

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  
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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 IC<sub>50</sub> 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 Rf 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 (2016).In vitro studies on 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.