

DHANANJAY KUMAR SINGH, PhD

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Academic Qualifications

PhD, Pharmaceutical Sciences Jawaharlal Nehru University, New Delhi, India (Supervisor: Dr. Suaib Luqman, CSIR-CIMAP, Lucknow)	2012- 2017
Master in pharmacy, (Pharmacology) BB Ambedkar University, Lucknow, India	2010- 2012
Bachelor of Pharmacy Amrita School of Pharmacy Kochi, India	2006-2010

Research/teaching Experience: 03 year post PhD + 05-year pre-PhD

Assistant Professor Department of Pharmacy, Central University of South Bihar, Gaya, India	2020-Present
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Overview: My major assignment here is to teach Master in Pharmacy students and also supervise them to complete research dissertation. I will also be supervising PhD from next session. I am interested in identification of Aging and Cancer associated novel biomarkers and exploration of therapeutic intervention. The research is mainly focussed to understand the aging process and cancer progression due to genome instability. We are also trying to understand the link of cellular senescence with aging and cancer. The major aim is to identify and develop some plant based therapeutic leads to modulate pathway(s) associated with aging and cancer in order to delay it and improve life span and health span.

Post-Doctoral Researcher Department of Cancer Pharmacology, Linköping University, Sweden	2019-2020
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Supervisor: Prof. Stig Linder

Research topic: To understand the mechanism of action of a novel DUBs inhibitor of the ubiquitin-proteasome system.

Overview: Objective of current research was to investigate the role of the proteasome deubiquitinases (DUBs) such as UCHL5 and USP14 in normal and malignant conditions and to identify and develop novel DUBs inhibitors for clinical use. To achieve the objective, various combinations of biological and chemical studies were performed using suitable cell and mouse model and techniques. Our lab has generated conditional USP14 and UCHL5 knockout cell lines by infecting cre-lentivirus. The purpose of generating USP-/- mouse model was to investigate the role of USP14 gene in cellular development and its contribution to cancer. For these purposes a conditional knockout model for DUB USP14 has been developed and further research is going on.

Post-Doctoral Researcher

2018- 2019

Sackler School of Medicine, Tel Aviv University, Israel

Supervisor: Prof. Yosef Shiloh

Research topic: Genome stability-aging link

Overview: To understand the link between genome instability and aging. Aim of the project was to develop a mouse model by partial deletion of two important gene (*ATM* and *WRN*), which are responsible for maintaining genome stability and metabolic homeostasis in humans. Developed model exhibited the phenotype and pace of normal human aging and could be used to find the link between moderate genome instability, senescence and aging. The work involved study of DNA damage response using variety of cellular and molecular biology techniques.

PhD Scholar (Doctorate degree)

CSIR-CIMAP, Lucknow, India under CIMAP-JNU programme.

Supervisor: Dr. Suaib Luqman, Senior Scientist

Thesis title: Development of chemical profiling and exploration of pharmacological activity in *Lawsonia inermis* L.

Overview: My doctoral research involved mechanistic drug screening for their pharmacological properties using *in vitro* and *in vivo* methods. Potential drug candidate were screened for anti-cancer, anti-oxidative, anti-microbial and anti-plasmodial, activities by cell based assay. Potent lead drug candidates were further evaluated in mouse model for anti-malarial, anti-cancer and hepato-protective activity. To ascertain the chemical profiling of plant extract, a validated RP-HPLC method was developed which led to simultaneous identification and quantification of major chemical markers in extracts of *L. inermis*. Mechanisms of action of potent leads were determined by targeting the specific enzyme targets. Flowcytometric analysis was used to study the effect of active molecule/extract at different stage of cell cycle. Molecular docking was also used for interaction study against selected targets.

Master Dissertation

CSIR-CIMAP, Lucknow, India and BBAU, Lucknow India.

Supervisor: Dr. Suaib Luqman, Scientist and Dr. Sudipta Saha, Assistant Professor.

Project title: Biological activity evaluation of Henna: an *in vitro* and *in vivo* study

Overview: In this dissertation work we evaluated the henna (*Lawsonia inermis*) extracts for their biological activities such as antioxidant and antimicrobial using well established *in vitro* cell based and *in vivo* mouse model.

Bachelor of Pharmacy Dissertation (Under graduate)

Amrita School of pharmacy Kochi, India

Supervisor: Della Grace Thomas, Assistant Professor

Title of the project: Estimation of olmesartan and valsartan (AR-II antagonist) in various pharmaceutical dosage forms by U.V. spectrophotometric method.

Overview: In this class room project a simple, rapid, and precise U.V. spectrophotometric method was developed for simultaneous quantification of two well-known angiotensin receptor antagonist (AR-II antagonist) from) in various

pharmaceutical dosage forms. The validity and accuracy of the developed method was also confirmed for reproducibility and recovery by statistically validate procedure.

