Dr. Syed Musthapa Meeran

Scientist-F & Professor, AcSIR
Laboratory of Nutritional Epigenetics, Division of Biochemistry
CSIR-Central Food Technological Research Institute (CSIR-CFTRI)
Mysore-570020, Karnataka, India.
Mobile-91-8400120629
Email: s.musthapa.cftri@csir.res.in; syedmusthapa@gmail.com
Google Scholar: https://scholar.google.com/citations?user=Y8xGSyYAAAAJ&hl=en
IRNS: https://cftri.irins.org/profile/125944

Academic Qualifications:

Ph. D. 2004 **Biochemistry-** *CSIR-Indian Institute of Toxicology Research (IITR), Lucknow, India.*
Thesis title: *"Biochemical and Cytogenetic Approach towards Non-Occupational Risk Assessment of Particulate Air Pollutants"*
[Degree awarded by the Aligarh Muslim University, Aligarh, India]

M. Sc. 1999 **Biochemistry**-with first division, Aligarh Muslim University, Aligarh, India.
Project title: *"Partial Purification and Immobilization of Turnip Peroxidase: Application in the detoxification of industrial waste water"*

B. Sc. 1997 **Biochemistry-** with first division, University of Madras, Madras, India.

Research Experiences:

Positions	**Department/ Employer**
Senior Principal Scientist	Department of Biochemistry, CSIR-Central Food Technological Research Institute (CSIR-CFTRI), Mysore, India.
Principal Scientist	Department of Biochemistry, CSIR-Central Food Technological Research Institute (CSIR-CFTRI), Mysore, India.
Senior Scientist	Division of Endocrinology, CSIR-Central Drug Research Institute (CSIR-CDRI), Lucknow, India.
Research Assistant Professor	Department of Biology, University of Alabama at Birmingham, AL, USA
Postdoctoral Fellow/ Research Associate	Department of Dermatology, University of Alabama at Birmingham, AL, USA
Research Scientist	New Drug Discovery Research (NDDR), Ranbaxy Research Laboratories, Gurgaon, India

Research Interest

Our laboratory primarily focuses on investigating the role of diet and dietary bioactives in modulating cancer progression and therapeutic response through the maintenance of gut microbiome homeostasis. Alterations in the gut microbiome can influence cancer development and treatment outcomes by regulating gene expression through nutritional epigenetic mechanisms.

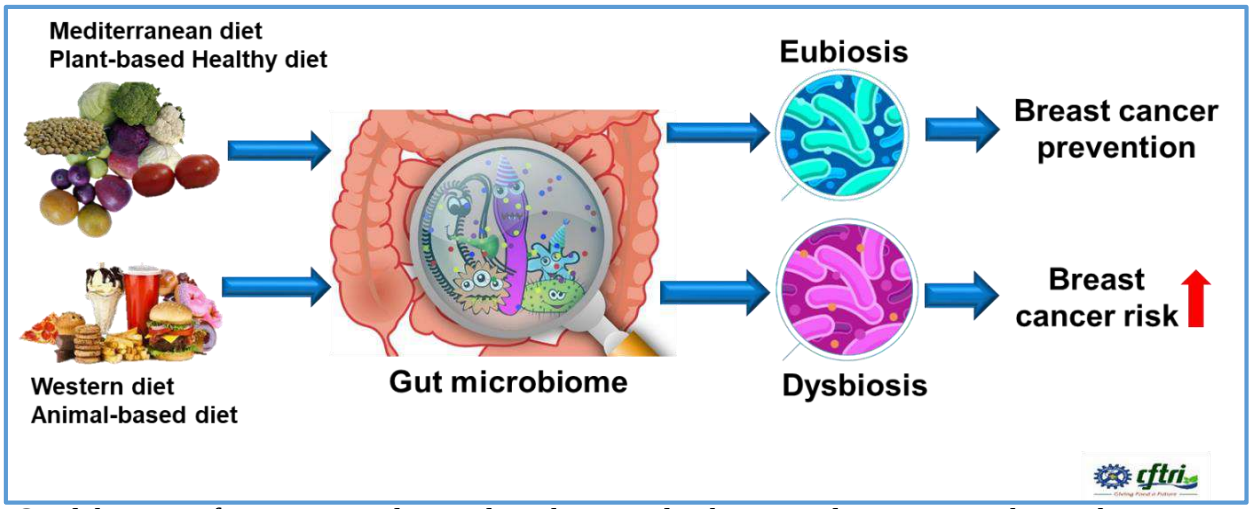
We also aim to explore the epigenetic effects of traditional spices and other bioactive dietary components on the onset and progression of lifestyle-associated diseases, including obesity and cancer.

Our research interests can broadly be categorized as follows:

- *Role of Dietary Bioactives on Gut Microbiome Homeostasis in Cancer Progression & Therapy*
- *Development of Functional food for management of cancer*
- *Investigation of the nutritional epigenetics of herbs and spices*
- *Impact of diet on cancer cell metabolism*

Significant Research Findings Published Recently

1. Gut microbiome alter the Cancer therapy: Nutri-microbiome on Cancer Therapy



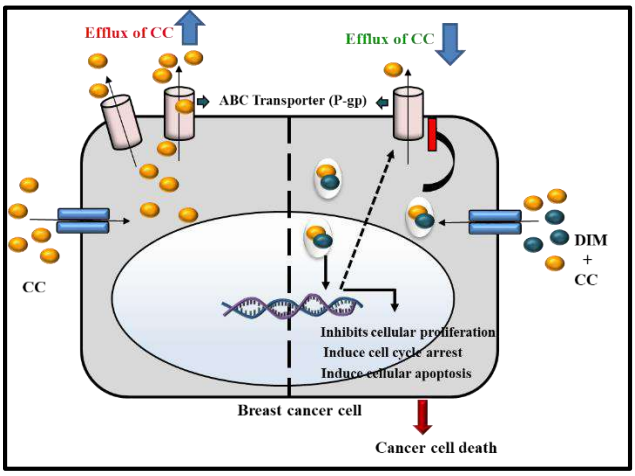
Our laboratory focuses on understanding the interplay between diet, gut microbiome homeostasis, nutritional epigenetics, and cancer progression, with a special emphasis on developing functional dietary formulations for cancer management. Cancer cells, particularly triple-negative breast cancer (TNBC) cells, exhibit altered cellular metabolism characterized by the "Warburg effect," which supports rapid proliferation and metastasis. Our research investigates how dietary bioactives regulate cancer progression by influencing epigenetic mechanisms and metabolic pathways. We have demonstrated that dietary epigenetic modulators, including natural DNA methyltransferase and histone deacetylase inhibitors, can reactivate epigenetically silenced tumor suppressor genes and suppress tumor-promoting genes through modulating gut microbiome. Further, dietary fibers derived from traditional medicinal plants such as curry leaves in restoring gut microbiome homeostasis. We demonstrated that soluble and insoluble dietary fibers from curry leaves possess distinct physicochemical properties and significantly promote beneficial gut bacteria and short-

chain fatty acid production. These dietary fibers restored microbial diversity and reduced pathogenic bacterial populations in dysbiotic models, highlighting their potential as functional foods for gut and metabolic health. Collectively, our research integrates nutritional epigenetics, gut microbiome modulation, and functional food development for cancer prevention and therapy.

