Dr. Jay Kant Yadav

Assistant Professor, Department of Biotechnology, Central University of Rajasthan, Ajmer-305 817 Rajasthan, INDIA. Email ID: jaykantyadav@curaj.ac.in Tel: +91-94689 43623

ORCID ID: https://orcid.org/0000-0003-1985-5925

ACADEMIC PROFILE

- **B.Sc.** (Zoology, Botany & Chemistry), **First Class**, U. P. Autonomous College, Varanasi, Poorvanchal University, U.P., India. **1997-2000**
- **M.Sc.** (Biotechnology), **First Class**, Department of Biotechnology, University of Calicut, Kerala, India **2000-2002**
- **Ph.D.** (Biotechnology), Department of Protein Chemistry and Technology, CSIR-Central Food Technological Research Institute (University of Mysore), Mysore, India **2004-2009**

  Thesis title: *Structure, Function and Stability of a-Amylases in the Presence of Various Co-Solvents*. (Supervisor- Dr. V. Prakash, then Director, CFTRI)

CURRENT POSITION

- **Associate Professor & Head,** Department of Biotechnology, Central University of Rajasthan, Ajmer-305 817, Rajasthan, INDIA **October 31, 2022-till date**

POST-DOCTORAL RESEARCH FELLOWSHIPS

- **Post-Doctoral Fellow**, Max-Planck Institute (Max-Planck Research Unit for Enzymology of Protein Folding) Halle (Saale), Germany. **November 2010 – November 2012**
- **Post-Doctoral Fellow**, Institute of Protein Biochemistry, Ulm University, Ulm, Germany. **November 2012 – April 2013**

VISITING/ GUEST PROFESSOR

- **International Guest professor** (W3) at Institute of Protein Biochemistry, Ulm University, Ulm, Germany. **January 2018 to June 2018**

TEACHING EXPERINCE

- **Associate Professor,** Department of Biotechnology, Central University of Rajasthan, Ajmer-305 817, Rajasthan, INDIA **July 2022- Till date**
- **Assistant Professor,** Department of Biotechnology, Central University of Rajasthan, Ajmer-305 817, Rajasthan, INDIA **May 2013 – July 2022**

TEACHING ASSISTANCE DURING PhD

- Part time/ Guest Lecturer at Department of Biotechnology, Mahajana Post-Graduate Centre, University of Mysore, Mysore, India. **2009-2010**
- Served as resource tutor of Microbiology and Biotechnology for Karnataka State Open University, Mysore, India **2009-2010**

VISITING/ GUEST PROFESSOR

- **International Guest professor** (W3) at Institute of Protein Biochemistry, Ulm University, Ulm, Germany. **January 2018 to June 2018**

RESEARCH AREA

- Structure – Function Relationships of Amyloids
- Molecular Mechanism of Amyloid-Induced Cataract formation
- Amyloids of Anti-Microbial Peptides

TECHNICAL SPECIALIZATIONS

- Fluorescence Spectroscopy
- Circular Dichroism Spectroscopy
- X-Ray Powder Diffraction
- Transmission Electron Microscopy

AWARDS/ FELLOWSHIP/ RECOGNITIONS

- CSIR-NET-JRF **December 2002**
- GATE (Graduate Aptitude Test in Engineering) **February 2002**
- Recipient of student fellowship sponsored by Dept. of Biotechnology (DBT) Govt. of India during M.Sc. (Biotechnology) programme. **July 2000 – June 2002**

- Deputed as **Inspired Teacher** and participated in the meeting '**In-Residence Programmes of Inspired Teachers'** chaired by **President of India at the President House** (Rashtrapati Bhawan), New Delhi. (https://en.wikipedia.org/wiki/Inspired_Teacher) **06th - 12th June 2015**
- Recipient of **Carrier Achievement Award** presented during 19th World Congress of International Union of Food Science and Technology IUFoST-2018. **October 2018**
- Nominated as **Early Carrier Scientist (ECS)** of International Union of Food Science and Technology (IUFoST): **November 2020-2022**

