

**UNIVERSITY GRANTS COMMISSION
BAHADUR SHAH ZAFAR MARG
NEW DELHI- 110002**

**STATEMENT OF EXPENDITURE IN RESPECT OF MAJOR RESEARCH
PROJECT**

- 1. Name of the Principal Investigator:** Prof. K. R. Chandrashekar
- 2. Dept. Of University/ College:** Department of Applied Botany
Mangalore University
- 3. UGC Approval No. and Date:** F. 42-950/2013(SR) dated 14 March 2013,
F. 42-950/2013(SR) dated 13 June 2016
- 4. Title of the Research Project:** Biochemical and Pharmacological studies on
Myristicaceae
- 5. Effective date of starting the project:** April 01, 2013
- 6. a. Period of Expenditure:** From April 01, 2013 to 31st March 2017.
- b. Details of the Expenditure:**

S. NO.	Items	Amount Approved	Total expenditure incurred
1.	Books & Journal	30,000/-	22,790/-
2.	Equipments	Nil/-	-
3.	Honorarium	Nil/-	-
4.	Contingency	50,000/-	50,000/-
5.	Travel/Field work	30,000/-	40,695/-
6.	Chemicals & Glass wares	2,50,000/-	2,43,627/-
7.	Hiring Services	50,000/-	50,925/-
8.	Overhead	87,800/-	87,800/-
9.	Any other Items (Please Specify)	-	-
10.	Honorarium to Principal Investigator	-	-
11.	Staff(date of appointment: (01.08.2013)	5,28,000/-	5,79,960/-
	Total	10,25,800/-	10, 75,797/-

c. Staff**Date of Appointment:** 01.08.2013

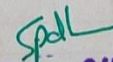
Month/Year	Designation	Fellowship	HRA	Expenditure Incurred (Rs.)
August 2013	J.R.F.	14,000.00	980.00 (7%)	14,980.00
September 2013	J.R.F.	14,000.00	980.00 (7%)	14,980.00
October 2013	J.R.F.	14,000.00	1400.00(10%)	15,400.00
November 2013	J.R.F.	14,000.00	1400.00(10%)	15,400.00
December 2013	J.R.F.	14,000.00	1400.00(10%)	15,400.00
January 2014	J.R.F.	14,000.00	1400.00(10%)	15,400.00
February 2014	J.R.F.	14,000.00	1400.00(10%)	15,400.00
March 2014	J.R.F.	14,000.00	1400.00(10%)	15,400.00
April 2014	J.R.F.	14,000.00	1400.00(10%)	15,400.00
May 2014	J.R.F.	14,000.00	1400.00(10%)	15,400.00
June 2014	J.R.F.	14,000.00	1400.00(10%)	15,400.00
July 2014	J.R.F.	14,000.00	1400.00(10%)	15,400.00
August 2014	J.R.F.	14,000.00	1400.00(10%)	15,400.00
September 2014	J.R.F.	14,000.00	1400.00(10%)	15,400.00
October 2014	J.R.F.	14,000.00	1400.00(10%)	15,400.00
November 2014	J.R.F.	14,000.00	1400.00(10%)	15,400.00
December 2014	J.R.F.	14,000.00	1400.00(10%)	15,400.00
January 2015	J.R.F.	14,000.00	1400.00(10%)	15,400.00
February 2015	J.R.F.	14,000.00	1400.00(10%)	15,400.00
March 2015	J.R.F.	14,000.00	1400.00(10%)	15,400.00
April 2015	J.R.F.	14,000.00	1400.00(10%)	15,400.00
May 2015	J.R.F.	14,000.00	1400.00(10%)	15,400.00
June 2015	J.R.F.	14,000.00	1400.00(10%)	15,400.00
July 2015	J.R.F.	14,000.00	1400.00(10%)	15,400.00
August 2015	S.R.F.	16,000.00	1600.00(10%)	17,600.00
September 2015	S.R.F.	16,000.00	1600.00(10%)	17,600.00
October 2015	S.R.F.	16,000.00	1600.00(10%)	17,600.00
November 2015	S.R.F.	16,000.00	1600.00(10%)	17,600.00
December 2015	S.R.F.	16,000.00	1600.00(10%)	17,600.00
January 2016	S.R.F.	16,000.00	1600.00(10%)	17,600.00
February 2016	S.R.F.	16,000.00*	1600.00(10%)*	17,600.00*
March 2016	S.R.F.	16,000.00*	1600.00(10%)*	17,600.00*
April 2016	S.R.F.	16,000.00*	1600.00(10%)*	17,600.00*
May 2016	S.R.F.	16,000.00*	1600.00(10%)*	17,600.00*
June 2016	S.R.F.	16,000.00*	1600.00(10%)*	17,600.00*
July 2016	S.R.F.	16,000.00*	1600.00(10%)*	17,600.00*

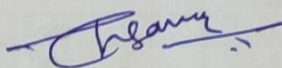
***Amount to be released by U.G.C. = 1, 05, 600 (52,800/- +HRA)**

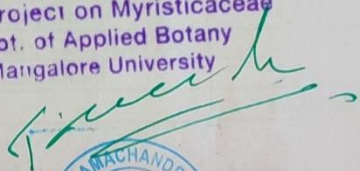

1. It is certified that the appointment have been made in accordance with the terms and conditions laid down by the Commission.