Related Publications:

1. https://doi.org/10.1016/j.semcancer.2020.12.006
2. https://doi.org/10.1007/s10555-023-10138-7
3. https://doi.org/10.1016/bs.ircmb.2024.09.003
4. https://doi.org/10.1016/j.ijbiomac.2024.139198

2. Diet enhances the efficacy of Cancer Therapy

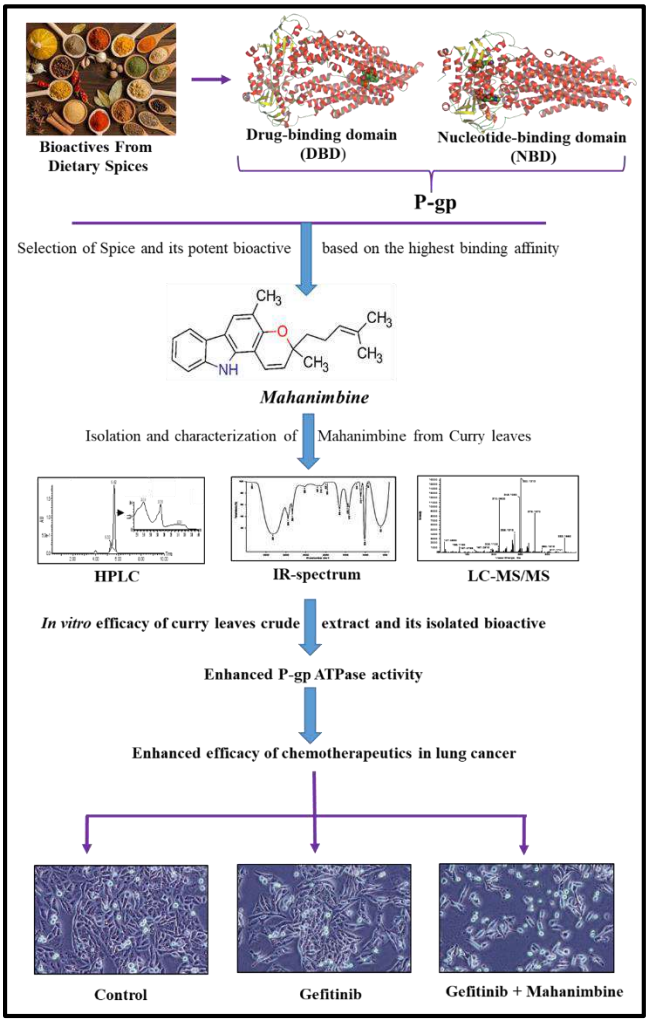


Diindolylmethane (DIM) is a key metabolite of Indole-3-carbinol (I3C) found in cruciferous vegetables such as broccoli, cauliflower, and cabbage. Overexpression of drug efflux transporters is commonly associated with multidrug-resistance in cancer therapy. Here for the first time, we investigated the ability of diindolylmethane (DIM), a dietary bioactive rich in cruciferous vegetables, in enhancing the efficacy of Centchroman (CC) by modulating the drug efflux transporters in human breast cancer cells. CC is a selective estrogen receptor modulator, having promising therapeutic efficacy against breast cancer. The combination of DIM and CC synergistically inhibited cell proliferation and induced apoptosis in breast cancer cells. This novel combination has also hindered the stemness of human breast cancer cells. The intracellular retention of CC has increased its efficacy against breast cancer. Overall, DIM, a dietary bioactive, enhances the anticancer activity of CC by modulating ABC-transporter-mediated drug efflux in breast cancer cells. Therefore, DIM-based nutraceuticals and functional foods can be developed as adjuvant therapy against cancer.

Related Publications:

1. https://doi.org/10.1016/j.jnutbio.2021.108749
2. https://doi.org/10.1080/01635581.2022.2143825
3. https://doi.org/10.1016/j.bioorg.2022.106170

3. Spice bioactives inhibit cancer chemo-resistance

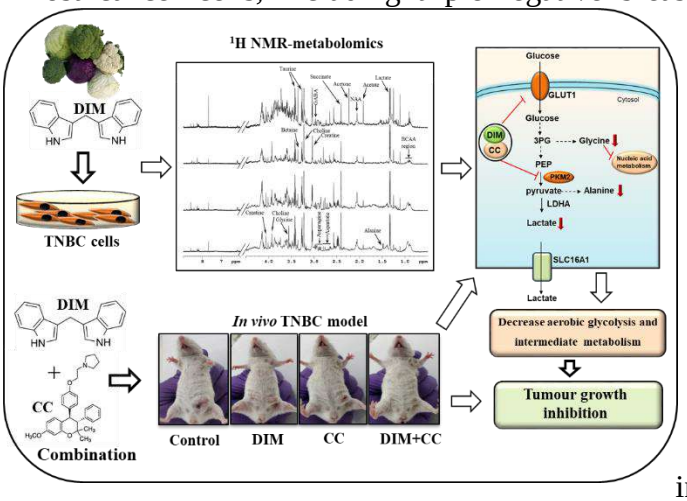


P-glycoprotein (P-gp), a transmembrane glycoprotein, is mainly involved in multidrug resistance. We have screened for potential bioactives from various spice plants with P-gp modulatory activity using computational molecular docking. The computational analysis revealed that several key bioactives from curry leaves, specifically mahanimbine, exhibited a strong binding affinity with P-gp. Therefore, we prepared a curry leaves extract and isolated mahanimbine by a novel, yet simple, extraction method using green extraction. We found that mahanimbine synergistically enhanced gefitinib efficiency by increasing its intracellular accumulation in lung cancer cells. Overall, mahanimbine has been shown to be a potent P-gp modulator. Therefore, spice bioactives based functional food formulations can be further developed as a potential candidate to overcome chemoresistance.

