

Curriculum Vitae

Arvind Kumar (M.Sc., B.Ed., Ph.D.)
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Present Address

CROM-MASS, CENIVAM,
Industrial University of Santander
Bucaramanga, Colombia, SA
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Education

- 2009-2014** Ph.D., Chemistry, H.N.B. Garhwal University (A Central University), Garhwal, Srinagar, Uttarakhand, India.
Thesis: “Phytochemical examination of *Dalbergia stipulacea* Roxb. and *Morina longifolia* Wall.” (Advisor: Prof. M.S.M. Rawat, Dr. V.K. Varshney)
- 2006-2007** B.Ed., Physical and Biological Science, C.C.S. University, Meerut, Uttar Pradesh, India.
- 2003-2005** M.Sc., Organic Chemistry, C.C.S. University, Meerut, Uttar Pradesh, India.
- 1999-2002** B.Sc., Chemistry, Zoology, and Botany, C.C.S. University, Meerut, Uttar Pradesh, India.

At Present

- Postdoctoral Research Scientist at the Center for Chromatography and Mass Spectrometry (CROM-MASS), CIBIMOL-CENIVAM, Industrial University of Santander, Bucaramanga, Colombia. (w.e.f. from 26th January, 2018), Advisor: Prof. (Dr.) Elena Stashenko

- Project-I* *Synthesis of fine chemicals from essential oils of plants grown in Colombia by Prins reaction with tin catalysts.*
- Project-II* *Isolation and characterization of bioactive compounds from residual biomass of Lippia origanoides H.B.K. different chemotypes and their bioactivities.*
- Project-III* *Separation and identification of the crude petroleum saturated hydrocarbons for use in 2D retention index references in GC×GC-TOF-MS.*
- Project-IV* *Isolation and characterization of bioactive compounds from residual biomass of Cordia curassavica (Jacq.) Roem. & Schult. and Turnera diffusa Willd. ex Schult. and their bioactivities.*

Skills

- Phytochemical investigation: Bioassay guided fractionation/isolation with analytical separation techniques (thin layer, preparative, column and paper chromatography) and their characterization with spectroscopic techniques (UV-Visible, FTIR, 1D and 2D NMR, 2D-GC×GC, GC-MS, HPLC-DAD, UHPLC-ESI-Orbitrap-MS).
- Extraction techniques: Isolation of essential oils via hydro, microwave and steam distillation, solvent extraction, solid phase-microextraction (SPME) with direct and headspace analysis, solid phase extraction (SPE) and spinning-band fractional distillation, supercritical fluid extraction (SFE-CO₂).
- Communication: Research papers, reviews, reports and general scientific articles.
- Software: STATGRAPHICS Centurion XV, ChemDraw, ACD software, MestReNova.

Awards/Fellowships

- *Postdoctoral Research Scientist* (2018-2020) at CROM-MASS, CIBIMOL-CENIVAM, Industrial University of Santander, Colombia.
- *Visiting Scientist* (2011-2012) at CROM-MASS, CIBIMOL-CENIVAM, Industrial University of Santander, Colombia.
- *SRF-ICFRE* (2009-2010) at Chemistry Division, Forest Research Institute, Dehradun, Uttarakhand, India.
- *JRF-ICFRE* (2007-2009) at Chemistry Division, Forest Research Institute, Dehradun, Uttarakhand, India.

Research Experience

- 2011-2012 *Visiting Scientist* at CROM-MASS, CIBIMOL-CENIVAM, Industrial University of Santander, Colombia on project '**Isolation and characterization of the chemical constituents from some aromatic plants**'.
- 2007-2010 *Junior/Senior Research Fellow* in National Medicinal Plant Board (NMPB) funded project entitled '**Screening and identification of the lower asarone (β -asarone) containing variety/populations of *Acorus calamus* L. and its multiplication to enhance its economical and medicinal value**' in Chemistry and Bioprospecting Division, Forest Research Institute, Dehradun, Uttarakhand, India.
- 2006-2007 *Project Officer* in Central Pollution Control Board (CPCB) sponsored project entitled '**Assessment of ground water quality of twenty four metropolitan cities of the country**' in National Institute of Hydrology, Roorkee, Uttarakhand, India.