  Special Award for Outstanding Presentation (Title: Nutritional considerations for healthy aging with special reference to the patients of Alzheimer's disease) given by Food Science Frontier Research Forum, International University Consortium of Food Science and Nutrition, during 17th -19th October 2019, Hangzhou, China. **October 2019**
- **Champion Award** for the Food Sustainability Idea/Concept Development Competition presented at the **21st World Congress of Food Science and Technology at Singapore**. (Title: Integration of dairy based protein nanostructures for the management of Alzheimer's disease). **3rd November 2022**
- **Member of Council of Mid-Career Scientists** of International Union of Food Science and Technology (IUFoST). **November 2022**

SELECTED RESEARCH PUBLICATIONS

1. Malik S and **Yadav J. K.** *Amyloids and amyloid-like protein aggregates in Food System: Challenges and New Perspectives*. **Accepted** to ***Current Protein & Peptide Science*, 2023**.
2. Jangir N., Bangrawa S., Yadav T., Malik S., Alamri S. A., Galanakis C. M., Singh M., **Yadav J. K.**, *Isolation and characterization of amyloid-like protein aggregates from soya beans and effect of low pH and heat-treatment on their stability*. ***Journal of Food Biochemistry*, 46***(10)*: 2022, e14369*
3. Malik S., De I., Singh M., Galanakis C.M., Alamri A.S., **Yadav J.K.** *Isolation and characterisation of milk-derived amyloid-like protein aggregates (MAPA) from cottage cheese.* ***Food Chemistry,*** 373: 2022, 131486. (IF: 7.27)
4. **Yadav J.K.** *Structural and functional swapping of amyloidogenic and antimicrobial peptides: Redefining the role of amyloidogenic propensity in disease and host defense.* ***J. Pept. Sci., 28****(4)*: 2021, e3378.
5. Mittal C., Kumari A., De I., Singh M., Harsolia R.S., **Yadav J. K.** *Heat treatment of soluble proteins isolated from human cataract lens leads to the formation of non-fibrillar amyloid-like protein aggregates.* ***Int. J. Biol. Macromol.*** 2021; **188**: 512–522. (IF: 6.953).
6. Verma N, Srivastava S., Malik R., **Yadav J. K.,** Goyal P., Pandey J., *Computational investigation for modeling the protein–protein interaction of TasA (28–261)–TapA (33–253): A decisive process in biofilm formation by Bacillus subtilis.* ***J Mol Model.***, 2020; 26(9): 226 (IF: 1.73)
7. Mittal C., Harsolia R. S., Singh M., **Yadav J. K.** *Disaggregation of amyloid-like protein aggregates isolated from human cataract lens.* ***Indian J. Biochem Biophys***. (NISCAIR) 2021; **58**: 359-365. (IF: 1.918)
8. Shalini G., **Yadav J. K.** *Aggregation hot spots in the SARS -CoV -2 proteome*

may constitute potential therapeutic targets for the suppression of the viral replication and multiplication. ***J. Protein Proteom.*** 2021; **12**: 1-13 https://doi.org/10.1007/s42485-021-00057-y