Related Publications:

1. https://doi.org/10.1016/j.bioorg.2022.106170
2. https://doi.org/10.1016/j.phymed.2022.154272
3. https://doi.org/10.3389/fphar.2023.1105484

4. Diet alters the Cancer Cell Metabolism

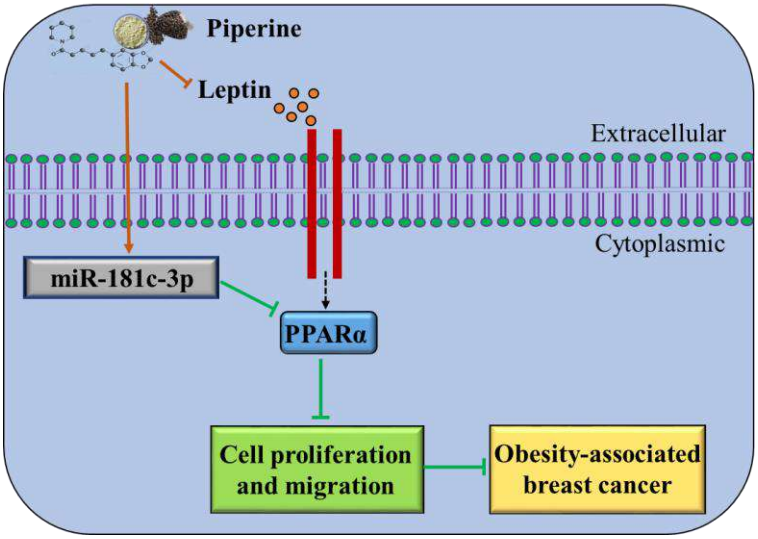


Most cancer cells, including triple-negative breast cancer (TNBC), adapt distinct metabolic reprogramming for rapid growth and proliferation. Hence, targeting metabolic dysregulation may provide a favorable therapeutic condition for the treatment of TNBC. The role of DIM in regulating TNBC cellular metabolism remains unknown. In the current study, we investigated the potential therapeutic interventions of DIM in TNBC and its metabolic reprogramming in enhancing the efficacy of chemotherapy. We found that DIM induced metabolic catastrophe in TNBC cells by regulating aerobic glycolysis and intermediate metabolism. Further, the DIM and CC combination significantly inhibited the TNBC tumor growth. Therefore, these findings suggest that diet-based nutraceuticals and functional foods can be developed as adjuvant therapy for treating metabolically dysregulated cancers.

Related Publications:

1. https://doi.org/10.1021/acsomega.2c05832
2. https://doi.org/10.1007/978-3-032-06948-1_10
3. https://doi.org/10.1007/978-3-030-20301-6_16

5. Dietary Spices inhibit Obesity-Associated Breast Cancer through miRNA alterations



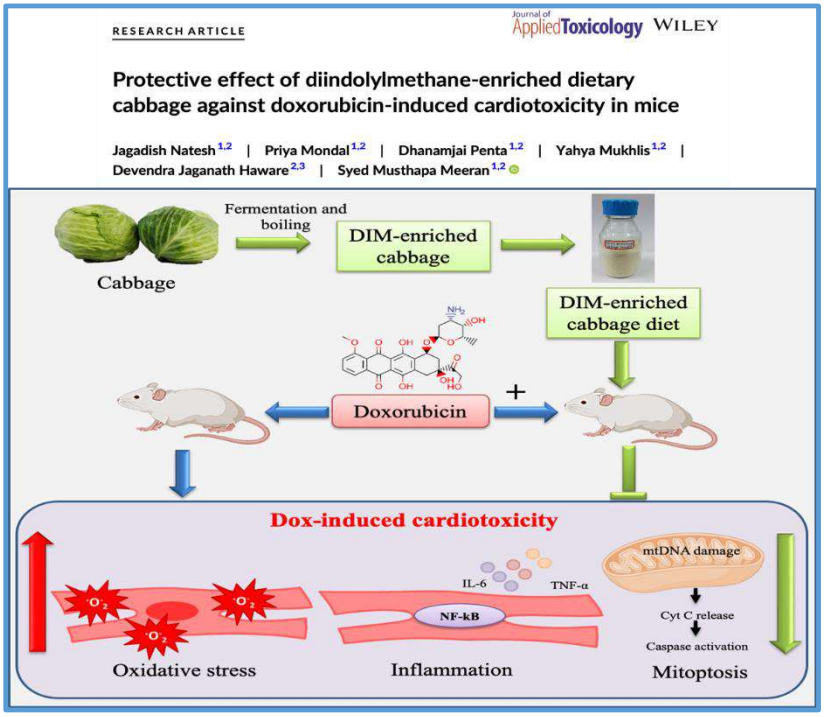
Obesity (adipocyte)-derived leptin activates multiple oncogenic signaling leading to breast cancer cell progression and metastasis. Hence, finding effective strategies to inhibit the oncogenic effects of leptin would provide a novel approach for disrupting obesity-associated breast cancer. We explored the role of

piperine, a major plant alkaloid from *Piper nigrum* (black pepper), against leptin-induced breast cancer. Piperine treatment significantly inhibited leptin-induced breast cancer cell proliferation, colony formation, migration, and invasion. We found that piperine downregulated the expression of *PPARα*, a predicted target of miR-181c-3p. Mechanistically, piperine potentiates miR-181c-3p-mediated anticancer potential in leptin-induced breast cancer cells. Interestingly, the knockdown of *PPARα* reduced the proliferative potential of leptin-induced breast cancer cells. Further, oral administration of piperine inhibited breast tumor growth in diet-induced obese mice, accompanied by upregulation of miR-181c-3p and downregulation of *PPARα* expression. Together, piperine represents a potential candidate for further development as an anticancer agent for treating obesity-associated breast cancer.

