Dr. Satpal Singh Badsara, PhD

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203-MFOS Laboratory, Department of Chemistry
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https://sites.google.com/view/mfoslaboratory/home?authuser=0

Personal Information

Date of Birth: June 28, 1983

Nationality Indian

Professional and Academic Journey

Assistant Professor: 2014-Continue

DST INSPIRE Faculty: 2015- 2020 (Availed Research Grant)

Post-Doctoral Researcher: Oct. 2013 to Dec.-2014 with Professor Chin-Fa Lee

National Chung Hsing University, Taiwan ROC.

Doctor of Philosophy (Ph. D.): 08/2013 with Professor D. Basavaiah

University of Hyderabad, Hyderabad.

Master of Science (M. Sc.): 2006; *Banaras Hindu University (B. H. U.)*

Awards/Achievements

1. **ISCB Young Scientist Award-2019** in **Chemical Sciences** by Indian Society of Chemists and Biologists, India.
2. **DST INSPIRE Faculty Award** by Indian National Science Academy (Department of Science & Technology, Government of India in 2015).
3. **Core Research Grant** by SERB, Department of Science & Technology, Government of India in 2020.
4. **Young Scientist Scheme** by SERB, Department of Science & Technology, Government of India in 2015.
5. Awarded **NSC Post-Doctoral Fellowship** by NSC Taiwan.
6. Qualified CSIR-JRF (through national eligibility test) and also qualified for SPM Examination.

7. Qualified in All India Graduate Aptitude Test in Engineering (GATE) in Chemistry (All India Rank 71).
8. Awarded Junior Research Fellowship (JRF) & Senior Research Fellowship (SRF) by CSIR New Delhi.
9. Selected for **State Talent Search Examination** (1995-96) organized by Rajasthan State Council of Educational Research & Training, Udaipur.

Research Interest

- Electro-Organic Synthesis
- Transition Metal-Free Approaches for Organic Synthesis
- Baylis-Hillman Chemistry

R & D Projects as Principal Investigator

S.N.	Title	Name of funding agency	Amount (INR)	Duration	Status
1.	"Development of Electrochemical Strategies for Carbon-Chalcogen Bond Formations"	SERB-INDIA (CRG)	36,56,268	2020-2023	Completed
2.	Development of Novel Metal Free Organic Transformations for the Synthesis of Oxindole Containing Heterocycles and Evaluation of Their Biological Activities	CSIR-INDIA (EMR)	35,00,000	2018-2021	Completed
3.	Development of Novel Metal Free Organic Transformations: Transition Metal Catalysis versus Peroxide Catalysis in sp3 C-H Borylation	DST-INDIA (INSPIRE Faculty)	35,00,000	2015-2020	Completed
4.	New Dimension towards C-H Functionalization: Development of Novel Metal Free C-H Silylation Reactions	SERB-INDIA (YSS)	27,34,000	2016-2019	Completed
5	Application of Iron Catalysis in the Development of C-H Borylation Reactions and Diastereoselective Synthesis of C-Aryl and C-Vinyl Glycosides	UGC-INDIA (Start-up)	6,00,000	2015-2017	Completed

Membership of Academies Societies

1. Member (**MRSC**) of **The Royal Society of Chemistry,** Cambridge, CB4 0WF, UK (**MRSC-666954**)
2. Life Member of Chemical Research Society of India **(No-LM2834).**
3. Life Member of Indian Society of Chemists and Biologists, India **(No.-LF/820/2017**).
4. Life Member Indian Science Congress Association (**No. L40730**)

Administrative, Related Experiences

- **Convener**, International Conference on "Frontiers at the Chemistry - Allied Sciences Interface (FCASI 2023; April 20-21, 2023).
- **Joint Director** (Research): Centre for Converging Technologies, University of Rajasthan (Sep 2021-Feb 2023).
- **Vice-Principal:** University Maharaja College, University of Rajasthan (Sep 2019-Sep 2021).
- **Coordinator (Chemistry)**: Centre for Converging Technologies, University of Rajasthan (Nov. 2017-Sep 2021).
- **Member,** Local Advisory Committee (LAC) DST-SAIF Programme, University of Rajasthan.
- **Member, UGC-CAS** Advisory Committee - Department of Chemistry, University of Rajasthan
- **Organizing Secretary**, International Conference on "Frontiers at the Chemistry - Allied Sciences Interface (e-FCASI 2020; June 30, 2021).
- **Organizing Secretary**, International Conference on "Frontiers at the Chemistry - Allied Sciences Interface (FCASI-2018; December 21-22, 2018).
- **Joint-Organizing Secretary**, International Conference on "Frontiers at the Chemistry - Allied Sciences Interface (FCASI-2017; July 22-23, 2017).
- **Coordinator-** International Conference on "Frontiers at the Chemistry - Allied Sciences Interface (FCASI-2016; April 25-26, 2016).

