21/09/2022  
Date of Grant :

पेटेंट नियंत्रक  
Controller of Patent

**टिप्पणी** - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, मार्च 2022 के उन्नीसवें दिन को और उसके परवर्त प्रत्येक वर्ष में उसी दिन देना होगा।

**Note** - The fees for renewal of this patent, if it is to be maintained will fall / has fallen due on 19<sup>th</sup> day of March 2022 and on the same day in every year thereafter.



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भारत सरकार  
GOVERNMENT OF INDIA  
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THE PATENT OFFICE  
पेटेंट प्रमाणपत्र  
PATENT CERTIFICATE  
(Rule 74 of The Patents Rules)

क्रमांक : 022118445  
SL No :



पेटेंट सं. / Patent No.	:	398581
आवेदन सं. / Application No.	:	1841/MUM/2012
फाइल करने की तारीख / Date of Filing	:	27/06/2012
पेटेटी / Patentee	:	DEPARTMENT OF POST GRADUATE STUDIES AND RESEARCH IN BIOLOGICAL SCIENCE, R.D. UNIVERSITY, JABALPUR (M.P.)

प्रमाणित किया जाता है कि पेटेटी को, उपरोक्त आवेदन में वधाप्रकटित FLAVONOID (BAICALEIN) PRODUCTION IN CELL CULTURES OF OROXYLUM INDICUM (L.) VENT. नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख जून 2012 के सत्ताईसवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदान किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled FLAVONOID (BAICALEIN) PRODUCTION IN CELL CULTURES OF OROXYLUM INDICUM (L.) VENT. as disclosed in the above mentioned application for the term of 20 years from the 27<sup>th</sup> day of June 2012 in accordance with the provisions of the Patents Act, 1970.



अनुदान की तारीख : 06/06/2022  
Date of Grant :

Controller of Patent

**टिप्पणी** - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, जून 2014 के सत्ताईसवें दिन को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।  
**Note.** - The fees for renewal of this patent, if it is to be maintained will fall / has fallen due on 27<sup>th</sup> day of June 2014 and on the same day in every year thereafter.



(12) PATENT APPLICATION PUBLICATION

(21) Application No.202121041593 A

(19) INDIA

(22) Date of filing of Application :15/09/2021

(43) Publication Date : 29/10/2021

(54) Title of the invention : A WINDSHIELD WIPER BLADE

(51) International classification :B60S0001380000, F16K0015200000, F16F0001420000, B29D0035120000, A41D0019000000  
(86) International Application No :NA  
Filing Date :NA  
(87) International Publication No : NA  
(61) Patent of Addition to Application Number :NA  
Filing Date :NA  
(62) Divisional to Application Number :NA  
Filing Date :NA

(71)Name of Applicant :  
**1)PROF. PRAGYAN JAIN**  
Address of Applicant :SCHOLAR, DEPARTMENT OF MECHANICAL ENGINEERING, GYAN GANGA INSTITUTE OF TECHNOLOGY AND SCIENCES, JABALPUR, 482004 -----  
**2)PROF. R. S. RAJPUT**  
**3)PROF. SUNIL KUMAR**  
**4)DR. DIBYENDU DUTTA**  
**5)PROF. RAKESH BAJPAI**  
**6)PROF. ANIL KUMAR BAJPAI**  
**7)PROF. PRABHAT PATEL**  
**8)PROF. ARTI SHARMA**  
**9)SAURABH TEWARI**  
**10)VINAMRA BHUSHAN SHARMA**  
**11)PROF. AMIT DIXIT**  
**12)ABHINEET SINGH**  
Name of Applicant : NA  
Address of Applicant : NA  
(72)Name of Inventor :  
**1)PROF. PRAGYAN JAIN**  
Address of Applicant :SCHOLAR, DEPARTMENT OF MECHANICAL ENGINEERING, GYAN GANGA INSTITUTE OF TECHNOLOGY AND SCIENCES, JABALPUR, 482004 -----  
**2)PROF. ARTI SHARMA**  
Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF SCIENCES AND HUMANITIES, GLOBAL NATURE CARE SANGTHAN'S OF GRP OF INSTITUTIONS JABALPUR -----  
**3)ABHINEET SINGH**  
Address of Applicant :MASTERS STUDENT, DEPARTMENT OF MECHANICAL ENGINEERING, GYAN GANGA INSTITUTE OF TECHNOLOGY AND SCIENCES, JABALPUR, 482004 -----

(57) Abstract :

This invention provides a windshield wiper blade. The blade comprises of a rubber element, said rubber element has an elongated rubber body member with a mid-rib extending throughout the length of a base portion of the rubber element. A plurality of ridged members arranged on one side of the mid rib on the base member to allow the water captured into the ridges before reaching the mid rib. The present invention provides a dual blade assembly arranged to be mounted on a single frame. This reduces the manufacturing costs and increases the efficacy of the wiping mechanism. Also, the wiper blade according to an embodiment of the invention, are made up of latex with graphene which increases blade life.