References:

1. https://doi.org/10.1021/acs.jafc.1c05670;
2. https://doi.org/10.1016/j.compbiomed.2021.104601
3. https://doi.org/10.1016/j.semcdb.2021.04.001
4. https://pubmed.ncbi.nlm.nih.gov/34977437/#:~:text=doi%3A-,10.1016/j.ncrna.2021.12.001,-.
5. https://doi.org/10.1016/j.ncrna.2020.11.004
6. https://doi.org/10.2174/1389200221666200106105201
7. https://doi.org/10.1016/j.ncrna.2019.10.001
8. https://doi.org/10.1016/j.compbiomed.2020.104102

6. Protective Effect of Diet against Chemotoxicity & Targeted Therapy



The therapeutic application and use of dietary bioactive diindolylmethane (DIM) is limited due to its low bioavailability. Our study method has increased DIM bioavailability in cabbage by up to nine-fold with conditional fermentation and boiling processes. We prepared a DIM-enriched diet and administered it to mice undergoing doxorubicin (Dox) treatment. The DIM-

enriched diet reversed cardiotoxic effects, modulated anti-oxidant defense, and inhibited apoptosis as well as inflammatory pathways. Our findings suggest DIM-enriched cabbage as a promising complementary diet for cancer patients undergoing chemotherapy.

Related Publications:

1. ***https://doi.org/10.4155/tde-2021-0038***
2. ***https://doi.org/10.1002/jat.4588***

Articles Published in the Peer-Reviewed Journals/Patents

- Total Research Publications: 104

  [International Journals-103; National Journal-01; Corresponding author-54; First author-22]

  [Google Scholar] [Pubmed] [Total citation-6574; h-index-42; i-10 index-77]

- Book Chapters Published: 09
- Patents: 02
- Invited Talks/ Chaired Technical Sessions:42
- Papers Presented in National/ International Conferences: 101

Professional Memberships

- National Environmental Science Academy (NESA), India-Life Member
- Association of Toxicologists & Risk Assessors (ASTRA), India-Life Member
- Laboratory Animal Scientists' Association (LASA), India-Life Member
- Association of Food Scientists & Technologists (AFST), India-Life Member
- The Biotech Research Society (BRSI), India-Life Member
- The Society of Biological Chemists (SBC), India-Life Member
- Indian Association for Cancer Research (IACR), India-Life Member
- Association for Biotechnology and Pharmacy (ABP), India-Life Member
- American Association for Cancer Research (AACR), USA-Active Member
- European Association for Cancer Research (EACR), UK-Associate Member
- American Society for Photobiology (ASP), USA

Editorial Board Member

- Frontiers in Medicine (September 2024-till date)
- Non-coding RNA research (Jan 2016-till dated)
- World Journal of Clinical Oncology (Jan 2015-Dec 2018)
- Frontiers in Endocrinology (March 2017-Feb. 2019)
- American Journal of Cancer Prevention (Jan, 2013-till date)
- International Journal of Cancer Research (2008-2010)
- Asian Journal of Biochemistry (2008-2010)
- Ad-hoc reviewer for many international peer-review journals

Awards

- **Best Research Publication Award** for the year 2024-25 CSIR-CFTRI
- **NABS-Best Scientist Award**-2024
- **Dr. MM Dhar Memorial Distinguished Career Achievement Award-2017**
- **Dr. J.M. Khanna Memorial Early Career Achievement Award-2016**

- **Young Scientist Grant** from DST-SERB from 2012-2015
- **Young Scientist Award-2011 by the Association for Biotechnology and Pharmacy (ABAP)**
- **Gold Medal** for work excellence by the **Association for Biotechnology and Pharmacy (ABAP)**
- **Dr. Swarn Nitya Anand Memorial Early Career Achievement Award-2016**
- **Travel award by the National Institute of Health (NIH), USA-2009**

- **Susan G. Komen for the Cure Travel grant award-2010 on** October 20-21, 2010.
- **Susan G. Komen for the Cure Travel grant award** on April 17-21, 2010
- **Outstanding Visiting Scholar Award-2007**" from the University of Alabama at Birmingham, USA

Selected Publications (Last 5 years only)

[Total publications: 104; International-103; National-01; Corresponding author-54; First Author-22]

[Google Scholar] [Pubmed] ***[Total citation-6574; h-index***-42; i-10 index-77]

**Published as a corresponding author*

1. Mondal P, Ramasamy S, Amalraj R, Anthonoiraj CJ, Gokila S and ***Meeran SM** (2025) Physicochemical characterization of dietary fiber polysaccharides extracted from Murraya koenigii leaves and their functional role on gut homeostasis. ***Int. J. Biol. Macromolecules**. In Press. 293: 139198. **JIF- 7.7***
2. Mondal P, Jayaprakash G and ***Meeran SM** (2024) The translational potential of epigenetic modulatory bioactive phytochemicals as adjuvant therapy against cancer. **Int. Rev. Cell Mol Biol**., *390: 140-185. **JIF- 6.8***

