

Name of Faculty **Dr. VARIMADUGU ARUNA**
 Designation Associate Professor
 Nature of Job/Appointment Regular
 Date of Joining 04 – 08 – 2006
 E-mail varuna_biotech@cbit.ac.in



Education Qualifications	Name of the Degree	Class
Ph. D	Doctor of Philosophy (Biotechnology)	Awarded
PG	M. Tech. (Biotechnology) M.Sc. (Biotechnology)	First with Distinction
UG	B. Sc. (Microbiology, Botany and Chemistry)	First

Work Experience		
Teaching	19 Years	
Research	19 years	
Industry	--	
Others	--	
Area of Specialization	Plant Biotechnology, Nano biotechnology	
Professional Memberships	Life Member, Indian Science Congress (Membership no. L244648) Life Member, Indian Botanical Society	
Responsibilities held at Institution Level	<ol style="list-style-type: none"> 1. Convener, Canteen Committee from 12.4.2021 to date 2. Member, NIRF Committee from 3.10.2020 to date 3. Member, ARIIA Committee from 3.10.2020 to date 4. Member, Innovation teaching, Learning, and Evaluation Committee from 3.10.2020 to till date 5. Member, Institution Innovation Cell from 12.4.2021 to till date 6. Member, IQAC Committee from 20.05.2021 to date 7. Coordination Committees member during NBA Expert Team's visit to the Institute from 10th to 12th December 2021 8. Member, Canteen Committee from 25th February 2020 to 11th April 2021 9. Member, drafting an action plan for UGC quality mandate (Deeksharambh) 8th April 2020 to date 10. Member, Program Content Committee 31st January 2020 to date 11. Hospitality Committees member during NBA Expert Team's visit to the Institute from 3rd to 5th January 2020 and 13th to 15th December 2019 12. Member, Student's attendance monitoring committee 2014, 2015, 2016, 2017 	
Responsibilities held at Department Level	<ol style="list-style-type: none"> 1. Member, Board of Studies 2. Program Coordinator, Program Assessment Committee (PAC) 3. Member, Department Advisory Committee (DAC) 4. Member, Course Expert Group 5. Coordinator, AICTE extension 6. Coordinator, ISO 	

	<ol style="list-style-type: none"> 7. Coordinator, Autonomous extension 8. In charge of Workload and Timetable preparation from 2006 to 2022 9. Coordinator/Class in charge 3rd year for AY 2021-22 10. Member, Student counseling 11. Member, Anti-ragging committee 12. Coordinator, NBA from 2008 to 2018
Research Guidance	Guided UG projects
Awards Received	<ol style="list-style-type: none"> 1. Best Teacher Award by Chaitanya Bharathi Institute of Technology, Hyderabad on 23.3.2019 2. Secured University First rank in Biotechnology for the year 2002 in Master's degree and received special prize from Governor of Andhra Pradesh in 2003.
Courses Handled at Under Graduate / Post Graduate Level.	Genetic Engineering and rDNA technology, Animal Biotechnology, Immunodiagnosics, Bioinformatics, Biochemistry, Environmental Biotechnology, Food Biotechnology, Plant and Animal Biotechnology, Tissue Engineering, Genomics and Proteomics, Introduction to Anatomy and Physiology of Humans, Genetics and Molecular biology
No. of Papers Published	<p>National Journals – 02 International Journals – 19</p> <p>National Conference – Nil International Conference – 02</p>
Projects Carried out	<ol style="list-style-type: none"> 1. Worked Junior Research Assistant on molecular markers in Andhra Pradesh Community Forest management project at Biotechnology Research Center, Tirupati from March-September, 2003. 2. Worked as Junior Research Fellow in a CSIR Sponsored project entitled “Micropropagation and bioprospecting of two potent Asclepiadaceous members- <i>Cryptolepis buchanani</i> and <i>Wattakaka volubilis</i>” at Sri Krishnadevaraya University, Anantapur from December 2004 to August 2006.
Patents	--
Technology Transfer	--
Invited Speaker	<ol style="list-style-type: none"> 1. Invited as Guest of honor and to deliver a lecture for the technical session in one-day seminar SPRING-2018 in “Current trends in Plant Sciences – Opportunities and its challenges” in Andhra Mahila Sabha Arts and Science College for Women, Hyderabad on 23rd February 2018. 2. Resource person in UGC Sponsored three-week Refresher Course on “Knowledge sharing enables and barriers in Pharmaceutical Research and Development” on 6th December 2016 3. Resource person in UGC Sponsored three-week Refresher Course on “Acquiring and improving skills of drug designing to achieve the goals of pharmaceutical research” on 26th June 2015 4. Resource person in UGC Sponsored a three-week Refresher Course on “Recent innovations in novel drug delivery systems through Nanotechnology towards various diseases” on 13th March 2015.
No. of Books/Chapter Published with details	<ol style="list-style-type: none"> 1. Aruna, V., Krushe, M., Aishwarya, C.V.S., Vaishnavi, M., Shankar, B.D. (2023). Metal-based nanosystems and their antimicrobial activity. In Antimicrobial Nanosystems. Trends and Developments. Chaudhery Hussain, Shadpour Mallakpour,