9. Schimansky A., **Yadav J. K.** *Amyloid cross-sequence interaction between Aβ(1-40) and aA(66–80) in relation to the pathogenesis of cataract.* ***Int. J. Biol. Macromol.*** 2021; **179**: 61-70.
10. Ram L., Mittal C., Harsolia R. S., **Yadav J. K.** *Trehalose inhibits the heat-induced formation of the amyloid-like structure of soluble proteins isolated from human cataract lens.* ***Protein J***. 2020 Oct 10. 39(5):509-518 doi: 10.1007/s10930-020-09919-8. (IF: 2.371)
11. Harsolia, R.S., Kanwar, A., Gour, S., Kumar, V.[2], Kumar, V.[1], Bansal, R., Kumar, S., Singh, M., **Yadav J. K**. *Predicted aggregation-prone region (APR) in βB1-crystallin forms the amyloid-like structure and induces aggregation of soluble proteins isolated from human cataractous eye lens.* ***Int. J. Biol. Macromol.*** 2020; **163**:702-710. (IF: 6.953)
12. Kumar, V., Kumar, P. G., **Yadav, J.K.** *Impact of semen-derived amyloid (SEVI) on sperm viability and motility: its implication in male reproductive fitness.* ***Eur. Biophys. J.*** 2019; **48**:659–671. (IF: 2.119)
13. Gour, S., Kumar, V., Singh, A., Gadhave, K., Goyal, P., Pandey, J., Giri R., **Yadav, J.K**. *Mammalian antimicrobial peptide Protegrin-4 self assembles and forms amyloid-like aggregates: Assessment of its functional relevance.* ***J. Pept. Sci.*** 2019; 25(3):e3151. (IF: 1.86)
14. Brünnert D., Shekhawat I., Chahar K. R., Ehrhardt J., Pandey J., **Yadav J. K.**, Zygmunt M., Goyal P., *Thrombin stimulates gene expression and secretion of IL-11 via protease-activated receptor-1 and regulates extravillous trophoblast cell migration*. ***J. Reprod. Immunol.,*** 2019; 132: 35-41. (IF: 3.86)
15. Kumar, V., Gour, S., Verma, N., Kumar, S., Gadhave, K., Mishra, PM., Goyal, P., Pandey, J., Giri, R., **Yadav, J.K.** *Pheromone peptide cOB1 from native Enterococcus faecalis forms amyloid-like structures: A new paradigm for peptide pheromones.* ***J. Pept. Sci.*** 2019; 25(8):e3178.
16. Gour S., Kumar V., Rana M., **Yadav J.K.** *The mechanism of Phosphatidylcholine-induced interference of PAP(248-286) aggregation*. ***J. Pept. Sci.*** 2019; 25(8):e3157.
17. Röcker A., Roan N.R., **Yadav J.K.**, Fändrich M., Münch J. *Structure, function and antagonism of semen amyloids.* ***ACS Chem. Commun.*** 2018; **54**: 5775-5769. (IF: 6.164)
18. Kumar V., Gour S., Peter O. S., Gandhi S., Goyal P., Pandey J., Harsolia R. S., **Yadav J. K**. *Effect of green tea polyphenol epigallocatechin-3-gallate on the aggregation of aA (66-80) peptide, a major fragment of aA-crystallin involved in cataract development*. ***Curr. Eye Res.*** 2017; **42**: 1368-1377. (IF: 1.91)
19. Wulff, M., Baumann, M., Thümmler, A., **Yadav, J.K.**, Heinrich, L., Knüpfer, U., Schlenzig, D., Schierhorn, A., Rahfeld, J., Horn, U., Balbach, J., Demuth, H., Fändrich, M. *Enhanced fibril fragmentation of N-terminally truncated and pyroglutamyl-modified Aβ peptide*. ***Angew. Chem. Int. Ed.*** 2016; **55**: 5081–5084.
20. Gour S., Kaushik V., Kumar V., Gaharwar B and **Yadav J. K.** *Targeting*

the semen derived amyloids to control HIV transmission: perspectives and challenges. ***J. Protein Proteom.*** 2016; **7**:19-27.