3. Mondal P and ***Meeran SM** (2024) Effect of extraction methods on bioactives profile, antioxidant potential and anticancerous properties of *Murraya koenigii* leaves. ***J Food Measurement and Characterization****. 18: 8344-8364.* ***JIF- 3.0***
4. Natesh J, Mondal P, Penta D, Mukhlis Y, Haware DJ, **Meeran SM** (2024) Protective effect of diindolylmethane-enriched dietary cabbage against doxorubicin-induced cardiotoxicity in mice. ***J Appl. Toxicol***, 44(6): 874-891. ***JIF- 3.8.***
5. Natesh J, Mukhlis Y, Ramasamy S, Mondal P, Kaur B and ***Meeran SM** (2024) Development of a self-nanoemulsifying drug delivery system of diindolylmethane for enhanced bioaccessibility, bioavailability and anti-breast cancer efficacy. ***J. Drug Delivery Science & Tech.*** *93; 105435.* ***JIF- 5.0***
6. Mondal P and ***Meeran SM** (2024) The emerging role of the gut microbiome in cancer cell plasticity and therapeutic resistance. **Cancer Metastasis Rev**., *43(1):135-154*. ***JIF- 10.3.***
7. Das G, Farhan M, Sinha S, Bora HK, Singh WR, and **Meeran SM** (2023) Milkania micrantha extract enhances the cutaneous wound healing activity through the activation of FAK/Akt/ mTOR signaling pathway. ***Injury.*** *54(8):110856.* ***JIF- 2.69.*** ISSN: 1879-0267
8. Mondal P and ***Meeran SM** (2023) Emerging role of non-coding RNAs in resistance to platinum-based anti-cancer agents in lung cancer. ***Frontiers in Pharmacology***, 14:1105484. ***JIF- 5.988.***
9. Penta D, Natesh, J, Mondal P, & ***Meeran SM** (2023) Dietary diindolylmethane enhances the therapeutic effect of centchroman in breast cancer by inhibiting neoangiogenesis. ***Nutrition and Cancer***, 75(2): 734-749. ***JIF- 2.9***
10. Penta D, Tripathi P, Rajarajan D, Natesh J, Mondal P and ***Meeran SM** (2022) Diindolylmethane promotes metabolic crisis and enhances the efficacy of Centchroman in breast cancer: A ^{1}H NMR based approach. ***ACS Omega***. Nov 7(47):43147-43160*.* ***JIF- 4.132***
11. Mondal P, Natesh J, Abdul Salam AA and ***Meeran SM** (2022) Mahanimbine isolated from Murraya koenigii inhibits P-glycoprotein involved in lung cancer chemoresistance. ***Bioorg Chem***. Dec 129*: 106170.* ***JIF- 5.307***
12. Mondal P, Natesh J, Abdul Salam AA and ***Meeran SM** (2022) Extract of Murraya koenigii selectively causes genomic instability by altering redox-status via targeting PI3K/AKT/Nrf2/caspase-3 signaling pathway in human non-small cell lung cancer. ***Phytomedicine***. Sep;104:154272. **IF: 6.656**
13. Mondal P, Natesh J, Penta D and ***Meeran SM** (2022) Progress and Promises of Epigenetic Drugs and Epigenetic Diets in Cancer Prevention and Therapy: A clinical update. ***Semin. Cancer Biol.*** *Aug 83: 503-522.* ***JIF- 17.01***
14. Mondal P, Kaur B, Natesh J and ***Meeran SM** (2022) The emerging role miRNA in the perturbation of tumor immune microenvironment in chemoresistance: Therapeutic implications. ***Semin. Cell Dev. Biol.*** Apr 124: 99-113. Journal Impact Factor (***JIF)- 7.73***
15. Mondal P, Natesh J, Abdul Salam AA, Thiyagarajan S and ***Meeran SM** (2022) Traditional Medicinal Plants against replication, maturation, and transmission targets of SARS-CoV-2: Computational investigation. ***J. Biomol. Structure & Dynamics.*** Apr 40(6)*: 2715-2732.* ***JIF- 3.31.***
16. Rajarajan D, Natesh J, Penta D, and ***Meeran SM** (2021) Dietary piperine suppresses obesity-associated breast cancer growth and metastasis by regulating the miR-181c-3p/PPARalpha axis. ***Journal of Agricultural and Food Chemistry***. *69(51): 15562-74.* ***JIF- 5.28***
17. Kaur B, Mukhlis Y, Natesh J, Penta D, and ***Meeran SM** (2022) Identification of hub genes associated with EMT-induced chemoresistance in breast cancer using integrated bioinformatics analysis. ***Gene.*** *Jan 30; 809: 146016.* **JIF-3.7**

18. Mondal P and ***Meeran SM** (2021) microRNAs in cancer chemoresistance: The sword and the shield. **Non-coding RNA Res**. Dec 9, 6*(4):200-210*.. ***JIF-5.97.***
19. Rajarajan D, Kaur B, Penta D, Natesh J and ***Meeran SM** (2021) miR-145-5p as a predictive biomarker for breast cancer stemness by computational clinical investigation. ***Comput. Biol. Med.*** *Aug; 135:104601.* ***JIF- 6.698***
20. Natesh J, Chandola C, ***Meeran S M,*** *Neerathilingam M (2021). CD44 aptamer Mediated Targeted Delivery of Doxorubicin to Cancer Cells. ***Therap. Deliver.*** Oct, *12(10): 693-703*. ***JIF-*** *Cite score: 4.7.*
21. Natesh J, Mondal P, Kaur B, Abdul Salam AA, Kasilingam S and ***Meeran SM** (2021) Promising phytochemicals of traditional Himalyan medicinal plants against putative replication and transmission targets of SARS-CoV-2 by computational investigation. ***Comput. Biol. Med.*** Jun; *133: 104383* ***JIF- 6.698***
22. Penta D, Mondal P, Natesh J, and ***Meeran SM** (2021) Dietary Bioactive diindolylmethane enhances the therapeutic efficacy of Centchroman in breast cancer cells by regulating ABCB1/ P-gp efflux transporters. ***J Nutr. Biochem.*** Aug; 94; 108749*.* ***JIF- 6.117***
23. Natesh J, Mondal P, Kaur B, Penta D, Abdul Salam AA, and ***Meeran SM** (2021) Culinary spice bioactives as potential therapeutics against SARS-CoV-2: Computational investigation. ***Comput. Biol. Med.*** Jan;*128: 104102* ***JIF- 6.698***
24. Khan S, Shukla S, Farhan M, Sinha S, Lakra AD, Penta D, Kannan A, ***Meeran SM** (2020) Centchroman prevents metastatic colonization of breast cancer cells and disrupts angiogenesis via inhibition of RAC1/PAK1/β-catenin signaling axis. **Life Sciences**. 256: 117976-. ***JIF- 5.03.***
25. Mondal P and ***Meeran SM** (2020) Long non-coding RNAs in breast cancer metastasis. **Non-coding RNA Res**. 5(4):208-218. ***JIF- 5.97.***

Book Chapters Published

26. Shukla S and ***Meeran SM** (2013) Epigenetic Factors in Breast Cancer Progression. Book title-Breast Cancer Metastasis and Drug Resistance. A. Ahmad (Ed.),, Springer Publications, New York, USA. Page 341-365, DOI: 10.1007/978-1-4614-5647-6_19; ISBN: 978-1-4614-5646-9.
27. Khan S, Shukla S and ***Meeran SM** (2018) Epigenetics in Cancer Prevention and Therapy: Role of Phytochemicals. Chapter: 14; Book title-Rediscovering Cancer: From Mechanism to Therapy. S. Sanyal (Ed.), Apple Academic Press, a Taylor & Francis group, Waretown, NJ, USA. Pages 493-526. ISBN: 978-1-77188-690-1.
28. Shukla S, Penta D, Mondal P and ***Meeran SM** (2019), Epigenetics of Breast Cancer: Clinical Status of Drugs and Phytochemicals. Chapter 16; Book title-*Breast Cancer Metastasis and Drug Resistance - Challenges and Progress, Second Edition.* A. Ahmad (Ed.), Springer Publications, New York, USA. Pages 293-310. ISSN: 2214-8019; ISBN: 978-3-030-20300-9
29. Mondal P and ***Meeran SM** (2022), Dietary regulation of miRNA in Precision Medicine of Lung Cancer. Chapter: 18. Title of the Book-*Epigenetics in Precision Medicine,* Volume 30 in Translational Epigenetics*.* Dr. José Luis García-Giménez (Ed.), Elsevier Publications, New York, USA. *Academic Press;* Pages 513-542. *ISBN: 597756.* https://doi.org/10.1016/B978-0-12-823008-4.00002-0
30. Natesh J, Penta D and ***Meeran SM** (2022), Epigenetics in Precision Medicine of Breast Cancer. Chapter: 3; Title of the Book-*Epigenetics in Precision Medicine,* Volume 30 in