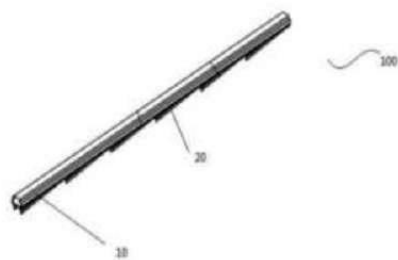


Figure -1

No. of Pages : 19 No. of Claims : 10

(54) Title of the invention : ANGLE OF REPOSE MEASURING APPARATUS AND CHAPATI FORMULATION OF DIFFERENT FLOURS FOR HIGH SELF LIFE

(51) International classification :G01N0033000000, A61K0008730000, A23L0029262000, A23L0027100000, A23L0027000000  
 (86) International Application No :NA  
 Filing Date :NA  
 (87) International Publication No : NA  
 (61) Patent of Addition to Application Number :NA  
 Filing Date :NA  
 (62) Divisional to Application Number :NA  
 Filing Date :NA

(71)Name of Applicant :

1)MAHAKUSHAL UNIVERSITY

Address of Applicant :Village-Aithakheda, Mukunwara Road, Post- Tilwara Jabalpur (M.P.) 482003 -----

Name of Applicant : NA

Address of Applicant : NA

(72)Name of Inventor :

1)Minali Masih

Address of Applicant :Research Scholar, Swami Vivekanand University, Sagar, Madhya Pradesh -----

2)Dr. R. C. Mishra

Address of Applicant :V.C Mahakaushal University, Ainthakheda, Chargawan Rd, Tilwara, Madhya Pradesh 482003 -----

3)Dr. Bhasker Jyoti

Address of Applicant :Assistant Professor, Mahakaushal University, Ainthakheda, Chargawan Rd, Tilwara, Madhya Pradesh 482003 -----

4)Dr. Surendra Singh

Address of Applicant :Department of Biological Science, Rani Durgavati University, Jabalpur-482001(M.P.),India -----

5)Prof. Rajesh Kumar Dubey

Address of Applicant :Director-Human Resource Development Center (UGC-HRDC), JNV University, Jodhpur, Rajasthan. -----

(57) Abstract :

The present invention relates to angle of repose measuring apparatus and chapati formulation of different flours for high self life. The objective of the present invention is to solve the problems in the prior art related to measuring the repose angle for the grains. Another objective of the present invention to present a composition of flour for chapati for better self-life.

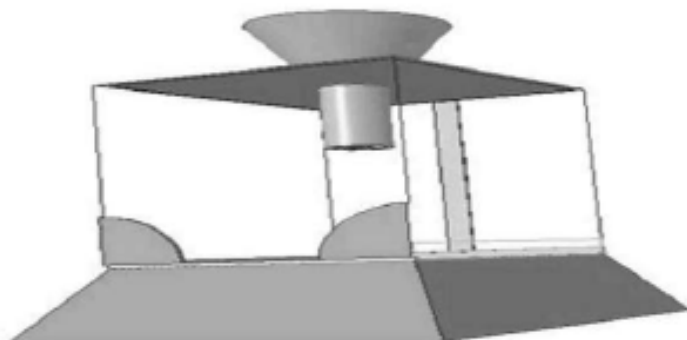


FIGURE 1

No. of Pages : 17 No. of Claims : 4





Australian Government

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# CERTIFICATE OF GRANT INNOVATION PATENT

**Patent number:** 2021104532

The Commissioner of Patents has granted the above patent on 13 April 2022, and certifies that the below particulars have been registered in the Register of Patents.