Teaching Experience

2017-2018 *Head & Assistant Professor* at Department of Applied Sciences, Roorkee College of Engineering, Roorkee, Uttarakhand, India.

2015-2017 *Assistant Professor* at Department of Chemistry, School of Physical Sciences, Lovely Professional University, Phagwara, Jalandhar, Punjab, India.

2012-2015 *Assistant Professor* at Department of Chemistry of Doon College of Engineering and Technology, Doon Group of Colleges, Dehradun, Uttarakhand, India.

Subjects Taught

At UG Level

- ☞ Organic chemistry
- ☞ Applied chemistry
- ☞ Engineering chemistry
- ☞ Environmental studies

Instruments Operated

- Ultra-High Performance Liquid Chromatography (UHPLC-Orbitrap-MS)
- High Performance Thin Layer Chromatography (HPTLC)
- High Pressure Liquid Chromatography (HPLC/DAD)
- Gas Chromatography- Mass Spectrometry (GC-MS)
- Fourier Transform Infrared Spectroscopy (FTIR)
- Atomic Absorption Spectrophotometer (AAS)
- Gas Chromatography (GC/FID)

Conducted Research Project/Dissertation

At UG Level

- ☞ **Pyrolysis of plastic wastes by microwave radiation** (2014) by Arun Joshi (Roll No. 10550113004) as a B.Tech. (Chemical Engineering) at Doon College of Engineering and Technology, Premnagar, Dehradun, Uttarakhand, India.
- ☞ **Preparation and formulation of herbal hand sanitizer** (2016) by Navneet Kaur (Reg. No. 11409650) as a B.Sc. Hons. (Chemistry) at Lovely Professional University, Phagwara, Punjab, India.
- ☞ **Formulation of ‘Aromatherapy Kit’ to promote the herbal products** (2016) by Anushi Grover (Reg. No. 11409207) as a B.Sc. Hons. (Chemistry) at Lovely Professional University, Phagwara, Punjab, India

At PG Level

- ☞ **Preparation and formulation of bath soap through green technology** (2016) by Priyanka Gaba (Reg. No. 11510426) as a M.Sc. (Chemistry) at Lovely Professional University, Phagwara, Punjab, India.
- ☞ **Antimicrobial activity of extracts and an isolated compound from *Dalbergia stipulacea* Roxb.** (2016) by Tahir Ahmad Bhat (Reg. No. 11400924) as a M.Sc. (Chemistry) at Lovely Professional University, Phagwara, Punjab, India
- ☞ **Formulation of incense sticks from the waste material based on natural products** (2016) by Ramneak Kaur (Reg. No. 11406275) as a M.Sc. (Chemistry) at Lovely Professional University, Phagwara, Punjab, India

Training /Meeting/Workshop Programme

- II International theory and practical course on Essential Oils and Plant Extracts organized by CROM-MASS CENIVAM, Industrial University of Santander, Colombia, held on 30th July-02th August, 2018.
- Theory and practical course on GC-MS attachment, Fundamentals, Applications and Interpretation of Spectra organized by CROM-MASS CENIVAM, Industrial University of Santander, Colombia, held on 19-28th October, 2011.
- Theory and practical course on Química con esencia organized by CROM-MASS, CENIVAM, Industrial University of Santander, Colombia, held on 26th August, 2011.
- Attended XI General Meeting of Centre of Investigation and Excellence, and Seminar on Vigilance Technology and Strategic Management organized by CENIVAM, Industrial University of Santander, Colombia, held on 6-7th February, 2012.
- Training on GC-MS in the Instrumentation laboratory at Central Pollution Control Board (CPCB), Parivesh Bhawan, East Arjun Nagar, Delhi, India.

Report Submitted

- **Isolation and characterization of the chemical constituents from Colombian aromatic plants** (2012) by Arvind Kumar, submitted at Center for Chromatography and Mass Spectrometry, CIBIMOL-CENIVAM, Industrial University of Santander, Bucaramanga, Colombia, S.A.
- **Screening and identification of the lower asarone (β -asarone) containing variety/populations of *Acorus calamus* L. and its multiplication to enhance its economical and medicinal value** (2011). Dr. H.S. Ginwal, Dr. V.K. Varshney, Arvind Kumar and Neha Mittal submitted to National Medicinal Plant Board (NMPB), Department of AYUSH, Ministry of Health & Family Welfare, Government of India, New Delhi, India.