- Vijai Anand Kabali. Elsevier Publisher. 149-190
2. **Aruna, V.**, Chada, N., Tejaswini Reddy, M., Geethikalal, V., Dornala, K., & Nagendranatha Reddy, C. (2022). Plant Synthesized Nanoparticles for Dye Degradation. In *Phytonanotechnology* (pp. 1-30). Singapore: Springer Nature Singapore. ISBN: 978-981-19-4811-4
 3. Aruna, V., Sneha, A., & Harshitha, D. S. (2022). Hepatocellular carcinoma—An updated review. *Theranostics and Precision Medicine for the Management of Hepatocellular Carcinoma*, 11-31. Academic Press is an imprint of Elsevier. ISBN: 978-0-323-98806-3.
 4. **Aruna, V.**, Kiranmai, C., Karupusamy, S., Anitha, S. and Pullaiah, T. 2006. Tissue culture studies in Asclepiadaceae – a review. In: *Recent trends in Biotechnology*. Editors – Pullaiah, T and Rama Swamy, N. Regency publication. 147-173. ISBN: 81-89233-22-X.
 5. Thangadurai, D., **Aruna, V.**, Kiranmai, C. and Pullaiah, T. 2002. Computational genomics, molecular markers, and plant systematics. *Emerging trends in Bioinformatics*. Editors- Irfan. A. Khan. and Atiya Khanum. Ukaaz Publications. 81-116. ISBN: 81-900441-4-1.

Book Chapters Submitted

1. **Aruna, V.**, Tejaswini Reddy, M., Geethikalal, V., Protocols for micropropagation in *Andrographis paniculata*. In *Andrographis paniculata*. Bentham Publishers. (Submitted on Nov 2022).
2. **Aruna, V.**, Aishwarya C V S, Naik, K.A., Vaishnavi, M., Dharmalingam, K., Sumithra, S. Microbial Synthesis of Gold Nanoparticles. In *Microbial Processes for Synthesizing Nanomaterials*. Springer Nature (Submitted in January 2023).
3. **Aruna, V.**, Navya Sree D R, Balaji D, Jyothika Meenakshi Ki, Chunduru Sai Hari Hara Sudheshna. Antimicrobial edible biofilms for food packaging - Nano-based technologies. In *Antimicrobials for sustainable food storage*. CRC Press and Taylor & Francis Group (Submitted in March 2023).

Webinar:

1. Attended online workshop on DNA Fingerprinting conducted by FABIA in association with Genome foundation, Hyderabad from 26th to 28th Nov 2021
2. Attended a national webinar on "Miraculous tools in Molecular Therapy and Reproduction" jointly Organized by the Department of Biotechnology and Microbiology, Vikrama Simhapuri University, Nellore held on 30th June 2021
3. Attended Online webinar on Agri-Biotechnology: Scientific and Industrial Perspective FABIA, Hyderabad 7th April 2021
4. Attended Online webinar on Future of Science and Technology, FABIA, Hyderabad 1st March 2021
5. Attended Awareness workshop - NIRF INDIA Rankings - 2021 for Higher Educational Institutions, IAE, Hyderabad from 18th and 19th January 2021
6. Attended Online webinar on Financial Wellbeing of employees during COVID 19, CBIT, Hyderabad 9th January 2021
7. Attended Online National Workshop on Materials for energy and environment applications, Yogi Vemana University, Kadapa, AP 21st to 23rd December 2020
8. Attended Online Seminar on Role and Significance of patents in Academia, VRSEC, Vijayawada under AICTE

Details of Short-Term Training Programs/Faculty Development Programs/Seminars/Workshops/Other Trainings (Attended and/or Organized).

