# AN EXPERIMENTAL STUDY ON THE ESSENTIAL OILS OF SELECTED SPP OF OCIMUM AND ITS VARIATIONS IN CONTENT, WITH RESPECT TO SEASONAL CHANGES AND ANATOMICAL VARIATIONS

Dissertation submitted to Mahatma Gandhi University,

Kottayam in partial fulfilment for the Degree of

Master of Science in Botany



MUKTHAHASA DATHAN

REG. NO.130011005890



68 Department of Botany

Sacred Heart college, Thevara

Kochi-682013

Kerala, India

2015



Thevara P.O., Kochi-682 013, Kerala, India

Dr. M.S Francis M.Sc., M.Ed., ph.D Head, Department of Botany S.H. College, Thevara



This is to certify that the dissertation entitled "AN EXPERIMENTAL STUDY ON THE ESSENTIAL OILS OF SELECTED SPP OF OCIMUM AND ITS VARIATIONS IN CONTENT, WITH RESPECT TO SEASONAL CHANGES AND ANATOMICAL VARIATIONS" is a bonafide report of the work done by Miss. MUKTHAHASA DATHAN (Reg. No.130011005890) under the guidance of Dr.GEORGE JOSEPH, Associate Professor in Botany, Sacred Heart College, Thevara in partial fulfillment of the requirements for the award of the Degree of Master of Science in Botany from Mahatma Gandhi University, Kottayam.

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I hereby declare that the dissertation entitled "AN EXPERIMENTAL STUDY ON THE ESSENTIAL OILS OF SELECTED SPP OF OCIMUM AND ITS VARIATIONS IN CONTENT, WITH RESPECT TO SEASONAL CHANGES AND ANATOMICAL VARIATIONS" submitted to Mahatma Gandhi University, Kottayam, Kerala in partial fulfillment for the Degree of Master of Science in Potany, is a record of original project work done by me during the course of M. Sc degree and has not been formed the basis for any other degree, diploma before.

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## Food Chemistry, 20100301 Publication

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| Zheljazkov, Valtcho D., Charles L. Cantrell, Babu Tekwani, and Shabana I. Khan. "Content, Composition, and Bioactivity of the Essential Oils of Three Basil Genotypes as a Function of Harvesting", Journal of Agricultural and Food Chemistry, 2008. Publication                     | % <b>1</b>  |
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| Rima Kumari. "Comparative analysis of essential oil composition and oil containing glands in Ocimum sanctum L. (Holy basil) under ambient and supplemental level of UV-B through gas chromatography—mass spectrometry and scanning electron microscopy", Acta Physiologiae Plantarum, | % <b>1</b>  |
|   | www.scialert.net Internet Source  www.naha.org Internet Source  www.etaxonomy.ac.cn Internet Source  Zheljazkov, Valtcho D., Charles L. Cantrell, Babu Tekwani, and Shabana I. Khan. "Content, Composition, and Bioactivity of the Essential Oils of Three Basil Genotypes as a Function of Harvesting", Journal of Agricultural and Food Chemistry, 2008.  www.scribd.com Internet Source  Rima Kumari. "Comparative analysis of essential oil composition and oil containing glands in Ocimum sanctum L. (Holy basil) under ambient and supplemental level of UV-B through gas chromatography—mass spectrometry and scanning electron |

### 12/30/2010

Publication

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|----|--|------------|
| 27 | Kaurinovic, Biljana, Mira Popovic, Sanja Vlaisavljevic, and Svetlana Trivic. "Antioxidant Capacity of Ocimum basilicum L. and Origanum vulgare L. Extracts", Molecules, 2011.  Publication | % <b>1</b> |
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| 36 | Kunwar, G., C. Pande, G. Tewari, C. Singh, and G.C. Kharkwal. "Effect of Heavy Metals on Terpenoid Composition of Ocimum basilicum L. and Mentha spicata L.", Journal of Essential Oil Bearing Plants, 2015.  Publication | <%1        |
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| 44 | Hajji, M "Chemical composition, angiotensin l-converting enzyme (ACE) inhibitory, antioxidant and antimicrobial activities of the essential oil from Periploca laevigata root barks", Food Chemistry, 20100801   | <%1 |
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Kitchlu, S., Rekha Bhadauria, Gandhi Ram,

| 62 | Kushal Bindu, Ravi K. Khajuria, and Ashok<br>Ahuja. "Chemo-Divergence in Essential Oil<br>Composition among Thirty One Core<br>Collections of <i>Ocimum sanctum</i> L. Grown<br>under Sub-Tropical Region of Jammu, India",<br>American Journal of Plant Sciences, 2013. | <%1 |
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| 63 | www.science.gov<br>Internet Source   | <%1 |
| 64 | Olga Makri. "Ocimum sp. (Basil): Botany,<br>Cultivation, Pharmaceutical Properties, and<br>Biotechnology", Journal of Herbs Spices &<br>Medicinal Plants, 01/18/2008<br>Publication  | <%1 |
| 65 | Rana, Virendra S., and M. Amparo Blazquez.  "Essential Oil Composition of the Aerial Parts of Five Ocimum species from Western India",  Journal of Essential Oil Bearing Plants, 2015.  Publication  | <%1 |
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Labra, M.. "Morphological characterization,

| 80 | essential oil composition and DNA genotyping of Ocimum basilicum L. cultivars", Plant Science, 200410 Publication  | <%1        |
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| 83 | Abozid, Medhat Mostafa and Asker, Mohsen M. S "CHEMICAL COMPOSITION, ANTIOXIDANT AND ANTIMICROBIAL ACTIVITY OF THE ESSENTIAL OIL OF THE THYME AND ROSEMARY", International Journal of Academic Research, 2013. Publication | <%1        |
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de Sousa, Damião, Palloma Hocayen, Luciana Andrade, and Roberto Andreatini. "A Systematic Review of the Anxiolytic-Like Effects of Essential Oils in Animal Models",

<%1

Publication

Molecules, 2015.

Suthar, Suresh K., and Ashok K. Malik. "GC/MS

<%1

Analysis of Volatile Compounds of the Essential Oil of Leaves of Ocimum sanctum Growing in Hisar, India", Asian Journal of Chemistry, 2015.

Publication

90

G. W. Turner. "Distribution of Peltate Glandular

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Trichomes on Developing Leaves of Peppermint", PLANT PHYSIOLOGY, 10/01/2000

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