**Name and address of patentee(s):**

Neeraj Mishra of Professor, Department of Pharmaceutics, Amity Institute of Pharmacy, Amity University of Madhya Pradesh (AUMP Gwalior Madhya Pradesh 474001 India

Ashish Garg of Assistant Professor, Department of P.G., Studies and Research in Chemistry and, Pharmacy, Rani Durgavati University Jabalpur M.P. 482003 India

Sumel Ashique of Assistant Professor, Department of, Pharmaceutics, Bharat Institute of, Technology, BIT-School of Pharmacy Meerut, Uttar Pradesh-250103 India

Aakash Upadhyay of Assistant Professor, Department of, Pharmaceutics, Bharat Institute of, Technology BIT-School of Pharmacy Meerut, Uttar Pradesh-250103 India

Suryakant Verma of Assistant Professor Department of, Pharmaceutics, Bharat Institute of, Technology BIT-School of Pharmacy Meerut, Uttar Pradesh-250103 India

Bharat Lal of Department of Pharmaceutics, I.S.F. College of Pharmacy Moga Punjab 142001 India

**Title of invention:**

Extraction and Isolation of Embelin from Embelia ribes berries and determination of its antiameobic activity

**Name of inventor(s):**

Mishra, Neeraj; Garg, Ashish; Ashique, Sumel; Upadhyay, Aakash; Verma, Suryakant and Lal, Bharat

**Term of Patent:**

Eight years from 24 July 2021

NOTE: This Innovation Patent cannot be enforced unless and until it has been examined by the Commissioner of Patents and a Certificate of Examination has been issued. See sections 120(1A) and 129A of the Patents Act 1990, set out on the reverse of this document.



Dated this 13<sup>th</sup> day of April 2022

Commissioner of Patents

## PATENTS ACT 1990

The Australian Patents Register is the official record and should be referred to for the full details pertaining to this IP Right.

This data, for application number 2021104532, is current as of 2023-02-28 21:00 AEST



Australian Government

IP Australia

# CERTIFICATE OF GRANT INNOVATION PATENT

**Patent number:** 2021103946

The Commissioner of Patents has granted the above patent on 30 March 2022, and certifies that the below particulars have been registered in the Register of Patents.

**Name and address of patentee(s):**

Esha Yadav of Associate Professor, Axis Institute of Pharmacy Kanpur, Uttar Pradesh-209402 India

Neeraj Mishra of Professor, Amity Institute of Pharmacy, Amity University Madya Pradesh Gwalior 474005 India

Pramod Bhaskar Kumar of Associate Professor, Shree devi college of Pharmacy, Airport Road, Kenjar Manglore Karnataka 574142 India

Ankita Singh of Pharm D Student, Department of Pharmacy Practice, School of Pharmaceutical Sciences SGRR University, Dehradun UK 248001 India

Ashish Garg of Assistant Professor, Department of chemistry and Pharmacy, Rani Durgavati University Jabalpur Madhya Pradesh 482001 India

Ankit Shukla of Principal, Dr Om Prakash College of pharmacy Bewar Road, NISAI, Farrukhabad, UP 209625 India

**Title of invention:**

A POLYHERBAL FORMULATION FOR HEALING WOUNDS IN DIABETIC PATIENTS

**Name of inventor(s):**

Yadav, Esha; Mishra, Neeraj; Kumar, Pramod Bhaskar; Singh, Ankita; Garg, Ashish and Shukla, Ankit

**Term of Patent:**

Eight years from 7 July 2021

NOTE: This Innovation Patent cannot be enforced unless and until it has been examined by the Commissioner of Patents and a Certificate of Examination has been issued. See sections 120(1A) and 129A of the Patents Act 1990, set out on the reverse of this document.



Dated this 30<sup>th</sup> day of March 2022

Commissioner of Patents

## PATENTS ACT 1990

The Australian Patents Register is the official record and should be referred to for the full details pertaining to this IP Right.

This data, for application number 2021103946, is current as of 2023-02-28 21:00 AEST

### Application Details

APPLICATION NUMBER	202021051576
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	26/11/2020
APPLICANT NAME	<b>1 . Ms. Garima Tiwari</b> <b>2 . Mr. Anat Shrivastava</b> <b>3 . Dr.M.Senthil Kumar</b> <b>4 . Dr. Mohammad Javeed</b> <b>5 . Dr. Rinkesh Bhatt</b> <b>6 . Ms. Ayesha Siddiqa</b> <b>7 . Mr. Nishant Behar</b> <b>8 . Dr. Shailendra Singh Pawar</b> <b>9 . Dr. Rajeev Shrivastava</b>
TITLE OF INVENTION	VEHICLE BUS DATA ACQUISITION AND FAULT ANALYSIS SYSTEM USING CAN AND MONITORING USING INTERNET OF THINGS AND MACHINE LEARNING BASED ALGORITHM
FIELD OF INVENTION	MECHANICAL ENGINEERING
E-MAIL (As Per Record)	garima.tiwari29@gmail.com
ADDITIONAL-EMAIL (As Per Record)	nagu.sajana@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	01/01/2021



# CERTIFICATE OF GRANT INNOVATION PATENT

**Patent number:** 2021102828

The Commissioner of Patents has granted the above patent on 30 June 2021, and certifies that the below particulars have been registered in the Register of Patents.