Margadarshan 5th December 2020

9. Attended Online webinar Agri-Biotechnology: Progress and Prospects, FABA, Hyderabad on 7th October 2020
10. Attended Online International Webinar on Emerging trends in biotechnology and Bioinformatics, YVU, Kadapa, AP 3rd to 5th September 2020
11. Attended Online webinar on Statistical Analysis as an interface in engineering problems, CBIT, Hyderabad on 13, July 2020
12. Attended three-day International Webinar series on “Herbal Remedies and Covid – 19” organized by Hindu College of Pharmacy, Guntur from 28th to 30th June 2020
13. Attended Leadership talk with Mr. Dipendra Manocha, Motivational Speaker broadcasted by MHRDs Innovation Cell on 27th June 2020
14. Attended Leadership talk with Mr. Shridhar Venkat, CEO, Akshay Patra Foundation broadcasted by MHRDs Innovation Cell on 20th June 2020
15. Attended one-day international webinar on “Flexible Energy Storage Devices” organized by CNST, IST, JNTU, Hyderabad and Dayalbag Educational Institute Agra on 20th June, 2020
16. Attended Leadership talk with Mr. R. Subrahmanyam, IAS, Secretary, Ministry of Social Justice & Empowerment broadcasted by MHRDs Innovation Cell on 13th June, 2020
17. Attended webinar for the faculty development program on “Outcome-based Education Software” organized by Vmedulife software services on 11th June 2020
18. Attended Leadership talk with Ms. Ashwini Deshpande, Co-Founder & Director Elephant Design broadcasted by MHRDs Innovation Cell on 6th June 2020
19. Attended Leadership talk with Dr. Nilesh N Oak Expert in Indian Civilization and History broadcasted by MHRDs Innovation Cell on 30th May 2020
20. Attended Leadership talk with Mr. Mahesh Babu CEO Mahindra Electric Mobility Ltd. broadcasted by MHRDs Innovation Cell on 23th May 2020
21. Attended the IIC Online Sessions conducted by the Institution's Innovation Council (IIC) of MHRD's Innovation Cell, New Delhi to promote Innovation, IPR, Entrepreneurship, and Start-ups among HEIs from 28th April to 22nd May 2020.
22. Attended the 1st National Webinar on "Strengthening research capabilities remotely" empowering Indian Research on Covid – 19 organized by Department of Biotechnology, Govt. of India and Elsevier on 22nd May 2020.
23. Attended Leadership talk with Dr. Pramod Chaudhari, Founder, Chairman, Praj Industries Limited broadcasted by MHRDs Innovation Cell on 16th May 2020
24. Attended a one-hour live webinar on “Digital transformation” organized by the University of Applied Research and Development on 12th May 2020
25. Attended India leadership talk webinar with Mr. D.P. Singh, Chairman UGC broadcasted by MHRDs Innovation Cell on 9th May 2020
26. Attended India First leadership talk webinar broadcasted by MHRDs Innovation Cell on 2nd May 2020



MOOCs:

1. Completed a course on Thoracic Oncology an online non-credit course authorized by the University of Michigan and offered through Coursera on 7th June 2020
2. Completed a course on Whole-genome sequencing of bacterial genomes - tools and applications an online non-credit course authorized by the Technical University of Denmark (DTU) and offered through Coursera on 1st June 2020
3. Completed a course on Biochemical Principles of Energy Metabolism an online non-credit course authorized by the Korea Advanced Institute of Science and Technology (KAIST) and offered through Coursera on 1st June 2020
4. Completed a course on The Science of Stem Cells an online non-credit course authorized by the American Museum of Natural History and offered through Coursera on 24th May 2020
5. Completed a course on Understanding Plants - Part II: Fundamentals of Plant Biology an online non-credit course authorized by Tel Aviv University and offered through Coursera on 17th May 2020.
6. Completed a course on Drug Discovery an online non-credit course authorized by the University of California San Diego and offered through Coursera on 11th May 2020
7. Completed a course on 7.00x: Introduction to Biology - The Secret of Life A course of study offered by MITx, an online learning initiative of The Massachusetts Institute of Technology through edX on 18th December 2013