21. Gour,S., Kaushik, V., Kumar, V., Bhat, P., Yadav, S.C., **Yadav J.K.** *Antimicrobial peptide (Cn-AMP2) from liquid endosperm of Cocos nucifera forms amyloid-like fibrillar structure*. ***J. Pept. Sci.*** 2016; **22**: 201-207.
22. Gaharwar, B., Gour, S., Kaushik, V., Kumar, V., Gupta, N., Hause, G., **Yadav J.K.** *Assessment of the effect of macromolecular crowding on aggregation behaviour of a model amyloidogenic peptide*. ***Protein Pept. Lett.,*** 2015, **22**: 87-93.
23. Schmidt, M., Rohou, A., Lasker, K., **Yadav, J.K.,** Schiene-Fischer, C., Fändrich, M., Grigorieff, N. *Peptide dimer structure in an Aβ(1-42) fibril visualized with cryo-EM*. ***Proc. Natl. Acad. Sci. USA.*** 2015, **112**: 11858-11863.
24. Kumar, S.T., Meinhardt, J., Fuchs, A.K., Aumüller, T., Leppert, J., Büchele, B., Knüpfer, U., Ramachandran, R., **Yadav, J.K.,** Prell, E., Morgado, I., Ohlenschläger, O., Horn, U., Simmet, T., Görlach, M., Fändrich, M. *Structure and biomedical applications of amyloid oligomer nanoparticles*. ***ACS Nano***, 2014, **8**:11042-11052.
25. Usmani, S.M., Zirafi, O., Müller, J.A., Sandi-Monroy, N.L., **Yadav, J.K.**, Meier, C., Weil, T., Roan, N.R., Greene, W.C., Walther, P., Nilsson, K.P., Hammarström, P., Wetzel, R., Pilcher, C.D., Gagsteiger, F., Fändrich, M., Kirchhoff, F., Münch, J. *Direct visualization of HIV-enhancing endogenous amyloid fibrils in human semen*. ***Nat. Commun***. 2014, **5**:3508.
26. Kapfo, W., Grace, S., Chauhan, J.B., **Yadav J.K.** *Effect of non-aqueous solvent on structural stability of a-amylase: a cost-effective prospective for protein stabilization*. ***Process Biochem***. 2013, **48**: 1025-1030.
27. Li, X., Zhang, X., Ladiwala, A.R., Du, D., **Yadav, J.K.**, Tessier, P., Wright, P., Kelly J., Buxbaum, J. *Mechanism of transthyretin inhibition of Aβ aggregation in vitro: insights into in vivo protection*. ***J. Neurosci***. 2013, **33**: 19423–19433.
28. Guna Sekhar, P.M., **Yadav, J.K.** *Preferential interaction of β-globulin from sesame seeds (Sesamum indicum L.) with cosolvents is accompanied by the protein structural reorganization*. ***Protein Pept. Lett.*** 2013, **20**: 510-520.
29. Haupt C, Leppert J, Rönicke R, Meinhardt J, **Yadav, J.K.**, Ramachandran R, Ohlenschläger O, Reymann KG, Görlach M, Fändrich M. *Structural basis of β-amyloid-dependent synaptic dysfunctions*. ***Angew. Chem. Int. Ed. Engl.*** 2012, **51**:1576-1579.
30. **Yadav, J.K.** *Macromolecular crowding enhances catalytic efficiency and stability of a-amylase*. ***ISRN Biotechnology***, 2013, Article ID 737805, 7 pages.
31. **Yadav, J.K.** *A differential behaviour of a-amylase, in terms of catalytic activity and thermal stability, in response to higher concentration* $CaCl_2$. ***Int. J. Biol. Macromol***. 2012, **51**:146-152.
32. **Yadav J.K.**, Prakash, V. *Stabilization of a-amylase, the key enzyme in carbohydrates properties alterations, at low pH*. ***Int. J. Food Prop***. 2011, **14**:1182-1196.
33. **Yadav J.K.**, Chandani N, P R Pande Prajakt, Chauhan J.B. *Counter effect of sucrose on ethanol-induced aggregation of protein*. ***Protein & Pept. Lett.*** 2010, **17**: 1542-1546.

34. **Yadav J.K.**, Prakash V. *Thermal stability of a-amylase in aqueous cosolvent systems*. ***J. Biosci.,*** 2009, **34**:377-387.

BOOK CHAPTERS

1. **Dr. Jay Kant Yadav**, Book Chapter: ***Management of Alzheimer's disease with Nutraceuticals***, *In-**Nutraceuticals in Brain Health and Beyond (ISBN: 978-0-12-820593-8)*** Edited by: Dr. Dilip Ghosh, Published by ***Academic Press***
2. Dr. Aparna Satapathy and **Dr. Jay Kant Yadav**, Book Chapter: ***Innovative protein and enzyme engineering processes for the production of biomass hydrolyzing enzymes***, In- ***BBB Circular Bioeconomy: Technologies for Biofuels and Biochemicals*** (*ISBN No. Paperback:9780323898553 eBook: 9780323910460)* Edited by: Sunita Varjani, Ashok Pandey, Thallada Bhaskar, S.Venkata Mohan, Daniel C.W. Tsang, Published by **Elsevier**
3. **Dr. Jay Kant Yadav**, Book Chapter: ***Mitigation of inflammation in COVID-19 infection through nutritional management***, In- Health ***Hygine, Sanitation and Environment in Pandemic Time (ISBN No. 978-93-5457-589-1***, Edited by S R M Pasupuleti, Published by **Immortal Publication**, India

ARTICLES PUBLISHED IN MAGEZINES

Article title: ***Discovery of a fundamental element responsible for transmission of HIV***. ***Vigyan Pragati (ISSN No. 0042-6075)***, December 2015, Page No. 43. (Originally published in Hindi)