Teaching

Courses Taught (UG Level): (i) CH-102 (Paper -II): Organic Chemistry (ii) CH-301(Paper -II): Inorganic Chemistry (iii) CH-302 (Paper -II): Organic Chemistry (iv) Chemistry Lab

Courses Taught at PG Level: (i) CHE-902: Organic Synthesis-I (ii) CHE-X02: Organic Synthesis-II (iii) CHE A11: Elective Lab

Thesis / Project Supervision

Ph. D. Awarded: 4

(i) Dr. Rekha Bai
(ii) Dr. Pratibha Singh
(iii) Dr. Rakhee Choudhary
(iv) Dr. Kamlesh Kumar Dabaria

Dissertation (M. Sc. Degree) Awarded: 13

(i) Ms. Anuja Rathi (2016)	Amity University-Rajasthan
(ii) Ms. Santosh Gurjar (2017)	Jayoti Vidyapeeth Women's University, Jaipur
(iii) Ms. Hemkiram Mangawa (2017)	Jayoti Vidyapeeth Women's University, Jaipur
(iv) Ms. Akanksha Choudhary (2018)	University of Rajasthan, Jaipur
(v) Ms. Kumari Sanju (2018)	University of Rajasthan, Jaipur
(vi) Mr. Deepak Sharma (2018)	University of Rajasthan, Jaipur
(vii) Mr. Kamlesh Saini (2019)	University of Rajasthan, Jaipur
(viii) Ms. Sristy Gupta (2019)	University of Rajasthan, Jaipur
(ix) Ms. Shreya Sharma (2019)	NIT Jalandhar
(x) Ms. Priya Poonia (2019)	NIT Jalandhar
(xi) Ms. Krishna Atal (2020)	University of Rajasthan, Jaipur
(xii) Mr. Nandesh Baghoriya (2021)	University of Rajasthan, Jaipur
(xiii) Ms. Akanksha Agrawal (2022)	University of Rajasthan, Jaipur
(xiv) Ms. Ms. Alisha Chhabra (2023)	University of Rajasthan, Jaipur

Publications:

Total Number = 43	Total Impact Factor = 260^{+}	Total Citation: 2197

(Source: https://scholar.google.com/citations?user=s_aJc30AAAAJ&hl=en & 2022 Journal Citation Reports, Thomson Reuters)

From University of Rajasthan (Total No: 27):

43. *Electrochemical selective divergent C-H chalcogenocyanation of N-heterocyclic scaffolds*

K. Ucheniya‡, P. Jat‡, A. Chouhan, L. Yadav, **S. S. Badsara**, *Org. Biomol. Chem.*, **2024**, *https://doi.org/10.1039/D4OB00448E*

‡ *This authors contributed equally and are joint first authors.*

42. *Cs_2CO_3-Mediated synthetic strategy for iprobenfos derivatives via thiophilic addition of H-phosphites on in situ generated thioaldehydes*

C-F. Lee, R. Bai, K-C. Liu, Z-W. Chen, A. Gurjar, **S. S. Badsara,** *Arkivoc* **2023** *(ii) 202312055*

41. *Electrochemical site-selective direct C-H sulfenylation and selenylation of a chromone-fused-indolizine (CFI) skeleton*

P. K. Jat, L. Yadav, A. Chouhan, K. Ucheniya, **S. S. Badsara**, *Chem. Commun.*, **2023**, 59, 5415-5418

40. *Electrochemical direct C-H mono and bis-chalcogenation of indolizine frameworks under oxidant-free conditions*

A. Chouhan, K. Ucheniya, L. Yadav, P. Jat, A. Gurjar, **S. S. Badsara**, *Org. Biomol. Chem.*, **2023**, *21*, 7643-7653.