2. If as a result of check or audit objection some irregularly is noticed at later date, action will be taken to refund, adjust or regularize the objected amounts.
3. Payment @ revised rates shall be made with arrears on the availability of additional funds.
4. It is certified that the grant of Rs. 9,35,000 (Rupees Nine lakhs Thirty Five Thousand only) received from the University Grants Commission under the scheme of support for Major Research Project entitled "Biochemical and Pharmacological studies on Myristicaceae" vide UGC letter No. F. F. 42-950/2013(SR) dated 14 March 2013 has been fully utilized for the purpose for which it was sanctioned and in accordance with the terms and conditions laid down by the University Grants Commission.


Registrar
MANGALORE UNIVERSITY
MANGALAGANGOTRI - 574 199


Finance Officer
MANGALORE UNIVERSITY


Signature of Principal Investigator
Prof. K.R. Chandrashekar
Principal Investigator
UGC Project on Myristicaceae
Dept. of Applied Botany
Mangalore University



Office:
VIJAY-KAMAL
S.L. Lobo Road
Attavara
Mangaluru - 1
M.No. 019293
Chartered Accountant

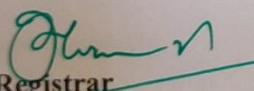
UNIVERSITY GRANTS COMMISSION
BAHADUR SHAH ZAFAR MARG
NEW DELHI- 110002

STATEMENT OF EXPENDITURE INCURRED ON FIELD WORK

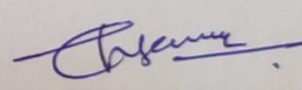
Name of the Principal Investigator: Prof. K. R. Chandrashekar

Name of the Place visited	Duration of the Visit		Mode of Journey	Expenditure Incurred
	From	To		
BARC, Mumbai	18.03.2014	21.03.2014	Train	1,335/-
Siddhapura	13.06.2014	14.06.2014	Taxi	6,443/-
Yallapura	21.09.2014	23.09.2014	Bus	852/-
Yallapura	16.11.2014	18.11.2014	Bus	852/-
Yallapura	08.02.2014	10.02.2014	Bus	852/-
Siddhapura	05.09.2014	06.09.2014	Bus, Omni	4,652/-
New Dehli	11.01.2015	14.01.2015	Auto, Train, Taxi, Air Fare	22,709/-
Siddhapura	22.10.2016	23.10.2016	Bus, Omni	3,000/-
Total expenditure incurred in field work				40,695/-

Certified that the above expenditure is in accordance with the UGC norms for Major Research Projects


Registrar

MANGALORE UNIVERSITY
MANGALAGANGOTRI - 574 199


Signature of Principal Investigator
Prof. K.R. Chandrashekar
Principal Investigator
UGC Project on Myristicaceae
Dept. of Applied Botany
Mangalore University



UNIVERSITY GRANTS COMMISSION
BAHADUR SHAH ZAFAR MARG
NEW DELHI- 110002

UTILIZATION CERTIFICATE

Certified that the grant of Rs. 10,25,800/- (Rupees Ten lakhs Twenty Five thousand Eight hundred rupees only) sanctioned to Mangalore University by the University Grants Commission under the scheme of support for Major research Project entitled "Biochemical and Pharmacological studies on Myristicaceae" vide UGC Letter No. F.42-950/2013(SR) dated 14 March. Received a sum of Rs. 9,35,000/- (Nine lakhs Thirty Five thousand rupees only) [5,71,800 (Five lacs seventy one thousand eight hundred rupees only) vide UGC Letter No. No. F. F.42-950/2013(SR) dated 14 March and Rs. 3, 63,200 (Three lakhs sixty three thousand two hundred only) vide UGC Letter No. F. 42-950/2013(SR) dated 13 June 2016]. Rs. 10, 75,797/-(Rupees Ten lakhs Seventy Five thousand Seven hundred and Ninety Seven rupees only), has been spent as on 31.03.2017, for the purpose for which it was sanctioned and in accordance with the terms and conditions laid down by the University Grants Commission and a sum of Rs.1,40,797/- (Rs.9,35,000 – Rs.10,75,797) is receivable from the said University Grant Commission.