- **Assessment of ground water quality of ten metropolitan cities across India** (2007). Dr. V.K. Choubey, Dr. M.K. Sharma, Arvind Kumar, Bhavit Sharma, Sunil Katoch, T. R. Sapra, Rakesh Goel, Babita Sharma and Beena Prasad submitted at Central Pollution Control Board (CPCB), Parivesh Bhawan, East Arjun Nagar, Delhi, India.

Book Published

- ☞ **Phytochemicals from *Dalbergia stipulacea* Roxb & *Morina longifolia* Wall** authored by Kumar and Varshney (ISBN 978-3659692994) LAP Lambert Academic Publishing, Germany (2015).

Publications (Research/Review)

☞ **Published Articles**

1. Pankaj Singh, Arvind Kumar, V.K. Varshney, Elena E. Stashenko, GC-MS analysis of different extracts of wild edible mushroom *Astraeus hygrometricus* (Pers.) Morgan from Jharkhand, India, the **10th International Medicinal Mushroom Conference, 2019, 452-464**, China.
2. Manpreet Kaur, Naveen Chandra Talniya, Seema Sahrawat, Arvind Kumar, Elena E. Stashenko, Ethnomedicinal uses, phytochemistry and pharmacology of *Carica papaya* plant: A compendious review, **Mini-Reviews in Organic Chemistry, 2019, 16(5), 463-480**, Bentham Science.
3. Bhupendra Koul, Pooja Taak, Arvind Kumar, Anil Kumar, Indraneel Sanyal, The genus *Psoralea*: Review of traditional uses, phytochemistry, pharmacology and tissue culture studies, **Journal of Ethnopharmacology, 2018, 232, 201-226**, Elsevier.
4. Arvind Kumar, Vinay K. Varshney, Mohan S.M. Rawat, Jairo R. Martinez, Elena E. Stashenko, HS-SPME/GC/GC-MS analysis of volatile constituents of *Morina longifolia* Wall., **Journal of Essential Oil Bearing Plants, 2018, 21(1), 155-63**, Taylor & Francis.
5. Arvind Kumar, Tahir Ahmad Bhat, Rattan D. Singh, *In vitro* antimicrobial activity of extracts and isolated compound of *Dalbergia stipulacea* Roxb. leaves, **American Institute of Physics**, Conference proceeding, **2017, 1860(1), USA; DOI: 10.1063/1.4990360**.
6. Arvind Kumar, Najat A. Bokhari, Kahkashan Perveen, Manal Al-Khulaifi, Iffat Siddiqui, *In vitro* antibacterial activity and chemical composition of essential oil of *Mentha arvensis* Linn. Leaves, **Journal of Essential Oil Bearing Plants, 2016, 19(4), 907-15**, Taylor & Francis.
7. Hema Lohani, Arvind Kumar, Ujjwal Bhandari, S. Zafar Haider, Sher Singh, Nirpendra Chauhan, Effect of seasonal and tree girth size variation on *Cupressus torulosa* D. Don

leaves essential oil composition growing in Uttarakhand, *Journal of Essential Oil of Bearing Plants*, 2014, 17(6), 1257-67, Taylor & Francis.