39. *Electrochemical, regioselective, and stereoselective synthesis of allylic thioethers and selenoethers under transition-metal-free and oxidant-free conditions*

K. Ucheniya, A. Chouhan, L. Yadav, P. K. Jat, **S. S. Badsara**, *J. Org. Chem.*, **2023**, *88*, 6096.

38. *Palladium-catalyzed synthesis of 2,3-disubstituted indoles via arylation of ortho-alkynylanilines with arylsiloxanes*

Y-T. Hsia, Y-L. Lu, R. Bai, **S. S. Badsara,** C-F. Lee, *Org. Biomol. Chem.*, **2023**, *21*, 7602-7610.

37. *Base-mediated chalcogenoaminative annulation of 2-alkynylanilines for direct access to 3-sulfenyl/selenyl-1H-indoles*

W-C. Chen, R. Bai, W-L. Cheng, C-Y. Peng, D. M. Reddy, **S. S. Badsara**, C-F. Lee, *Org. Biomol. Chem.*, **2023**, *21*, 3002.

36. *Electrochemical bis-arylation of carbonyls: A direct synthetic strategy for bis(Indolyl)methane*

P. K. Jat, K. K. Dabaria, R. Bai, L. Yadav, **S. S. Badsara**, *J. Org. Chem.*, **2022**, *87*, 12975.

35. *Electrochemical Cascade Thia-Michael and Thioacetalization of Cyclic Enones*

L. Yadav, Maneesha, K. K. Dabaria, P. K. Jat, A. Gurjar, **S. S. Badsara**, *Synthesis*, **2022**, *54*, 5479.

34. *Electricity Promoted Chemoselective Functionalization of Alkenes: Diastereoselective Synthesis of Oxindole Containing Thioethers and Selenoethers*

K. K. Dabaria, R. Bai, **S. S. Badsara**, *ChemistrySelect*, **2022**, *7*, *e202202992*.

33. *Cesium Carbonate-Catalyzed Synthesis of Phosphorothioates via S-Phosphination of Thioketones*

Z-W. Chen, P. Annamalai, R. Bai, Y. Hu, **S. S. Badsara**, K-W. Huang, C-Fa Lee, *Chem. Commun.*, **2022**, *58*, 11001.

32. *Atom-Economical, Catalyst-Free Hydrosulfonation of Densely Functionalized Alkenes: Access to Oxindole Containing Sulfones*

K. K. Dabaria, R. Bai, P. K. Jat, **S. S. Badsara**, *New J. Chem.*, **2022**, *46*, 12905

31. *Blue LED-Mediated Syntheses of Arylazo Phosphine Oxides and Phosphonates via N-P Bond Formation*

B-R. Shen, P. Annamalai, R. Bai, **S. S. Badsara**, C-F. Lee, *Org. Lett*., **2022**, *24*, 5988.

30. *Room temperature, metal-free, regio-selective arylselenation of anilines using diselenides as selenium source*

R. Bai, K. K. Dabaria, **S. S. Badsara**, *Synthesis*, **2022**, *54*, 2487.

29.*The journey of C-S bond formations from metal to electro-catalysis*

Z-W. Chen, R. Bai, P. Annamalai, **S. S. Badsara**, Chin-Fa Lee, *New J. Chem.*, **2022**, *46*, 15 (Perspective).

28. *Carbon-Sulfur Bond Constructions: From Transition-Metal Catalysis to Sustainable Catalysis*

P. Annamalai, K-C. Liu, **S. S. Badsara**, C.-F. Lee, *Chem. Rec.*, **2021**, *21*, 3674 (Personal Account).

27. *Catalyst-Free Synthesis of Phenanthridines via Electrochemical Coupling of 2-Isocyanobiphenyls and Amines*

B. K. Malviya, K. Singh, P. Jaiswal, M. Karnatak, V. P. Verma, **S. S. Badsara**, S. Sharma, *New. J. Chem.*, **2021**, *45*, 6367.