PAPER PRESENTED IN SYMPOSIA & CONFERENCES

1. Paper presented (Title: ***Molecular basis of formation of synaptotoxic β-amyloid oligomers***) in *82nd Annual meeting of the Society of Biological Chemists (India) & International Conference on Genomes: Mechanism and Function*, at University of Hyderabad, Hyderabad, INDIA.
   December 2013
2. Paper presented (Title: ***Role of Amyloids in HIV transmission***) in *11th BRSI Convention & International Conference on Emerging Trends in Biotechnology*, at JNU New Delhi, INDIA.
   November 2014
3. Paper presented (Title: ***Effect of N-terminal modifications on Aβ amyloid formation***) in *National Symposium on Biophysics and Golden Jubilee meeting of the Indian Biophysical Society* at Jamia Millia Islamia, New Delhi, INDIA.
   February 2015
4. Paper presented (Title: ***Stabilization of an antimicrobial peptide by exploring their intrinsic biophysical properties***) in *BITS Conference on Gene and Genome Regulation (BCGGR) at Birla Institute of Technologies and Sciences (BITS)*, Pilani, Rajasthan, INDIA.
   February 2016
5. Paper presented (Title: ***Role of chemical modifications in Alzheimer's disease***) in *National Symposium on Emerging Trends in Applied Chemical Sciences (ETACS)* at School of Chemical and Pharmaceutical Sciences, Central University of Rajasthan, Ajmer, INDIA
   March 2016
6. Paper presented (Title: ***Role of semen derived amyloids on sperm viability and motility: Relevance in male infertility***) in *International Conference on Reproductive Health with Emphasis on Strategies for Infertility, Assisted Reproduction and Family Planning & 22nd Annual Meeting of the Indian Society for the Study of Reproduction and Fertility* at AIIMS New Delhi. INDIA.
   January 2017

7. Paper presented (Title: ***Amyloids of anti-microbial peptides: Amyloids of Antimicrobial Peptides: A New Paradigm towards Development of Peptide-based Antimicrobials)*** *in the International Conference of Intrinsically Disordered Proteins, IISER, Mohali, India*

December 2017

8. Paper presented (Title: ***Amyloidogenic propensity of selected anti-microbial peptides***) *in 2nd Ulm meeting on 'Biophysics of Amyloids', Ulm University, Ulm, Germany.*

February 2018

9. Paper presented (Title: ***Amyloids of anti-microbial peptides: A new paradigm of functional amyloids***) *in Chemistry Department of Technical University of Munich (TUM), Munich Germany. SFB-* 1035.

May 2018

10. Invited lecture delivered (Title: ***Designing Future Food for Age-Related Human Diseases: With Special Emphasis on Alzheimer's Diseases***) *in 19th World Congress of IUFoST-2018, CIDCO Centre, Mumbai, India*

October 2018

11. Paper presented (Title: ***Amyloid-like Structures in Surgically Removed Human Cataract Eye Lenses***) *in 3rd Ulm meeting on 'Biophysics of Amyloids', Ulm University, Ulm, Germany.*

February 2019

12. Invited lecture delivered (Title: ***Nutritional considerations for healthy aging with special reference to the patients of Alzheimer's disease***) in Food Science Frontier Research Forum, International University Consortium of Food Science and Nutrition, during 17th -19th October 2019, Hangzhou, China.

October 2019

13. Invited lecture delivered (Title: ***Interfering Amyloid β (Aβ) peptide aggregation to develop therapeutic strategies for the treatment of Alzheimer's disease***) in "Neurocon" held at M.M. University, Mullana-Ambala, Haryana, India, (15-18 November 2019)

November 2019

14. Invited lecture delivered (Title: ***Amyloids of Antimicrobial Peptides: A new paradigm for antimicrobial therapy***) in "The Annual BSBE Winter Meeting 2019 "Amyloids: In Diseases to Promising Materials" held at IIT Kanpur, India, (06th – 7th December 2019).