**Name and address of patentee(s):**

Jitender Kumar of Sharda University, School of Business Studies, Plot No. 32, 34, Knowledge Park III Greater Noida Uttar Pradesh 201310 India

**Title of invention:**

EMPLOYEE PERFORMANCE EVALUATION AND IMPROVEMENT SYSTEM

**Name of inventor(s):**

Kumar, Jitender; Pandey, Anamika; Dixit, Sweta and Kumar, Sunil

**Term of Patent:**

Eight years from 25 May 2021

NOTE: This Innovation Patent cannot be enforced unless and until it has been examined by the Commissioner of Patents and a Certificate of Examination has been issued. See sections 120(1A) and 129A of the Patents Act 1990, set out on the reverse of this document.



Dated this 30<sup>th</sup> day of June 2021

Commissioner of Patents

**PATENTS ACT 1990**

This Australian Patents Register is the official record and should be referred to for the full details concerning this IP Right.

Director

University Institute of Management  
Rani Durgavati University, Jabalpur

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202021036662 A

(19) INDIA

(22) Date of filing of Application :26/08/2020

(43) Publication Date : 18/09/2020

(54) Title of the invention : SYSTEM FOR AUTONOMOUSLY PLANTING, WATERING AND MONITORING AN AGRICULTURAL FIELD AND IN REMOTE FOREST AREAS

(51) International classification	:G05D0001020000, G05D0001000000, A01C0021000000, A01G0025160000, A01B0079000000	(71)Name of Applicant : <b>1)Prakhar Mani Tripathi</b> Address of Applicant :1578, Old Kanchanpur, Adhartal, Jabalpur (MP) India Pin 482004 Madhya Pradesh India <b>2)Nishi Patil</b> <b>3)Pragyan Jain</b> <b>4)Aditya Singh Patel</b> <b>5)Gaurav Patel</b> <b>6)Dr. Vandana Roy</b> <b>7)Sakshi Namdeo</b> <b>8)Surubhi Khurasiya</b> <b>9)Dr. Purnima Beohar</b>
(31) Priority Document No	:NA	(72)Name of Inventor : <b>1)Prakhar Mani Tripathi</b> <b>2)Nishi Patil</b> <b>3)Pragyan Jain</b>
(32) Priority Date	:NA	
(33) Name of priority country	:NA	
(86) International Application No	:NA	
Filing Date	:NA	
(87) International Publication No	: NA	
(61) Patent of Addition to Application	:NA	
Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

A system (100) for autonomously planting, watering, and monitoring an agricultural field. The system (100) includes a communication application (102), an agricultural autonomous vehicle (108), and a server (110). The communication application (102) transmits coordinates of a closed area. The communication application (102) prompts the user to feed plant types for plantation. The agricultural autonomous vehicle (108) navigates over the agricultural field which includes a plant container (202), a GPS unit, sensors, camera (204), processing unit, and a battery (206). The plant container (202) stores saplings, and seeds based on the plant type. The GPS unit enables the agricultural autonomous vehicle (108) to navigate towards the GPS coordinates. The sensors detect the moisture content of the soil, and detect atmosphere humidity, and determines weather forecast. The camera (204) captures multimedia files of plants and the agricultural field. The processing unit performs planting, watering, and monitoring for each of the saplings, and seeds. The server (110) receives the plurality of multimedia files to perform an analysis. The most illustrative drawing: FIG. 1.

No. of Pages : 30 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.201721002537 A

(19) INDIA

(22) Date of filing of Application :23/01/2017

(43) Publication Date : 24/05/2019

(54) Title of the invention : PRODUCTION OF NOVEL ANTIBACTERIAL COMPOUND FRAXIDIN FROM ASPERGILLUS JAPONICUS SK1.