26. *Electrochemical Synthesis of Carbodiimides via Metal/Oxidant-Free Oxidative Cross-Coupling of Amines and Isocyanides*

B. K. Malviya, P. K. Jaiswal, V. P. Verma, **S. S. Badsara**, S. Sharma, *Org. Lett*., **2020**, *22*, 2323.

25. *Highly Atom-Economic, Catalyst-free, and Solvent-free Phosphorylation of Chalcogenides*

R. Choudhary, P. Singh, R. Bai, M. C. Sharma, **S. S. Badsara**, *Org. Biomol. Chem.*, **2019**, *17*, 9757.

24. *Substrate Switched Dual Functionalization of Alkenes: Catalyst-free Synthetic Route for β-hydroxy and β-keto Thioethers*

S. S. Badsara, P. Singh, R. Choudhary, R. Bai, M. C. Sharma, *New. J. Chem.*, **2019**, 43, 11045.

23. *Cationic Pd(II) catalyzed regioselective intramolecular hydroarylation for the efficient synthesis of 4-aryl-2-quinolones*

K. Singh, B. K. Malviya, V. P. Verma, **S. S. Badsara**, V. K. Bhardwaj, S. Sharma, *Tetrahedron*, **2019**, *75*, 2506.

22. *Engineered C-S bond construction*

C-F. Lee, R. S. Basha, **S. S. Badsara**, *Top. Curr. Chem.*, **2018**, *376*, 25. (Springer International Publishing AG, part of Springer Nature 2018).

21. *Open flask, clean and practical protocol for diastereoselective syntheses of oxindole containing phosphinoyl compounds under catalyst-free and solvent-free conditions*

R. Bai, R. Choudhary, P. Singh R. Thakuria, M. C. Sharma, **S. S. Badsara**, *ChemistrySelect*, **2018**, 3, 3221.

20. *Room temperature, open flask C-P bond formation on water under catalyst-free conditions*

R. Choudhary, R. Bai, P. Singh, M. C. Sharma, **S. S. Badsara**, *SynOpen*, **2018**, *2*, 213.

19. *Regio- and stereoselective syntheses of allylic thioethers under metal free conditions*

P. Singh, R. Bai, R. Choudhary, M. C. Sharma, **S. S. Badsara**, *RSC Adv.*, **2017**, *7*, 30594.

18. *Metal-free, regio- and stereoselective S-methylation/phenylation of allyl halides using sulfoxides as sulfenylating agent*

R. Choudhary, R. Bai, P. Singh, M. C. Sharma, **S. S. Badsara**, *Tetrahedron*, **2017**, 73, 4323.

17. *Peracetic Acid Mediated sp2 C-H Selenation of Arenes*

P-A. Hsieh, **S. S. Badsara**, C.-H Tsai, D. M. Reddy, C-F. Lee, *Synlett*, **2016**, *27*, 1557.

From University of Hyderabad and National Chung Hsing University

(‡= Equal Contribution)

16. *CuCl/TBHP catalyzed synthesis of amides from aldehydes and amines in water*

S-Y. Lu, **S. S. Badsara,** Y-C Wu, D. M. Reddy, C.-F Lee, *Tetrahedron Lett*, **2016**, *57*, 633.

15. *$K_2S_2O_8/I_2$ Promoted Syntheses of α-Thio-β-dicarbonyl Compounds via Oxidative C-S Coupling Reactions Under Transition Metal-Free and Solvent-Free Conditions*

Y.-W. Liu ‡, **S. S. Badsara**,‡ Y.-C. Liu, C.-F. Lee, *RSC Adv.*, **2015,** *5***,** 44299.

14. *Microwave-assisted copper-catalyzed cross-coupling reaction of thiols with aryl iodides in water*

Y-A. Chen,‡ **S. S. Badsara**,‡ W-T. Tsai, C-F. Lee, *Synthesis* **2015**; 47, 181.

13. *Formal synthesis of a disaccharide repeating unit (IdoA–GlcN) of heparin and heparan sulfate*

R. C. Sawant, Y-J Liao, Y-J. Lin, **S. S. Badsara**, S-Y Luo, *RSC Adv.*, **2015**, *5*, 19027.

12. *Transition-Metal-Catalyzed C-S Bond Coupling Reaction*

C-F. Lee, Y-C. Liu, **S. S. Badsara**, *Chem. Asian J.* **2014**, *9*, 706 (Focus Review).

11. *Metal-free cross-coupling reaction of aldehydes with disulfides by using DTBP as an oxidant under solvent-free conditions*

J-W. Zeng, Y-C. Liu, P-A. Hsieh, Y-T. Huang, C-L. Yi, **S. S. Badsara**, C-F. Lee, *Green Chem.*, **2014**, *16*, 2644.