December , 2019

15. Delivered an invited lecture in the webinar title: "Development of a peptide-based, rapid, affordable, point-of-care, diagnostic test for COVID-19" at Singapore- Massachusetts Institute of Technology (MIT) Alliance for Research and Technology (SMART) during the DiSTAP Seminar series on 11th June 2020

June, 2020

16. Delivered an invited lecture in the webinar title: (Water, Energy and Environment: Challenges & Solutions (WEE-2021) title: "Healthy Aging: Role of Nutrition in Moderating the Molecular Events leading to Alzheimer's disease" Organized by Department of Chemistry, Institute of Science, GITAM University, Visakhapatnam, India

January, 2021

17. Delivered an invited lecture in the GYAN GANGA PROGRAMME, conducted by Commissionerate of College Education Rajasthan, and the Department of Botany, Samrat Prithvi Raj Chauhan Government College, Ajmer, Rajasthan during 1st to 6th February 2021.

February 2021

18. Delivered an invited lecture on the topic "Trehalose inhibits the heat-

induced formation of the amyloid-like structure of soluble proteins isolated from human cataract lens" in the International Conference on Biotechnology for Sustainable Agriculture, Environment and Health (BSAEH 2021) during 4th to 8th March 2021.

March 2021

19. Delivered a plenary lecture in the 1st ECSS Symposium Strengthening Global Food Science and Technology on the topic "The anticipated nutritional and health risks associated with protein-rich foods: with special reference to milk and soy proteins" held during 15-16 September 2021.

September 2021

20. Delivered a lecture (Title: Integration of dairy based protein nanostructures for the management of Alzheimer's disease) for the Food Sustainability Idea/Concept Development Competition in the 21st World Congress of Food Science and Technology at Singapore, and won the CHAMPION award. **November 2022**

SYPOSIUM/ CONFERENCES ORGANIZED

1. Acted as Organising Secretory of the National Symposium on ***Good Laboratory Practices & Safety Guidelines (GLPSG-2015)*** at Central University of Rajasthan, Ajmer, INDIA.

July 2015

2. Member of organising committee of Rajasthan Science Congress at Central University of Rajasthan

October 2018

3. Member of organising committee of 19th World Congress of IUFoST2018, CIDCO Centre, Mumbai, India

October 2018

ADMINISTRATIVE RESPONSIBILITIES

1. Head, Department of Biotechnology, Central University of Rajasthan 31st October 2022- till date
2. Core Committee Member-NAAC-SSR, 2022
3. Member, Plantation and Landscape Committee, Central University of Rajasthan
4. Innovation Cell, 2014-2017
5.

PROFESSIONAL COURSES ATTENDED

1. Attended one day Orientation Workshop on "***Best Teaching Practices***" at Central University of Rajasthan, Ajmer, Rajasthan, INDIA.

4th October 2013

2. Attended the UGC-Sponsored Orientation Programme in Biotechnology, offered by JNV University, Jodhpur, Rajasthan, INDIA.

16th December 2013 to 11th January 2014

3. Attended UGC- Sponsored Refreshers Course in Life Sciences at UGC-Human Resource Development Centre, MDS University, Ajmer, Rajasthan, INDIA.

20th July to 9th August 2016

RESEARCH

1. **Title of the project**: Assessment of amyloidogenic propensities of HIV

PROJECTS	infection enhancing peptide PAP(248-286) under relevant physiological conditions (SB/YS/LS-130/2013) (INR. 19.00/- Lakh). **Funding agency:** Science and Engineering Research Board (An autonomous body of Department of Science and Technology) (SERB-DST), Under Fast Track Young Scientist Scheme, Govt. of India, New Delhi, India. **December 2013- December 2016** 2. **Title of the project**: How lysophospholipids (lysophosphatidic acid and sphingosine phosphate) metabolic pathways regulate placental development during pregnancy maintenance (INR. 50.00/- Lakh) **Funding agency:** Department of Biotechnology, Ministry of Science and Technology Government of India, New Delhi, India. 3. **Title of the project**: Targeting crystallin-amyloids for the development of non-invasive therapeutic strategy for treatment of age-related cataract (INR. ≈30.00/- Lakh) **Funding agency:** Science and Engineering Research Board (An autonomous body of Department of Science and Technology) (SERB-DST), Govt. of India, New Delhi, India. **My role in the project:** Principal Investigator. **December 2018- 2021**
MEMBERSHIP OF PROFESSIONAL BODIES	➢ Life member, Society of Biological Chemists, India ➢ Life member, Biotech Research Society, India ➢ Life member, Biophysical Society of India, India