8. Arvind Kumar, Vinay K. Varshney, Mohan S.M. Rawat, Seema Sahrawat, Chemical constituents of *Morina* genus: A comprehensive review, *American Journal of Essential Oil and Natural Products*, 2014, 1(3), 1-15, USA.
9. Arvind Kumar, Vinay K. Varshney, Rajendra Prasad, Mohan S. M. Rawat, Elena E. Stashenko, *In vitro* antioxidant and antifungal activities of essential oil of *Morina longifolia* Wall. leaves, *Journal of Biologically Active Products from Nature*, 2013, 3(3), 183-193, Taylor & Francis.
10. Arvind Kumar, Vinay K. Varshney, Mohan Singh M. Rawat, Jairo R. Martinez, Elena E. Stashenko, Chemical composition of the essential oil of *Morina longifolia* Wall. leaves, *Journal of Herbs, Spices and Medicinal Plants*, 2013, 19(4), 348-356, Taylor & Francis, USA.
11. V.K. Varshney, Amit Pandey, Vera Thoss, Arvind Kumar, H.S. Ginwal, Foliar chemical attributes of the hybrid bred from *Eucalyptus citriodora* x *Eucalyptus torelliana* and its parental taxa, and implications for fungal resistance, *Annals of Forest Research*, 2012, 55(1), 53-60, Romania.
12. M.N.I. Bhuiyan, V.K. Varshney, S.C. Varshney, Arvind Kumar, Farhana Akter, Composition of essential oil of the leaf and inflorescence of *Pogostemon benghalensis* (Burm.f.) Kuntze, *International Research Journal of Plant Science*, 2011, 2(9), 271-275, Nigeria.
13. V.K. Varshney, Amit Pandey, Arvind Kumar, Divyadhara Rathod, Pooja Kannaujia, Chemical screening and identification of high cordycepin containing cultured isolate(s) of medicinal Chinese caterpillar mushroom, *Ophiocordyceps sinensis* (Berk.) G.H. Sung *et al.*, *International Journal of Medicinal Mushroom*, 2011, 13(4), 327-333, Israel.
14. H.S. Ginwal, V.K. Varshney, Arvind Kumar, Neha Mittal, Population genetic structure and diversity of high value vulnerable medicinal plant *Acorus calamus* in India using RAPD and chloroplast microsatellite markers, *Journal of Forestry Research*, 2011, 22(3), 367-377, Springer.

☞ Communicated/ Planned Articles

15. Arvind Kumar Elizabeth Q. Rueda, Jairo R. Martínez, Raquel E. Ocazonez, Elena E. Stashenko (2020), Pentacyclic triterpene from *Lippia organoides* H.B.K. and its cytotoxic activity (*Pharmacognosy Magazine*, pm_218_20, Medknow Publications).
16. Bhupendra Koul, Arvind Kumar, Dhananjay Yadav (2020), *Bergenia Genus: Traditional uses, phytochemistry and pharmacology* (*Current Pharmaceutical Design*, BMS-CPD-2020-HT141-1844-9, Bentham Sciences).

17. Yuri Córdoba Campo, Jesica J. Mejía, Anderson J. Arias, Lady J. Sierra, Arvind Kumar, Jairo R. Martínez, Elena E. Stashenko (2020), Chemical composition by UHPLC-ESI-Orbitrap-MS and antioxidant activity of *Lippia origanoides* extracts obtained from fresh and steam-distilled plant material (prepared for *Journal of Separation Science*, Wiley).

Seminar /Conferences (National/International)

☞ Oral presentations

1. ***In vitro* antimicrobial activities of extracts and isolated compound from *Dalbergia stipulacea* Roxb.**, International conference in *Recent Advances in Fundamental and Applied Sciences* (RAFAS-2016) organized by School of Physical Sciences at Lovely Professional University, Punjab, India, held on 25-26th November, 2016.
2. ***Formulation of incense sticks from the waste material based on natural products*** ' National seminar on *Education for Sustainable Development* organized by Regional Institute of Education, Bhopal, Madhya Pradesh sponsored by NCERT, New Delhi, India, held on 21-23th October, 2016.
3. ***In vitro* antimicrobial activity of essential oil isolated from *Morina longifolia* Wall. Leaves**, National seminar on *Today's Innovations-Tomorrow's Sustainability in Allied Science, Technology, Management and Education* organized by Doon Group of Colleges, Dehradun with sponsored by Uttarakhand State Council of Science & Technology (UCOST), Dehradun, Uttarakhand, India, held on 25-26th May, 2013.
4. **Variability of essential oil and β -asarone in different agro climatic population of *Acorus calamus* Linn.**, 1st International conference on *New Horizons in Pharmaceutical & Biomedical Sciences* organized by Sheetal Life science Pvt. Ltd and Society of Environment, Health & Biotech with Siddhartha College of Pharmacy, Dehradun, Uttarakhand, India, held on 12-13th January, 2013
5. **Isolation, chemical composition and antioxidant capacity of *Morina longifolia* leaves essential oil**, 7th Uttarakhand State Science & Technology Congress-2012 at Graphic Era University, organized by UCOST, Dehradun, Uttarakhand, India, held on 21-23rd November, 2012.
6. **Isolation and chemical characterization of sesquiterpenoid hernandulcin isolated from 'orozuz' extract (*Lippia dulcis* Trevir) grown in Colombia**, VIII International Congress on *Chemistry, Chemical Engineering and Biochemistry* (QUIMICUBA-2012) Organized by Cuban Society of Chemistry (SCQ) at Hotel Habana, Havana, Cuba, held on 9-12th October, 2012.
7. **A comparative study of morphological and chemical characteristics of wild and cultivated *Acorus calamus* Linn.**, National seminar on *Advances in Natural Products*