Place: Mangalagangothri

Date: 12. 05.2017

PRINCIPAL
INVESTIGATOR

Prof. K.R. Chandrashekar
Principal Investigator
UGC Project on Myristicaceae
Dept. of Applied Botany
Mangalore University

Finance Officer
MANGALORE UNIVERSITY

SIGNATURE OF THE REGISTRAR
Registrar

MANGALORE UNIVERSITY
MANGALAGANGOTRI - 574 199

STATUTORY
AUDITOR



UNIVERSITY GRANTS COMMISSION
BAHADUR SHAH ZAFAR MARG
NEW DELHI- 110002

PROFORMA FOR SUBMISSION OF INFORMATION AT THE TIME OF
SENDING THE FINAL REPORT OF THE WORKDOEN ON THE PROJECT

1. **Title of the Project:** Biochemical and Pharmacological studies on Myristicaceae
2. **Name and Address of the Principal Investigator:** Prof. K.R. Chandrashekar
Department of Applied Botany
Mangalore University
Mangalagangothri-574199
3. **Name and Address of the Institution:** Department of Applied Botany
Mangalore University
Mangalagangothri-574199
4. **UGC Approval Letter No. and Date:** F. 42-950/2013(SR) dated 14 March 2013
5. **Date of Implementation:** April 01, 2013
6. **Tenure of the Project:** **3 Years+ 1 Year (Extended)**
7. **Total Grant Allocated:** 10, 25,800/-
8. **Total Grant Received:** 9, 35,000/-
9. **Final Expenditure:** 10, 75, 730/-
10. **Title of the Project:** Biochemical and Pharmacological studies on Myristicaceae
11. **Objectives of the Project:**
 1. **Screening of Phytochemical in plants**
 - Primary Metabolites: Carbohydrates, Proteins, Fats etc.
 - Secondary Metabolites: Alkaloids, Phenols, Flavonoids etc.
 2. **Evaluation of Pharmacological properties of Plant extracts**
 - In vitro study
 - In vivo study
 3. **Isolation and characterisation of bioactive compounds.**

12. Whether Objectives were achieved: Yes

13. Summary of the Findings:

The Western Ghats inhabits five species of Myristicaceae belonging to three genera viz. *Myristica*, *Knema* and *Gymnacranthera*; all of them are trees associated with evergreen to semi evergreen forests. Among five species of Myristicaceae, *Myristica fatua* var. *magnifica* and *Gymnacranthera canarica* are exclusive to the Swamps while *M. dactyloides*, *M. malabarica* and *Knema attenuata* are non swampy plant species.

Significantly a higher amount of ash (11.67%) was registered in rind of *M. Dactyloides*. The carbohydrate content was in the order of Rind (80.71%) >Kernel (36.60%)>Aril (25.35%)>Testa (18.70%) in case of *M. fatua*. The present study indicated the presence of total protein content of 379mg/g followed by kernel (254mg/g), aril (101mg/g) while testa showed 14mg/g of total protein. Rind of *M. fatua* recorded significantly high amount of calcium (26.7mg/g) followed by aril (24.48mg/g), Testa (24.47mg/g) and kernel (23.97mg/g) exhibited on par calcium content. Glycine was the major amino acid found in the all the fruit parts. The major fatty acids such as Myristic acid (6.15%), Palmitic acid (3.33%), Oleic acid (14.31%) and Paullinic acid (51.22%) were found in kernel of *M. dactyloides*.

The total phenolic content of *M. fatua* ranged between 14.67-195mg GAE/mg while flavonoids ranged between 8.0-332mg quercetin equivalent/g. Significantly a minimum IC₅₀ value (0.02mg/ml) was observed in the methanolic extracts of kernel of *M. dactyloides*. At 20µg, on par α-amylase inhibitory activity was exhibited by ethyl acetate extract (91.8%) and aqueous extract of kernel(91.56%) followed by methanolic extract of bark (91.24%) and hexane extract of kernel(91.06%) in case of *M. fatua* which is comparable with the standard Acarbose (92.13%).

Aril ethyl acetate extract of *M. fatua* at 200mg/kg dose exhibited a good inhibition of about 52.83% while 400mg/kg dose exhibited 62.26% of inhibition against paw oedema which is comparable with the Standard diclofenac

with inhibition of 69.81%. TLC of ethyl acetate extract of *M. fatua* resulted in 7 spots with R_f values of 0.235 (Brownish yellow), 0.411 (Violet), 0.0505 (Light violet), 0.635 (Brownish black), 0.741 (Violet), 0.811 (Light violet) and 0.847 (Blackish brown) respectively in the mobile phase of Toluene: Ethyl acetate (10:1). All the 7 spots were prominent and clear.

14. Contribution to the Society: Project work created awareness in the conservation of rare endemic plants like *M. fatua*

15. Whether any Ph. D. Enrolled/ Produced out of the Project: Enrolled

16. No. of Publications out of the project: 2

1. Viveka M. R., Bhagya N and K. R. Chandrashekar. *In vitro* studies on a antidiabetic and anti - inflammatory properties of *Myristica dactyloides* Gaertn. Proceedings of the National Seminar on 'Herbal Technology & Ethnobotany'. ISBN 978 - 93 - 5254 - 227 - 7.
2. Viveka M.R. and K.R. Chandrashekar (2016), Antioxidant and antibacterial activities of *Myristica fatua* var. *magnifica* (Beddome) Sinclair. Asian J Pharm Clin Res, Vol 9, Issue 4, 2016, 235-239.

Signature of the Principal Investigator

Prof. K.R. Chandrashekar
Principal Investigator
UGC Project on Myristicaceae
Dept. of Applied Botany
Mangalore University

Registrar.

Registrar

MANGALORE UNIVERSITY
MANGALAGANGOTRI 574 199