10. *Syntheses of selenoesters through C-H selenationof aldehydes with diselenides under metal-free andsolvent-free conditions*

J-C. Liou,‡ **S. S. Badsara**,‡ Y-T. Huang, C-F Lee, *RSC Adv.*, **2014**, *4*, 41237**.**

9. *Metal-free sp3 C-H functionalization: a novel approach for the syntheses of selenide ethers and thioesters from methyl arenes*

S. S. Badsara, Y-C. Liu, P-A. Hsieh, J-W. Zeng, S-Y. Lu, Y-W. Liu, C-F. Lee, *Chem. Commun.*, **2014**, *50*, 11374**.**

8. *Copper-catalyzed cross-coupling reaction of thiols with aryl iodides under ligand-free conditions*

Y-T. Huang, W-T. Tsai, **S. S.Badsara**, C-C. Chan,C-F. Lee, *J. Chin. Chem. Soc.* **2014**, *61*, 967.

7. *An unusual Wittig reaction with sugar derivatives: exclusive formation of a 4-deoxy analogue of α-galactosyl ceramide*

R. C. Sawant, Y-H. Lih, S-A. Yang, C-H. Yeh, H-J. Tai, C-L. Huang, H-S. Lin, **S. S. Badsara**, S-Y.Luo, *RSC Adv.***, 2014**, *4*, 26524.

6. *Synthesis of ganglioside Hp-s1*

W-S. Chen, R. C. Sawant, S-A. Yang, Y-J. Liao, J-W. Liao, **S. S. Badsara**, S-Y. Luo, *RSC Adv.*, **2014**, *4*, 47752.

5. *Transition-metal-free syntheses of pyridine-containing thioethers through two-fold C-S bond formation*

S. S. Badsara, C. Chan, C-F. Lee, *Asian J. Org. Chem*. **2014**, *3*, 1197.

4. *Ketones as electrophiles in two component Baylis–Hillman reaction: a facile one-pot synthesis of substituted indolizines*

D. Basavaiah, G. Veeraraghavaiah, ***S. S. Badsara,*** *Org. Biomol. Chem.*, **2014**, *12*, 1551**.**

3. *Baylis-Hillman carbonates in organic synthesis: A convenient one-pot strategy for nitrone-spiro-oxindoles frameworks*

D. Basavaiah, ***S. S. Badsara***, G. Veeraraghavaiah, *Tetrahedron* **2013**, *69*, 7995.

2. *Baylis-Hillman bromides as a source of 1,3-dipoles: sterically directed synthesis of oxindole-fused spirooxirane and spirodihydrofuran frameworks*

D. Basavaiah, ***S. S. Badsara***, B. C. Sahu, *Chem Eur. J.* **2013**, *19*, 2961.

1. *Recent contributions from the Baylis-Hillman reaction to organic chemistry*

D. Basavaiah, B. S. Reddy, **S. S. Badsara,** *Chem. Rev.*, **2010**, *110*, 5447.

Invited Talks

18. *"Electro-Organic Synthesis: Green and Sustainable Approach for Forging New Bonds"* at Indo-French Conference "Fostering Catalysis for Societal Benefit (FCSB-2024)", Organized by School of Chemistry, University of Hyderabad, Hyderabad during January 15-17, 2024.

17. *"Electrochemical Synthetic Approaches for Carbon -Carbon and Carbon -Chalcogen Bond Formations: Direct Functionalization of Biologically Important Scaffolds* at International Conference on "Science and Technology for Innovative and Sustainable Development" (STISD-2023), Organized by Department of Chemistry, Mizorum University, Aizawl, Mizoram during June 28-30, 2023.

16. *"Electrochemical Synthesis of Thioethers, Selenoethers and Bis(Indolyl)methanes""* at RSC-*CFOS-2022*, Organized by Department of Chemistry, Indian Institute of Technology Roorkee during December 01-04, 2022.

15. *"Electroorganic Synthesis of Thioethers, Selenoethers and Bis(Indolyl)methanes"* at 27th ISCB International Conference (ISCBC-2023) Jointly organized by Indian Society of Chemists & Biologists (ISCB) and Department of Chemistry, Birla Institute of Technology, Mesra , Ranchi, India during November, 16-19, 2022.