Faculty development program

1. Attended FDP on Establishment and Management of Business Incubators conducted by ni-msme, Hyderabad from 10th to 12th March 2022
2. ATAL Online Elementary FDP on "Applications of CRISPR-Cas Gene Editing Tool" at Maulana Abul Kalam Azad University of Technology, West Bengal, from 7th to 11th February 2022
3. Attended ATAL Online Elementary FDP on "National FDP on Genome Engineering technology" at Central University of Kerala, from 17th to 21st January 2022
4. Attended Online ATAL Advanced FDP on "Non-Thermal Processing of Food Products" at College of Food Processing Technology and BioEnergy. from 27th to 31st December 2021
5. Attended FDP on "Drug Discovery from lab to industry in Biotechnology" organized by Department of Biotechnology, National Institute of Technology, Andhra Pradesh, Tadepalligudem, from 23th to 27th August 2021.
6. Attended One Week FDP on national e-Awareness cum Training Program on Intellectual Property Rights, Govt. PG College Rajouri, Jammu and Kashmir in collaboration with CSIR-IMMT, Bhubaneswar from 25th to 30th June 2021
7. Attended One-week national e-workshop Innovation & Intellectual Property Rights, CSIR-IMMT, Bhubaneswar from 14th to 19th June 2021
8. Attended FDP Advances in Biotechnology and Bioinformatics, NITW, Warangal 22nd to 26th March 2021
9. Attended Online FDP on Contemporary Advances in Biotechnology, National Institute of Technology,

Tadepalligudem from 2nd to 6th November 2020

10. Attended a one-week AICTE-sponsored STTP on Synthesis, Characterization and its Applications of Nanomaterials, JNTU, Hyderabad from 24th to 29th August 2020.
11. Attended a one-week online Refresher Course on BharateeyaChaitanyam, Chaitanya Bharathi Institute of Technology, Hyderabad from 29th June to 5th July 2020.
12. Attended a one-week faculty development program on Data Science using R programming organized by Mahaveer Institute of Science and Technology in association with Webtek labs from 12th to 17th June 2020.
13. Attended a one-week faculty development program on “Outcome Based Education and NBA Accreditation Process (UG)” organized by Chaitanya Bharathi Institute of Technology, Hyderabad, 28th May to 1st June 2020
14. Attended a one-week online faculty development program on “Outcome Based Education: A step towards excellence” organized by Government College of Engineering, Karad, Maharashtra under Margadarshan Scheme of AICTE, New Delhi from 11th to 15th May 2020
15. Attended three-week RC in Life Sciences at University of Hyderabad, from 17th Nov to 7th Dec 2017.
16. Attended one-week National Level Faculty Development Programme on Emerging Trends, Issues and Challenges in Big Data and Clouding Computing from 20th to 25th Feb 2017.

Conference/Seminar/Symposia/Workshops/training attended

1. Attended one-day State Conference for “Academics and Researchers” Swecha at Learning center, Tech Mahindra, Hyderabad from 28th November 2021
2. Attended one-month training on Innovation Ambassador Training (Foundation Level) conducted by MoE’s Innovation Cell & AICTE, 30th June to 30th July 2021
3. Attended online workshop entitled Biologics & Biosimilars: Upstream & Downstream technologies conducted by FABA from 10th to 18th July 2021
4. Attended three-day IUCEE Leadership Summit -2021 conducted by Indo Universal Collaboration for Engineering Education from 9th to 11th July 2021
5. Attended three-day International Conference “BIO ASIA 2020 Today for Tomorrow” conducted by FABA at HICC, Hyderabad, from 17th to 19th Feb 2020
6. Attended and completed Inter Auditor training on ISO 9001: 2015 Quality management system on 8th December 2018
7. Attended one-day Symposium on “Significance of Sanskrit for Technological Research” conducted by CBIT on 8th Sept 2018.
8. Attended a two-day National Level Workshop on “Interface of Statistical Analysis using R” conducted by CBIT on 9th and 10th Feb 2018.
9. Attended two-day National Conference on “Recent Advances in Pharmaceutical Industry and Drug Development” conducted by JNTU, Hyderabad on 21st and 22nd July 2017.

Conference/Seminar/Symposia/Workshops Organized

1. Worked as a **Co-convenor** in conducting a Two-day National

level technical symposium entitled “Sudhee’ 24th and 25th March 2022.