(51) International classification	:C12R 1/00 C12P 17/00	(71)Name of Applicant : <b>1)BIO-DESIGN INNOVATION CENTRE, DEPARTMENT OF BIOLOGICAL SCIENCES, RANI DURGA VATI UNIVERSITY, JABALPUR</b>
(31) Priority Document No	:NA	Address of Applicant :SARASWATI VIHAR, PACHPEDI,
(32) Priority Date	:NA	JABALPUR-482001, MADHYA PRADESH, INDIA. Madhya
(33) Name of priority country	:NA	Pradesh India
(86) International Application No	:NA	(72)Name of Inventor :
Filing Date	:NA	<b>1)KUMAR, SUNEEL</b>
(87) International Publication No	: NA	<b>2)AHARWAL RAVINDRA PRASAD</b>
(61) Patent of Addition to Application Number	:NA	<b>3)SANDHU, SARDUL SINGH</b>
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

The present invention represents the isolation, characterization and antibacterial activity of novel antibacterial compound fraxidin from *Aspergillus japonicus* SK1 isolated from *Achyrenthes aspera* L. plant collected from Jabalpur region (MP.) India. Fungal species was identified on the basis of their morphological characteristics as well as by molecular sequencing. Various parameters like media, incubation period, carbon source, nitrogen source, temperature, pH and shelf life were optimized for the maximum production of the antibacterial compound. For purification of the antibacterial compound solvent-solvent extraction method was used. The different ratio of n-butanol and ethyl acetate showed the antibacterial activity was further purified in Column chromatography and a total 15 fraction were eluted and observed their antibacterial activity. The fraction number 10 (j) that showed maximum zone of inhibition against pathogenic bacteria was further purified by thin layer chromatography (TLC) on silica gel G plate in solvent mixture of n-butanol: ethyl acetate: acetone (4:3:3) and developed three spot on silica gel G plate with a Rf value of 0.68, 0.73 and 0.95 and fraction obtain at a Rf value of 0.73 was gave the best activity against test bacterial strain. For chemical elucidation of the antibacterial bioactive compound TLC sample that showed the maximum antibacterial activity having Rf value 0.73 was dissolved into the water: methanol (20:80) solvent system and chemical structure of the antibacterial compound was identified by LCMS/MS named as fraxidin. The new bioactive compound isolated from the secondary metabolite of *Aspergillus japonicus* SK1 having a formula C11H10O5.



No. of Pages : 48 No. of Claims : 13

(12) PATENT APPLICATION PUBLICATION

(21) Application No.201721003140 A

(19) INDIA

(22) Date of filing of Application :27/01/2017

(43) Publication Date : 03/08/2018

(54) Title of the invention : 2'-HYDROXYGENISTEIN: NOVEL ANTIBACTERIAL COMPOUND FROM PHOMA SP. RP1 AND PRODUCTION THEREON

(51) International classification	:A61K 31/00	(71)Name of Applicant :
(31) Priority Document No	:NA	<b>1)BIO-DESIGN INNOVATION CENTRE, DEPARTMENT OF BIOLOGICAL SCIENCES, RANI DURGA VATI UNIVERSITY, JABALPUR</b>
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(57) Abstract :

Protocol was developed for isolation, fermentation, purification and characterization of the 2-Hydroxygenistein antibacterial compound of endophytic fungi harbouring Indian medicinal plant *Litsea glutinosa* (Lour.) C.B. Rob. Endophytic fungal strain RP1 was identified as *Phoma* sp. by phenotypic characteristics as well as molecular sequencing. Screening of crude extract from *Phoma* sp. was investigated for their antibacterial activity. The optimum productivity of the antibacterial compound and biomass was achieved with optimized physico-chemical parameters containing Sabourauds dextrose broth (SDB), incubation period (14 days), temperature (27°C), pH (7), carbon source (maltose) and nitrogen source (peptone). The optimum carbon source and temperature for maximum antibacterial activity and biomass were peptone at 27°C respectively. Therefore, in the present invention it was revealed that there is no co-relation between biomass and antibacterial activity of the *Phoma* sp. RP1. Large scale production of the antibacterial metabolite was carried out in the bioreactor. All optimized physico-chemical parameters were applied for fermentation in the bioreactor. For purification of the antibacterial compound solvent-solvent extraction method was used. The n-butanol fraction of CFCF showed maximum antibacterial activity was further purified in column chromatography (hexane : n-butanol : acetone in ratio 50:30:20) and a total 10 fraction (A-J) were eluted and observed their antibacterial activity. The fraction number E that showed maximum zone of inhibition against test bacteria was further purified by TLC in solvent mixture of petroleum ether and ethyl acetate (70:30) that gave three spot with R<sub>f</sub> values 0.26, 0.52 and 0.59 and fraction obtain having a R<sub>f</sub> value of 0.26 was giving the best antibacterial activity. TLC sample was again dissolved into the water: methanol (20:80) solvent system and chemical structure of the antibacterial compound was identified by LCMS/MS and named as 2-Hydroxygenistein (C<sub>15</sub>H<sub>10</sub>O<sub>6</sub>).



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