Awards and fellowship

- ❖ Best research paper award March 2019, (*Phytomedicine* 2019, 55, 92-104) at annual day of CSIR-CIMAP, Lucknow, India.
- ❖ Visiting Scientist fellowship, (2019) **Linkoping University, Sweden**
- ❖ National post doctoral fellowship (**NPDF**), 2017, awarded by Science and Engineering Research Board, Department of Science and technology, Government of India.
- ❖ Tel Aviv University **Post doc fellowship** (2017-2019), **Tel Aviv, Israel**
- ❖ CSIR-Junior research fellowship (**CSIR-JRF-GATE**) awarded by Council of Scientific and Industrial Research, New Delhi, India.
- ❖ CSIR-Senior research fellowship (**CSIR-SRF-GATE**) awarded by Council of Scientific and Industrial Research, New Delhi, India.
- ❖ **GPAT, PG** Scholarship (2010-2012) awarded by University Grant Commission(UGC), New Delhi, India.
- ❖ Dr. P. D. Sethi Annual Award Sponsored by The Pharma Review for **best paper (Industrial Crops and Products 2017 Jan 31;95: 33-42).**
- ❖ Best poster award at an International conference, ET& SD-2014 at BBAU, Lucknow, India.
- ❖ Best paper award in National Scientific Conference-2015, organized by BARC India at CSIR-CIMAP Lucknow.

Scientific Publications

First/ corresponding author/equally contributed research papers

1. S. Sinha, B.Kumar, S.Luqman, **Singh D.K.** Neuroprotective potential of *Cucurbita maxima* Duchesne ex Poir, *Caesalpinia bunduc* (L.) Roxb and
2. **Singh DK**, Cheema HS, Saxena A, Jyotshana, Singh S, Darokar MP, Bawankule DU, Shanker K, Luqman S. Fraxetin and its rich extract from *Lawsonia inermis* L. ameliorate oxidative stress in *P. berghei* infected mice by augmenting antioxidant defence system. **Phytomedicine** 2017, 36, 262-272.
3. Singh, Shilpi[#]; Dubey, Vijaya; **Singh, DK[#]**; Fatima, Kaneez; Ahmad, Ateeque; Luqman, Suaib, "Antiproliferative and antimicrobial efficacy of the compounds isolated from the roots of *Oenothera biennis* (L.)" . **Journal of Pharmacy and Pharmacology** 2017,69, 1075–1251. (**#Equal contribution**).
4. Nasreen Z[#]; Singh, Shilpi; **Singh, DK[#]**; Fatima, Kaneez; Ahmad, Ateeque; Luqman, Suaib. Characterization and evaluation of bioactive polyphenolic constituents from the fruits of *Zanthoxylum armatum* (DC.), a traditionally used spice. **Biomedicine and Pharmacotherapy** 2017, 89, 366–375. (**#Equal contribution**).
5. Ahmad A, **Singh DK[#]**, Fatima K, Tandon S, Luqman S. New constituents from the roots of *Oenothera biennis* and their free radical scavenging and ferric reducing activity. **Industrial Crops and Products** 2014, 58:125-32. (**#Equal contribution**).

6. **Singh DK**, Luqman S, Mathur AK. *Lawsonia inermis* L.–A commercially important primeval dying and medicinal plant with diverse pharmacological activity: A review. *Industrial Crops and Products* 2015, 65, 269-86.
7. **Singh DK**, Luqman S. *Lawsonia inermis* (L.): A Perspective on Anticancer potential of mehndi/henna. **Biomedical Research and Therapy** 2014, 4,112-20.

Co-authored papers

8. Singh S, **Singh DK** , Meena A, Dubey V, Masood N, Luqman S. Rutin protects t-butyl hydroperoxide-induced oxidative impairment via modulating the Nrf-2 and iNOS activity, **Phytomedicine** 2019,55, 92-104. (**Best paper award**).
9. Shakya VK, Luqman S, Tikku AP, Chandra A, **Singh DK**. A relative assessment of essential oil of *Chrysopogon zizanioides* and *Matricaria chamomilla* along with calcium hydroxide and chlorhexidine gel against *Enterococcus faecalis* in *ex vivo* root canal models. **J Conserv Dent.** 2019, 22, 34-39.
10. Mishra D, Khare P, **Singh DK**, Luqman S, Kumar PA, Yadav A, Das T, Saikia BK. Retention of antibacterial and antioxidant properties of lemongrass oil loaded on cellulose nanofibre-poly ethylene glycol composite. *Industrial Crops and Products.* 2018 Apr 30;114:68-80.
11. Sinha S, Kumar B, **Singh DK**, Luqman S, Singh M, Singh A. Antioxidant and cholinesterase Inhibitory activity of phenolic rich extracts from *Bombax ceiba* L. Flowers. *Free Radicals and Antioxidants* 2018, 8, 135-140.
12. Jyotshna, Gaur P, **Singh DK**, Luqman S and Shanker K. Validated method for quality assessment of henna (*Lawsonia inermis* L.) leaves after postharvest blanching and its cosmetic application. **Industrial Crops and Products** 2017, 95, 33-42.
13. Agarwal K, **Singh DK**, Jyotshna, Ahmad A, Shanker K, Tandon S, Luqman S. Antioxidative potential of two chemically characterized *Ocimum* (Tulsi) species extracts. **Biomedical Research and Therapy** 2017, 4, 1574-1589.
14. Sinha P, Srivastava S, Mishra N, **Singh DK**, Luqman S, Chanda D, Yadav NP. Development, optimization, and characterization of a novel tea tree oil nanogel using response surface methodology. **Drug development and industrial pharmacy** 2016, 42, 1434-1445.
15. Mishra D, Khare P, Shanker K, Singh DK, Luqman S. Controlled delivery systems of cellulose matrix for oxytetracycline: In vitro dissolution. **New Horizons in Translational Medicine** 2016, 3, 66-72.
16. Khan A, Luqman S, Masood N, **Singh DK**, Saeed ST, Samad A. Eclipta yellow vein virus enhances chlorophyll destruction, singlet oxygen production and alters endogenous redox status in *Andrographis paniculata*. **Plant Physiology and Biochemistry** 2016,104, 165-73.
17. Thakur JP, Haider R, **Singh DK**, Kumar BS, Vasudev PG, Luqman S, Kalra A, Saikia D, Negi AS. Bioactive isochromenone isolated from *Aspergillus fumigatus*, endophytic fungus from *Bacopa monnieri*. *Microbiology Research* 2015, 1; 6(1).
18. Akhtar MM, Srivastava S, Sinha P, **Singh DK**, Luqman S, Tandon S, Yadav NP. Antimicrobial potential of topical formulation containing essential oil of *Eucalyptus citriodora* Hook. **Annals of Phytomedicine** 2014;3:37-42.

