CHEMICAL COMPOSITION AND EFFECTS OF ENVIRONMENTAL FACTORS ON ESSENTIAL OILS OF SOME PLANTS BELONGING TO FAMILIES – LAMIACEAE, CHENOPODIACEAE AND APIACEAE

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CERTIFICATE

This is to certify that Mr. Vineet Kandpal has carried out the research work under my supervision for the award of Ph.D. Degree in Chemistry and put in the required period of attendance in the Department of Chemistry, M. B. Govt. P. G. College, Haldwani, Nainital.

The work included in the thesis entitled “Chemical Composition and Effects of Environmental Factors on Essential Oils of Some Plants Belonging to Families – Lamiaceae, Chenopodiaceae and Apiaceae” is original unless stated otherwise and has not been submitted for any other Degree.

Date: May 12, 2017

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DECLARATION

I hear by declare that this thesis is a presentation of my original research work wherever contribution of others are involved, every effort is made to indicate this clearly, with due reference to the literature and acknowledgement of collaborative research and discussion. The work was done under the guidance of Dr. Neeta Joshi Associate Professor Department of Chemistry, M. B. Govt. P. G. College, Haldwani, Nainital.

The thesis has not been submitted for the award of any degree, diploma or fellowship of any university or institution.

Date: 12 May, 2017
Place: Haldwani

(Vineet Kandpal)
The diversified topography of the Kumaun and Garhwal region of western Himalaya favours the growth of a variety of aromatic flora. Some of these are valuable for different industries and a number of these have been used as indigenous medicines by the rural folk. The author has undertaken the study of effect of environment on chemical composition of essential oil of plants *Hyptis suaveolens* (L.) Poit. *Anisomeles indica*, *Chenopodium ambrosioides* and *Selenium wallichianum* by comparing chemical composition of essential oil during different growth phases of plant. The author also studied antimicrobial activity of essential oil and physicochemical composition of soil holding plant during each plant harvest.

The subject matter of this thesis has been divided into seven chapters. Chapter-I deals with General Introduction. The analysis of seasonal variation in essential oil composition of the selected four plants of families Lamiaceae, Chenopodiaceae and Apiaceae has been discussed under Chapter-II, III, IV, and V. Chapter-VI deals with antimicrobial activity screening of essential oils against selected fungi. Soil analysis at the time of harvesting of plant at different growth phases has been incorporated in Chapter-VII.
Acknowledgement

The work presented in this monograph was performed under the supervision of Dr. Neeta Joshi, Associate professor, Department of Chemistry, M.B. Govt. P.G. College Haldwani, to whom I am expressing my sincere gratitude and humble thanks for continuous guidance, invaluable help, immaculate suggestions, continuous inspiration, constant encouragement and heartfelt blessings throughout the course of the work.

I deem it my privilege to have undertaken this investigation under valuable, thoughtful, inspiring guidance and expert supervision of Professor Y.P.S. Pangtey, former Head, Botany Department and Professor C.S. Mathela, former Head, Chemistry Department, Kumaun University, Nainital.

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