Translational Epigenetics. Dr. José Luis García-Giménez (Ed.), Elsevier Publications, New York, USA. *Academic Press;* Pages 43-67. *ISBN: 597756.* https://doi.org/10.1016/B978-0-12-823008-4.00004-4

31. Kaur B and *__Meeran SM__ (2023) The Epigenetic Regulation of the Tumor Immune Microenvironment: The Role of Epi-drugs and Epi-diets. Chapter: 01. Title of the Book-*Horizons in Cancer Research,* Volume 86. Dr. Hiroto S. Watanabe (Ed.), Nova Science Publishers, New York, USA*;* Pages 01-34. *ISBN: 979-8-89113-170-5.* https://novapublishers.com/shop/horizons-in-cancer-research-volume-86/

32. Kaur B, Mondal P and *__Meeran SM__ (2023) Epigenetic Regulation in Breast Cancer Tumor Microenvironment. Chapter: 06. Title of the Book-*Cancer Epigenetics,*. Volume 11. Pages: 213-243 Dr. Rasime Kalkan (Ed.), Springer Nature, New York, USA*;* Pages 213-243. *ISBN:* 978-3-031-42364-2. DOI: 10.1007/978-3-031-42365-9

33. Mukhlis Y, Amalraj R, Natesh J and ***Meeran SM** (2025) Non-coding RNAs in Metabolic Reprogramming of Breast Cancer: Dietary Opportunities and Translational Implications. Chapter 10. Title of the Book-Non-coding RNAs. *In Press* , Editors: Drs. Mohmmad Fahad Ullah (Ed.), Aamir Ahmad. Springer Nature, New York, USA. ISBN: 978-3-032-06948-1 **DOI :** https://doi.org/10.1007/978-3-032-06948-1_10

34. Khanum RB, Mukhlis Y, and ***Meeran SM** (2025) Cancer Genomics. Chapter 2. Title of the Book- Personalized Cancer Medicine through Multiomics. *In Press* , Editors: Drs. Mohammad Azhar Aziz and Snober Mir (Eds.), Elsevier Publications, New York, USA ISBN: 978-0-443-445484.

Invited Talks (last 5 years only) ***Out of the total 46***

1. Delivered an invited talk on 'Epigenetics of Cancer Cell Metabolism and Gut Microbiome' at the International Conference on Genetics and Epigenetics of Cancer (ICGEC-2) at JSS AHER, Mysore, Karnataka, India. October 30, 2025.
2. Delivered an invited talk on 'Epigenetics of Cancer' at the Molecular Biology Association (MBA)-2025 at Department of Molecular Biology, University of Mysore, Mysore, Karnataka, India. October 25, 2025.
3. Delivered an invited talk on 'Nutritional Epigenomics in Health Research' at the National Workshop on Molecular Research Bootcamp at Department of Biochemistry, J.J. College of Arts and Science, Bharathidasan University, Pudukkottai, Tamilnadu, India. September 17, 2025.
4. Delivered an invited talk on 'Emerging Trends in Oncology Research: Food, Microbiome and Cancer' at the National Conference on Cancer Research and Therapy (PUNCCRT) – 2025 at Parul University, Vadodara, Gujarat. April 2-3, 2025.
5. Delivered an invited talk on "Innovative Functional Foods for Modulating Cancer Cell Metabolism and Healthy Gut Microbiome" at the DST-ANRF sponsored conference on "Innovative Strategies for Advancing Biomedical Research (NCISABR)" at Dayananda Sagar University, Bangalore. January 15-17, 2025.
6. Delivered an invited talk on "Functional food alters the cancer cell metabolism through the dynamic alterations of the gut microbiome homeostasis" at the workshop on "Deciphering the Microbiome-Cancer Connection: Bridging Science and Medicine- A Workshop conducted by the Department of Radiotherapy, Jawaharlal Nehru Medical College, AMU from March 01-03, 2024.

7. Delivered an invited talk on "Empowering Bioeconomy: Epi-Diet Mastery and Ethnopharmacology Uniting Against Chemoresistance and Tumor Recurrence" at the 10th Convention of Society for Ethnopharmacology, India cum National Seminar on "Ethnopharmacology for Bio-economy : The New Paradigm" (EBNP-2023) organized by the CSIR-North East Institute of Science and Technology, Jorhat, Assam held on November 28-30, 2023.
8. Delivered an invited talk on "Nutri-epigenetic Interventions for Breast Cancer Management" at the International Conference on Genetics and Epigenetics of Cancer organized by the Department of Biochemistry, JSS Academy of Higher Education & Research held on October 30-31, 2023.
9. Delivered an invited talk on "Gut Health and Breast Cancer: Epigenetic Diet for the Management of Cancer" at the International Conference on Contemporary Research for the Sustainable Development of Biological Sciences (ICCRSDBS-2023) organized by the Department of Biochemistry, Vivekanandha College of Arts & Sciences for Women, Tiruchengode, Tamilnadu on February 01-02, 2023
10. Delivered an invited talk on "Bringing Basic and Translational Research to the Clinic: Challenges and Opportunities" at the 42nd Annual Conference of the Indian Association for Cancer Research (IACR) organized by the ACTREC, Tata Memorial Centre, Navi Mumbai, held on January 12-16, 2023
11. Delivered an invited talk on "Gut Health is Good Health: An Epigenetic perspective" in the International Conference on Contemporary Research in Biological Sciences (ICCRBS-2022) organized by the Department of Biochemistry, Vivekanandha College of Arts & Sciences for Women, Tiruchengode, Tamilnadu on June 10-11, 2022
12. Delivered an invited talk on "Serendipity: Science and Scientist" in the "Special Lecture Program of PG Studies & Research in Chemistry & Biochemistry" held at the St. Philomena's College, Mysore, Karnataka, India on May 19, 2022.
13. Delivered an invited talk on "Advanced Tools of RNA interference (RNAi) in Lifestyle diseases" on March 14, 2022 in the "RUSA 2.0 & DST-PURSE Biological Sciences workshop" held at the Department of Biochemistry, Bharathidasan University, Tiruchirappalli, India on March 14-16, 2022.
14. Chaired a technical session on the theme "Gut microbiota and its modulation through food and nutrition" on the second academic session on Oct 29, 2021 in the "International conference on Gut-Brain-Health connections" held at the CSIR-CFTRI, Mysore, Karnataka, India on October 28-29, 2021.
15. Delivered an invited talk on "Gut health is good health: A nutritional perspective" on Oct 29, 2021 in the "International conference on Gut-Brain-Health connections" held at the CSIR-CFTRI, Mysore, Karnataka, India on October 28-29, 2019.