19. Gupta R, Pandey P, Singh S, **Singh DK**, Saxena A, Luqman S, Bawankule DU, Banerjee S. Advances in *Boerhaaviadiffusa* hairy root technology: a valuable pursuit for identifying strain sensitivity and up-scaling factors to refine metabolite yield and bioactivity potentials. *Protoplasma* 2015, 28:1-4.
20. Mishra S, Phukan UJ, Tripathi V, **Singh DK**, Luqman S, Shukla RK. PsAP2 an AP2/ERF family transcription factor from *Papaver somniferum* enhances abiotic and biotic stress tolerance in transgenic tobacco. *Plant molecular biology* 2015, 1; 89:173-86.

Paper presented in National and International conferences

1. **Dhananjay Kumar Singh**, Vijaya Dubey, Nusrat Masood, Shilpi Singh, Abha Meena, Suaib Luqman. Perceiving the Antiproliferative Efficacy and Cathepsin D Diffidence of Henna (*Lawsonia inermis* L.) Extracts and Their Major Constituents in Human Cancer Cell Lines. SBCI, Bhubneshwar, India. 17th Dec- 21st Dec: 2014.
2. **Dhananjay Kumar Singh**, SuaibLuqman. 'Industrial Application of *Lawsonia inermis* Through Contemporary Investigations. ICOMP, Lucknow, India 2015.
3. Dewasya Pratap Singh, Rida Sageer, **Dhananjay Kumar Singh**, Amit Kaushik, Athar Husain, SuaibLuqman, and Dayanandan Mani. Hepatoprotective efficacy of Phalatrikadikwath: a classical Ayurveda preparation. ICOMP, Lucknow, India 2015.
4. Karishma Agarwal, **Dhananjay Kumar Singh**, Ateeque Ahmad, Suaib Luqman and Sudeep Tandon. Phytochemical constituents and antioxidant activities of the extracts from roots of *Ocimum kilimandscharicum*. ICOMP, Lucknow, India 2015.
5. **Dhananjay Kumar Singh**, Suaib Luqman. Antiradical and Antioxidant Activities of *Lawsonia inermis* (L.) and its Constituents. SFRR, Lucknow, India; 30th Jan-1st Feb: 2013.
6. Disha Mishra, **Dhananjay Kumar Singh**, Suaib Luqman, Puja Khare. Isolation and Characterization of nanaocellulose from waste biomass and its antimicrobial properties against *Pseudomonas aeruginosa*. ET & SD, Lucknow, India; 21st – 23rd Feb: 2014. (**Best poster award**).
7. **Dhananjay Kumar Singh**, Lijo John, Sumith G.UV-Spectrophotometric method for the estimation of Olmesartan from formulation, Pharmacon-kerala, Thrisur, India; 20th -22nd Jan: 2010.
8. **Dhananjay Kumar Singh**. Immunomodulatory activity of plant drugs, Phycopharma-Thrissur, India; 21st -22nd Feb: 2009.

Member of editorial board

- ❖ International Journal of Bioscience and Medicine
- ❖ Journal of Pharmaceutical Research and Review

Participation in Workshop/Seminar

- ❖ One day national seminar on “Recent trends in pharmacy”, Pharmasearch, Kochi, India; 5th Dec: 2008.
- ❖ International seminar on “Emerging trends in Pharmacy practice”, Kochi, India; 20th Feb: 2009.

- ❖ Two day international “Workshop on Pharmacoeconomics in Indian Healthcare”, Kochi, India; 19th – 20th Oct: 2009.
- ❖ One day seminar on “Spectral analysis in pharmaceutical Sciences”, Kochi, India; 22nd March: 2010.