Chemistry and Sustainable Development Organized by Department of Environment and Chemistry at Graphic Era University with support of UCOST, Dehradun, Uttarakhand, held on 4-5th June, 2011.

8. **Determination of foliar essential oil composition from medicinally important *Morina longifolia* by GC-MS**, 2nd Biennial International Conference on New developments in drug discovery from natural products and traditional medicines organized by the Department of Natural Products at National Institute of Pharmaceutical Education and Research (NIPER), Sector-67, S.A.S. Nagar, Punjab, India, held on 20-24th November, 2010.
9. **In vitro clonal propagation of *Plumbago zeylanica* and assessment of plumbagin content by HPTLC**, 5th Uttarakhand State Science & Technology Congress-2010 at Doon University, Dehradun organized by UCOST, Dehradun, Uttarakhand, India, held on 10-12th November, 2010.
10. **In vitro clonal propagation through axillary bud culture of *Tylophora indica* and quantification of tylophorine through HPTLC**” 5th Uttarakhand State Science & Technology Congress-2010 at Doon University, Dehradun organized by UCOST, Dehradun, Uttarakhand, India, held on 10-12th November, 2010.
11. **HPTLC analysis of cultured *Cordyceps sinensis* for its bioactive constituents**, 4th Uttarakhand State Science & Technology Congress-2009, held at G.B. Pant University of Agriculture & Technology, Pantnagar, India organized by UCOST, Dehradun, Uttarakhand, India, held on 10-12th November, 2009.
12. **Screening of populations of *Acorus calamus* Linn. grown in the Himalayan region for their β -asarone content**, 5th Symposium on Phytochemistry and Ayurveda: Potential and Prospects, organized by Universities Journals of Phytochemistry and Ayurveda Heights (UJPAH), Dehradun, Uttarakhand, India, held on 27th December, 2008.
13. **Extraction, isolation and characterization of flavonoid from supercritical fluid (CO₂) extract of *Lippia organoides* H.B.K. and evaluation of antioxidant activity in International Science Week conference at UIS, Bucaramanga, Colombia, held on 17-21th September, 2018).**

Conducted Workshop

- Organized a one day workshop titled “**RASAYNIK ERA-14**” at Department of Applied Science, Doon College of Engineering & Technology, Premnagar, Dehradun, Uttarakhand held on 14th October, 2014.

Academic Service and Recognition

Reviewer- *Natural Products Research* (Taylor & Francis), *Journal of Medicinal Plant Research* (Academic Journals), *Letters in Organic Chemistry* (Bentham Science).

Life member- *Indian Science Congress Association*, Kolkata, India (Reg. No. L35909).

Associate editor- *Journal of Medicinal Plant Research* (ISSN 1996-0875), *Journal of Pharmacognosy and Phytochemistry* (E-ISSN 2349-8234).

Sport Activities

- 2007 Participated in Volleyball Game in 7th Annual Sports Meet at Forest Research Institute, Dehradun, Uttarakhand and awarded *Silver* medal.
- 2008 Participated in Short-Put Game in 8th Annual Sports Meet at Forest Research Institute, Dehradun, Uttarakhand and awarded *Gold* medal and consecutively *Silver* medal in Volleyball tournament.

References

1. **Prof. (Dr.) Elena E. Stashenko**
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2. **Dr. V.K. Varshney**
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3. **Prof. (Dr.) M.S.M. Rawat**
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Ex-Head of Chemistry Department
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Dated: 04 May, 2020
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(Dr. Arvind Kumar)