14. *"Electricity Promoted Synthesis of Thioethers, Selenoethers and Bis(Indolyl)methanes"* at International Conference "Green Technology: Issues and Challenges" during September 22-24, 2022 organized by Centre for International Cooperation, Ch. Charan Singh University, Meerut & Indian Science Congress Association (ISCA) Haridwar Chapter.

13. *"Greener and Sustainable Protocols for C/P-Chalcogenides Bond Formations'* at Professor Ram Chand Paul National Symposium on Emerging Chemical Innovations for Swachh, Swasth and

Sarvatra Bharat", during Feb 27-28, 2020 organized by Department of Chemistry, Panjab University, Chandigarh, India.

12. *"Catalyst-Free Synthesis of Thioethers, Phosphinothioates and Phosphoroselenoates" at* 10th conference of Haridwar Chapter of The Indian Science Congress Association on Science and Technology: Rural Development, organized by Department of Chemistry and Department of Physics, Gurukula Kangri Universty, Haridwar, Uttarakhand, India during 15-16th February, 2020.

11. *"Sustainable Methods for C-S, C-P and P-Chalcogenides Bond Formations"* at International Conference on Emerging Trends in Chemical Sciences (ETCS-2020) during February 13-15, 2020 organized by Department of Chemistry, Guwahati University, Guwahati, Assam, India.

10. *"Metal-Free Carbon-Sulfur and Phosphorus-Chalcogenides Bond Formations"* at 26th ISCB International Conference (ISCBC-2020) Jointly organized with Nirma Institute of Pharmacy International Conference (NIPiCON) during 22nd - 24th January, 2020 at Nirma University, Ahmedabad, India.

9. *"Metal-Free C-S and C-P Bond Formations: Recent Developments From Our Laboratory" at 7th* Asian Network for Natural & Unnatural Materials (ANNUM VII) International Conference during September, 27-29, 2019 organized by Gujarat University, Ahmedabad, India.

8. *"Open flask, catalyst-free synthesis of oxindole containing α-hydroxy phosphinoyl compounds*" at 25th ISCB International Conference (ISCBC-2019) "Trends in Chemical and Biological Sciences: Impact on Health and Environment" during January, 12-14, 2019 at Hotel Golden Tulip, Lucknow, India.

7. *"Open Flask, Catalyst-Free Practical Protocols for C-P Bond Formation" at* 9th National Conference of Haridwar Chapter "The Indian Science Congress Association" at G. B. Pant University of Agriculture & Technology, Pantnagar, Uttarakhand, India during October, 13-14, 2018.

6. *Metal Free Syntheses of Thioethers: Reactivity, Scope and Challenges"* at 24th ISCB International Conference (ISCBC-2018) "Frontier Research in Chemistry & Biology Interface" during January 11-13, 2018 at Manipal University Jaipur, India.

5. *"Peroxide catalysis in C-S coupling reactions: Reactivity, Scope and Challenges"* at *CFOS-2017,* Organized by Department of Chemistry, Indian Institute of Technology Roorkee during December 22-24, 2017.

4. *"Solvent switched regio- and stereoselective C-S coupling reactions"* at 8th National Conference of "The Indian Science Conference Association" (Haridwar Chapter) hosted by Kumaun University, Nainital during October 14-15, 2017.

3. *"Syntheses of Thioethers Under Metal Free Conditions: Reactivity, Scope and Challenges* at International Conference on Frontiers at the Chemistry and allied Sciences Interface (FCASI 2017) organized by Centre for advanced study, Department of Chemistry, University of Rajasthan during July 22-23, 2017.

2. *"Syntheses of Thio/Seleno Ethers and Esters Under Metal Free Conditions via C-H Functionalization"* at 23rd ISCB International Conference "Interface of Chemical Biology in Drug Research "organized by SRM University Chennai and ISCB during February 8-10, 2017.

1. "*Recent Advances in Oxidant Promoted C-H Functionalization*" at 7th National Conference of "The Indian Science Conference Association" (Haridwar Chapter) held at Gurukul Kangri Vishwavidyalya, Haridwar during November 20-22, 2016.

April 24, 2024

(Dr. Satpal Singh Badsara)