Papers Presented at National/ International Conferences ***Out of the total 101***

(Last 5 years only)

1. Amalraj R, **Meeran SM** (2025) Dietary green tea polyphenols-altered gut homeostasis attenuates metabolic crisis in TNBC through epigenetic modulations. DST-ANRF sponsored conference on “Innovative Strategies for Advancing Biomedical Research (NCISABR)” at Dayananda Sagar University, Bangalore. January 15-17, 2025. Abstract # MED P08; Page# 96. CFTRI Communication# CFTRI-PMC/2024-25/331.

   ****Best Poster Award***

2. **Meeran SM** (2025) Innovative Functional Foods for Modulating Cancer Cell Metabolism and Healthy Gut Microbiome. DST-ANRF sponsored conference on “Innovative Strategies for Advancing Biomedical Research (NCISABR)” at Dayananda Sagar University, Bangalore. January 15-17, 2025. Abstract # 006; Page# 27 Director approval: FT/DoB/SMM/ 007 /2024.
3. **Meeran SM**, and Mondal P (2024) Defueling cancer cell metabolism through interventions of epigenetic modulatory diets. 46th All India Cell Biology Conference (AICBC2024) at ACTREC, Tata Memorial Centre, Navi Mumbai. January 10–12, 2024. AICB/2023/182. PMC approval# CFTRI-PMC/2023-24/424.
4. **Meeran SM,** Prakash GJ, Rajendran AR (2023) Dietary epigenetic modulators reprogram cancer cell metabolism through the dynamic alterations of the gut microbiome homeostasis. 92nd Annual Conference of Society of Biological Chemists (India) at BITS-Pilani, Goa campus. December: 18-20, 2023. PC-2CB15F, Page#186. PMC approval# CFTRI-PMC/2023-24/128.
5. Mondal P, Rajendran AR, **Meeran SM** (2023) Gut Microbiota Modulation by Curry Leaves Dietary Fibers: Extraction, Characterization, and Implications on Dysbiosis. 92nd Annual Conference of Society of Biological Chemists (India) at BITS-Pilani, Goa campus. December: 18-20, 2023. PC-1LC22S, Page#558. PMC approval# CFTRI-PMC/2023-24/154.
6. Rajendran AR, Prakash GJ, **Meeran SM** (2023) Dietary Green Tea Polyphenols Modulate Energy Metabolites in Breast Cancer via the Gut-Breast Epigenetic Axis. 92nd Annual Conference of Society of Biological Chemists (India) at BITS-Pilani, Goa campus. December: 18-20, 2023. PC-2CB37S, Page#207. PMC approval# CFTRI-PMC/2023-24/155.
7. Prakash GJ, Rajendran AR, Mondal P, **Meeran SM** (2023) Dietary sulforaphane-altered gut homeostasis promotes metabolic crisis in triple-negative breast cancer (TNBC) *via* epigenetic modulations. 92nd Annual Conference of Society of Biological Chemists (India) at BITS-Pilani, Goa campus. December: 18-20, 2023. PC-2CB38S, Page#208. PMC approval# CFTRI-PMC/2023-24/159
8. Mukhlis Y, Natesh J, **Meeran SM** (2023) Complementary Efficacy of DIM-enriched Diet in 4T1-syngenic Mice Breast Tumor model. 11th International Conference of Laboratory Animal Scientist’s Association (LASA), India, held at Indian Institute of Science (IISc), Bengaluru. November 7-8, 2023. PP-010, Page#112. CFTRI-PMC/2023-24/149.

First Prize Awarded for poster presentation

9. **Meeran SM** (2023) Nutri-epigenetic Interventions for Breast Cancer Management. International Conference on Genetics and Epigenetics of Cancer organized by the Department of Biochemistry, JSS Academy of Higher Education & Research, held on October 30-31, 2023. PMC approval# CFTRI-PMC/2023-24/84.
10. Rajendran AR, Rajarajan D, Venugopal AP, **Meeran SM** (2023) Postbiotic metabolites produced by green tea polyphenols-treated Lactobacillus acidophilus inhibit breast cancer growth and metastasis. 29th Indian Convention of Food Scientists and Technologists (ICFoST), at Al Saj Convention Centre, Thiruvananthapuram. January 05-07, 2023. Abstract number: NFA-019. PMC/2022-23/399.
11. Venugopal AP, Rajendran AR, Rajarajan D, **Meeran SM** (2023) Green tea polyphenols ameliorate LPS-induced inflammation via mediating the gut microbiome diversity. 29th Indian Convention of Food Scientists and Technologist (ICFoST), at Al Saj Convention Centre, Thiruvananthapuram. January 05-07, 2023. Abstract number: NFA-017. PMC/2022-23/397.
12. Mukhlis Y, Natesh J, Chethana R, Haware DJ, **Meeran SM** (2023) Diindolylmethane-enriched Smart Food for the Management of Breast Cancer. 29th Indian Convention of Food Scientists and Technologists (ICFoST), at Al Saj Convention Centre, Thiruvananthapuram. January 05-07, 2023. Abstract number: NFA-016. PMC/2022-23/395.
13. Natesh J, Mukhlis Y, **Meeran SM** (2023) Cardioprotective effects of diindolylmethane (DIM)-enriched diet against doxorubicin-induced cardiotoxicity by modulating redox-balance. 29th Indian Convention of Food Scientists and Technologists (ICFoST), at Al Saj Convention Centre, Thiruvananthapuram. January 05-07, 2023. Abstract number: NFA-037. PMC/2022-23/311.
14. Penta D, Natesh J, Mondal P, **Meeran SM** (2023) Epi-diets for the management of hormonal refractory breast cancer. 29th Indian Convention of Food Scientists and Technologists (ICFoST), at Al Saj Convention Centre, Thiruvananthapuram. January 05-07, 2023. Abstract number: NFA-030. PMC/2022-23/396.
15. Kaur B, **Meeran SM** (2023) Ultrasound-assisted extraction of phytochemicals from curry leaves (Murraya koenigii) using natural deep eutectic solvents. 29th Indian Convention of Food Scientists and Technologists (ICFoST), at Al Saj Convention Centre, Thiruvananthapuram. January 05-07, 2023. Abstract number: PFB-008. PMC/2022-23/398.
16. Venugopal AP, Rajendran AR, Penta D, **Meeran SM** (2023) Dietary epigenetic modulators promote metabolic crisis and genomic instability in breast cancer through ABCB1-efflux transporters. 42nd Annual Conference of The Indian Association of Cancer Research (IACR), at Advanced center for treatment research and education in cancer, Navi Mumbai. January 12-16, 2023. PMC/2022-23/304
17. Mondal P, Chaudhari SR, **Meeran SM** (2023) Development of a rapid, three-step isolation method of mahanimbine and its isomer from Murraya koenigii: Assessment of their bioaccessibility. 29th Indian Convention of Food Scientists &