2. Worked as a Coordinator for conducting International Conference on Biotechnology and Interdisciplinary Technologies from 8th and 12th November 2021
3. Worked as an organizing committee member in conducting a Two-day National level technical symposium entitled “NEOZION’ on 3rd and 4th March 2021.
4. Worked as **Coordinator** in conducting One Week Webinar cum Faculty Development Program Series on “Current Progress and Future Prospects of Biotechnology”, organized by the Department of Biotechnology, CBIT in association with Andhra Pradesh Akademi of Sciences from 08th to 13th June 2020.
5. Worked as an organizing committee member in conducting a Two-day National level technical symposium entitled “NEOZION’ 19” September 2019.
6. Worked as an organizing committee member in conducting a Two-day workshop on “Current Trends in Bioinformatics” on 15th and 16th March 2019.
7. Worked as **Coordinator** in conducting a Two-day National level technical symposium entitled “NEOZION’ 18” on 28th and 29th September 2018.
8. Worked as organizing committee member in conducting a Two-day National level technical symposium entitled “NEOZION’ 17” September 2017.

Papers presented at National and International Conference

1. Presented a paper entitled “Rapid shoot multiplication of *Bacopa monnieri* from nodal explant” at the International Conference on Biotechnology and Interdisciplinary technologies at Chaitanya Bharathi Institute of Technology, Hyderabad on 8th and 12th November 2021
2. Presented a paper entitled “*In vitro* plantlet regeneration from leaf explants of *Andrographis lineate* Nees. - A medicinal plant” at National Conference on Integrative Plant Biochemistry and Biotechnology at Indian Council of Agricultural Research – Indian Institute of Rice Research, Hyderabad during 8th and 9th November 2019.
3. Presented a paper entitled “Interaction and nanotoxic effect of metallic nanoparticles on bacteria stains” at the 2nd International Conference on Nano Science and Engineering Applications, ICONSEA-2018 at JNTU, Hyderabad from 4th to 6th October 2018.
4. Presented a paper entitled “*In vitro* plant regeneration of *Abelmoschus moschatus* medik. L. -a valuable medicinal plant” at International Conference on Bio-Technology & Bio-Engineering – Trends, ICBT – 2017 at JNTU, Hyderabad from 23rd to 25th March 2017.

Publication in International Journal

1. **Aruna, V. 2021.** Interaction and Nanotoxic Effect of Metallic Nanoparticles on Bacterial Strains. Journal of Shanghai Jiaotong University, 17: 73 – 79. ISSN: 1007-1172
2. Kumari, G.P., Naveen, M. and **Aruna, V. 2021.** Cerium chloride mediated synthesis of aurones using microwave irradiation. International Journal of Biological Research and Development. 11: 25-30. ISSN (P): 2250-0022

Details of Journal Publications/
Conferences (National and
International)

International Conference :