Technologists (ICFOST) at Thiruvananthapuram, Kerala, India on Jan. 5-7, 2023. Abstract number: PP-NFA-012. PMC/2022-23/383

18. Mondal P, **Meeran SM** (2023) Mahanimbine isolated from Murraya koenigii inhibits lung tumorigenesis and metastasis through promoter methylation and downregulation of canonical Wnt/Beta-catenin pathway. 42nd Annual Conference of the Indian Association of Cancer Research (IACR) at Navi Mumbai, Maharashtra, India on Jan. 12-16, 2023. Abstract number: PP-49, Page#122. PMC/2022-23/471
19. Mondal P, **Meeran SM** (2023) Mahanimbine isolated from M koenigii alters genomic stability and inhibits lung tumorigenesis. International Conference on Contemporary Research for the Sustainable Development of Biological Sciences (ICCRSDBS) at Tiruchengode, Tamilnadu, India on Feb. 1-2, 2023 Oral Presentation. PMC/2022-23/518

Best Oral Presentation Award

20. Penta D, **Meeran SM** (2023) Dietary diindolylmethane alters cancer cells metabolism in triple-negative breast cancer. International Conference on Contemporary Research for the Sustainable Development of Biological Sciences (ICCRSDBS) at Tiruchengode, Tamilnadu, India on Feb. 1-2, 2023 Oral presentation. CFTRIPMC/2022-23/520
21. Natesh J, Mukhlis Y **Meeran SM** (2023) DIM-enriched diet ameliorates doxorubicin-induced cardiotoxicity in mice via modulating relax balance and inflammation. International Conference on Contemporary Research for the Sustainable Development of Biological Sciences (ICCRSDBS) at Tiruchengode, Tamilnadu, India on Feb. 1-2, 2023 Oral presentation. CFTRIPMC/2022-23/519
22. Mondal P, Natesh J, **Meeran SM** (2022) ABCB1-drug efflux inhibition of Mahanimbine: Isolation, characterization and biological effect on human lung cancer cells. 91st Annual Conference of Society of Biological Chemists (India) at Kolkata. December: 8-11, 2022. PP-010, Page#112. CFTRI-PMC/2022-23/244.
23. Amal Raj R, Penta D, **Meeran SM** (2022) Epi-diet alters the homeostasis of the gut microbiome for the management of cancer therapy. Asian Pacific Organization for Cancer Prevention (APOCP) Conference at Kolkata. December: 8-10, 2022. AB-07
24. Mondal P, Natesh J, **Meeran SM** (2022) Mahanimbine isolated from Murraya koenigii alters redox status and inhibits lung tumorigenesis through chromatin remodeling. Asian Pacific Organization for Cancer Prevention (APOCP) Conference at Kolkata. December: 8-10, 2022. Abstract number: PP-043. CFTRI-PMC/2022-23/215
25. Rajarajan D, **Meeran SM** (2022). Modulation of miR-181c-3p by piperine regulates obesity-associated breast cancer growth and metastasis. On 41st Annual Conference of Indian Association for Cancer Research-(IACR) at Noida, UP, India on March 2-5, 2022. Abstract # OP-053, Page#134.
26. Rajarajan D, Natesh J, Penta D, **Meeran SM** (2022). Dietary piperine suppresses the progression and metastasis of obesity-associated breast cancer. On the *"28th Convention of Food Scientists & Technologists (28th ICFoST)* at Aurangabad, Maharashtra, India on January 20-22, 2022. Abstract # PP-040, Page#175

27. Mukhlis Y, Natesh J, **Meeran SM** (2022). Dietary diindolylmethane augments the therapeutic efficacy of doxorubicin in human breast cancer cells. On the *"28th Convention of Food Scientists & Technologists (28th ICFoST)* at Aurangabad, Maharashtra, India on January 20-22, 2022. Abstract # PP-040, Page#175
28. **Meeran SM,** Shukla S, Mondal P (2020). Cucurbitacin B inhibits lung tumorigenesis and stemness of human lung cancer cells through epigenetic modifications. On the "39th Annual Conference of Indian Association for Cancer Research-(IACR) at the RGCB, Thiruvananthapuram, Kerala, India on February 5-7, 2020. Abstract # OP-053, Page#134.
29. Natesh J, Chandola C, Neerathilingam M, **Meeran SM** (2020). CD-44 aptamer mediated targeted delivery of Doxorubicin to breast cancer cells. On the "39th Annual Conference of Indian Association for Cancer Research-(IACR) at the RGCB, Thiruvananthapuram, Kerala, India on February 5-7, 2020. Abstract # PP-040, Page#175.
30. Mondal P, Bettadaiah BK, **Meeran SM** (2020). Extract of *Murraya koenigii* alters the redox status and upregulates oxidative stress-mediated genomic instability in human lung cancer cells. On the "39th Annual Conference of Indian Association for Cancer Research-(IACR) at the RGCB, Thiruvananthapuram, Kerala, India on February 5-7, 2020. Abstract # PP-049, Page#184.
31. Penta D, Natesh J, Mondal P, **Meeran SM** (2020). Dietary combinations of Diindolylmethane and Centchroman synergistically overcome stemness and chemoresistance of human breast cancer cells through epigenetic modifications. On the "39th Annual Conference of Indian Association for Cancer Research-(IACR) at the RGCB, Thiruvananthapuram, Kerala, India on February 5-7, 2020. Abstract # PP-025, Page#160.

Perspective PhD students: ***Interested candidates may apply through the institute guidelines and may also send their CV directly to me by Email s.musthapa.cftri@csir.res.in***

Best Research Publication Award-2025

Student PhD Viva at CFTRI

Core Research group CDRI