3. Kumari, G.P., Naveen, M. and **Aruna, V.** 2021. Synthesis of quinoline derivatives using microwave irradiation: their anti-cancer activity. *International Journal of Biological Research and Development*. 11: 19-24. ISSN (P): 2250-0022
4. **Aruna, V.** and Pullaiah, T. 2018. Organogenesis of *Abelmoschus moschatus* Medick. Using aseptic seedling explants. *European Journal of Medicinal Plants*, 25: 1-8. ISSN: 2231-089.
5. **Aruna, V.**, Sudhakar, H., Gangadhar T. and Naveen, M. 2018. Amberlite IR-120 catalyzed synthesis of 6-aryl-5H-quinazolin[4,3-b]quinazolin-8(6H)-one derivatives as anticancer agents. *Indian Journal of Advances in Chemical Science*. 6: 187- 192. ISSN: 2320-0898(P); 2320-0928(E)
6. Kumar, R.R., Kumar S.R., Sekhar, B.R., Raju, VVNKVP, Murthy, C., N Srinivasu, N., **Aruna, V.**, Chaitanya, M. and Naveen M. 2018. Catalyst Free Synthesis of N-(1,3-Dioxoisindolin-4-Yl) Acetamide Derivatives using Water and their Biological Evaluation. *Der Pharma Chemica*, 10(9): 89-96. ISSN:0975-413X
7. **Aruna, V.** and Pullaiah, T. 2016. *In vitro* shoot multiplication of medicinally important plant *Andrographis lineate* Nees via nodal explants. *European Journal of Medicinal Plants*. 17: 1-7. ISSN: 2231-0894
8. **Aruna, V.**, Kiranmai, C. and Pullaiah, T. 2016. Callus culture and *in vitro* shoot regeneration from stem segments of endemic and medicinally important *Carallumalasiantha* (Wight) N.E.Br. *International Journal of Science and Research*. 5:903-908. ISSN: 2319-7064 (online line)
9. Kiranmai, C., **Aruna, V.** and Pullaiah, T. 2015. Somatic Embryogenesis and indirect organogenesis of *Caralluma pauciflora* Wight (Apocynaceae) - An endemic and rare plant. *Indian Journal of Biotechnology*. 14:411-413. ISSN: 0975-0967 (Online); 0972-5849(Print)
10. **Aruna, V.**, Kiranmai, C., Karupusamy, S. and Pullaiah, T. 2012. Effect of medium, explants, cytokinins and node position on *in vitro* shoot multiplication of *Carallumalasiantha* (Wight) N.E.Br., an endemic and medicinally important plant. *African Journal of Biotechnology*. 11: 15523-15528. ISSN: 1684-5315.
11. **Aruna, V.**, Kiranmai, C., Karupusamy, S. and Pullaiah, T. 2012. Influence of aseptic seedling explants on *in vitro* shoot multiplication of *Carallumaadscendens* var. *attenuate* Wight. *African journal of Plant Sciences*. 6:290-294. ISSN: 1996-0824.
12. Kiranmai, C., **Aruna, V.** and Pullaiah, T. 2012. *In vitro* propagation of *Caralluma pauciflora* by shoot tip culture. *Journal of Tropical Medicinal plants*. 13:163-165. ISSN: 1511-8525.
13. Karupusamy, S., Kiranmai, C., **Aruna, V.** and Pullaiah, T. 2009. *In vitro* conservation of *Ceropegia intermedia* – an endemic plant of South India. *African Journal of Biotechnology*. 8: 4052-4057. ISSN: 1684-5315.
14. **Aruna, V.**, Kiranmai, C., Karupusamy, S. and Pullaiah, T. 2009. Micropropagation of three varieties of *Carallumaadscendens* – via nodal explants. *Journal of Plant Biochemistry and Biotechnology*. 18: 121-123. ISSN: 0971-7811.
15. Kiranmai, C., **Aruna, V.**, Karupusamy, S. and Pullaiah, T. 2008. Callus culture and plant regeneration from seedling

- explant of *Pergulariadaemia* (Forsk.) Chiov. *Journal of Plant Biochemistry and Biotechnology*. 17: 99-101. ISSN: 0971-7811.
16. Kiranmai, C., **Aruna, V.**, Karupusamy, S. and Pullaiah, T. 2008. *In vitro* propagation of *Pergulariadaemia* (Forsk.) Chiov. *Plant Cell Biotechnology and Molecular Biology*. 8: 67-72. ISSN: 0972-2025.
 17. Karupusamy, S., **Aruna, V.**, Kiranmai, C. and Pullaiah, T. 2007. *In vitro* propagation of an endemic umbellifer *Hydrocotyleconferata*. *Indian Journal of Biotechnology*. 6: 541-544. ISSN: 0972-5849.
 18. Karupusamy, S., Kiranmai, C., **Aruna, V.** and Pullaiah, T. 2006. Micropropagation of *Vanasushavapedata* – an endangered medicinal plant of South India. *Plant Tissue Culture and Biotechnology*. 16: 85-94. ISSN: 1817-3721.

Publication in National Journal

1. Kiranmai.C., **Aruna, V.**, Uday. S., Reddy. PVB., Pullaiah. 2014. Somatic embryogenesis in *Pergulariadaemia* (Frsk.) Chiov. – A medicinal plant. *The Journal of Indian Botanical Society*. 93: 259-263 ISSN: 0019 -4462.
2. Shasany, A.K., **Aruna, V.**, Darokar, M.P., Alok, K., Bahl, J.R., Bansal, R.P. and Khanuja, S.P.S. 2002. RAPD marking of three *Pelargonium graveolens* genotypes with chemotypic differences in oil quality. *Journal of Medicinal and Aromatic Plant Sciences*. 24: 729-732. ISSN: 0253-7125.

