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EDUCATION

1978-1980 B.Sc. (Zoology, Botany, Chemistry) Lucknow University, Lucknow, India
1981-1983 M.Sc. (Organic Chemistry) Faizabad University, Faizabad, India
1986-1992 Ph.D. (Biochemistry) Central Drug Research Institute, Lucknow, India
Degree awarded by Agra University, Agra, India

ACADEMIC APPOINTMENTS

1983 -1986 **Junior Research Fellow**, Department of Biochemistry, Lucknow University, Lucknow, India
1986 -1988 **Junior Research Fellow**, Central Drug Research Institute, Department of Biochemistry, Lucknow, India
1988 -1991 **Senior Research Fellow**, Central Drug Research Institute, Department of Biochemistry, Lucknow, India
1992 -1996 **Research Associate**, Central Drug Research Institute, Department of Biochemistry, Lucknow, India
1996 -1998 **Assistant Professor (tenured)**, C.C.S.University, Meerut, India, Department of Organic Chemistry, Lucknow, India
1998 - 2000 **Research Associate**, University of Arkansas for Medical Science, Department of Internal Medicine, Division of Gastroenterology, Little Rock, AR
2000 – 2002 **Instructor**, University of Arkansas for Medical Sciences, Department of Internal Medicine, Division of Gastroenterology, Little Rock, AR
2002 - 2013 **Assistant Professor** in the Research Track, University of Arkansas for Medical Sciences, Department of Pharmacology and Toxicology, Little Rock, AR
2013 - 2017 **Associate Professor**, University of Arkansas for Medical Sciences, Department of Pharmacology and Toxicology, Little Rock, AR
2017-Present **Associate Professor**, Texas Tech Health sciences center, Department of Internal Medicine, Lubbock, TX

ADDITIONAL TRAINING

Approaching and using the ultrasound diagnostic of rodents, hands-on course using VisualSonics Vevo 770, October 2007 in Little Rock, AR
National Institute on Aging (NIA) Grants Technical Assistance Workshop (TAW), November 2012 in San Diego, CA

6th Annual Isotope Tracers in Metabolic Research: Principles and Practice of Kinetic Analysis, March 2013 in Little Rock, AR

RESEARCH SUPPORT

Ongoing Research Support

DoD W81XWH-18-1-0534 **(Awasthi, PI; Singh, Co-I**) 8/15/18 - 8/14/21
Prevention of Breast Cancer by Haploinsufficiency of RALBP1
Major goals: The proposed studies will determine for the first time if Rlip depletion strategy can be used in breast cancer prevention, and to determine how Rlip regulates the expression of key oncogenes and tumor suppressors.

Role: Co-Investigator

School of Medicine Research Seed Grant Program TTUHSC (Alan Peiris, PI; Singh, Co-I) 2018-2020

Treating Vitamin D Insufficiency in Community Dwelling Elderly to Improve Arterial Stiffness
Major goals: Improving outcomes is replacing Vitamin D early and our study population excludes subjects with established cardiovascular disease.

Role: Co-Investigator

Completed Research Support

NIH/NIGMS P20 GM109005 **(Singh, PI; Hauer-Jensen, PD**) 5/1/17- 5/30/18
Attenuating doxorubicin cardiotoxicity with sulforaphane in breast cancer patients
Major goals: The proposed studies will determine for the first time if SFN can be used safely as neo-adjuvant in breast cancer patients, and to determine how SFN may enhance DOX's chemotherapeutic actions while simultaneously reducing cardiotoxic side effects.
Role: **Principal Investigator**

AHA 15GRNT25080225 **(Mayeux, PI/Singh Co-I)** 07/01/15 –06/30/17

Preclinial studies in a rat pup model of infant sepsis-induced cardiorenal syndrome

Major goals: To establish the temporal relationships between the development of microvascular failure, mitochondrial injury and oxidative stress in the kidney of rat pups made septic by cecal ligation and puncture.

Role: **Co-Investigator**

NIH/NIGMS P20 GM109005 **(Dr. Martin Hauer-Jensen, Program Director /Singh, PI**) 10/1/15 - 9/30/16

Prevention of Doxorubicin Cardiomyopathy in Cancer Treatment
Major goals: The proposed studies will determine optimal dosing of Sulforaphane and Doxorubicin in a clinically relevant rat breast cancer model, and will elucidate novel mechanisms by which Sulforaphane differentiates between cardiac and cancer cells.
Role: **Principal Investigator**

AHA 14GRNT18890084 **(Singh, PI)** 01/01/14 –12/31/16

Mitochondrial-nuclear signaling for protection against doxorubicin cardiotoxicity
Major goals: To characterize the mechanism by which electrophiles protect heart from cardio-toxic agents.
Role: **Principal Investigator**

NIA/NIH R01 AG 032643 **(Singh, PI)** 09/01/09 –07/31/16
Causative role of lipid peroxidation products in obesity and aging
Major goals: To characterize the mechanism by which 4-hydroxynonenal triggers fat accumulation.

Role: **Principal Investigator**

1P30AG028718-01A2 (**Wei, Program Director /Singh, PI**) 12/01/11 - 12/31/12
National Institutes of Health
Modulation by 4-hydroxynonenal (4-HNE) of the phosphorylation status of acetyl-CoA carboxylase (ACC) as a potential determinant of ectopic fat levels in skeletal muscle
Major goals: To define the mechanism by which 4-hydroxynonenal triggers obesity.
Role: **Principal Investigator**

R01 AG 028088 (**Zimniak, PI/Singh Co-I**) 02/01/07 - 01/31/13
National Institutes of Health
Role of glutathione transferases in life span extension of *C. elegans*
Major goals: To define the mechanism by which 4-hydroxynonenal affects life span.
Role: **Co-Principal Investigator**

R01 ES 09140 (**Singh, PI /Zimniak, subcontract PI**) 08/01/98 – 07/31/06
National Institutes of Health
Toxicological relevance of human GST P1-1 polymorphism
Major goals: To characterize allelic forms of hGSTP1-1 in knock-in mice and in transfected cells.
Role: **Subcontract Investigator**

R01 AG 18845-01 (**Zimniak, PI**) 03/01/02 - 02/28/07
National Institutes of Health
Role of lipid peroxidation and 4hydroxynonenal in aging
Major goals: To create transgenic *Drosophila* lines with inducible and tissue-specific expression of mammalian GSTs, which may be able to conjugate 4-hydroxynonenal (4-HNE). The lines will be used to evaluate the effects of 4-HNE metabolism on biochemical markers of aging and on life span.
Role: **Co-Investigator**

R01 ES 07804-06 (**Zimniak, PI**) 08/01/01 - 07/31/06
National Institutes of Health
Glutathione transferases and oxidative stress toxicology.
Role: **Co-Investigator**

VA Merit Review (**Zimniak, PI**) 10/01/01 - 09/31/04
U.S. Dept of Veterans Affairs

Mechanisms of hepatic transport of organic anions
Role: **Co-Investigator**

Pending Grant Applications

1R0 National Institutes of Health (**Singh, PI**) 03/01/19 – 02/28/24
The use of sulforaphane to prevent cardiac toxicity from doxorubicin
Major goals: To explore the contribution of PGAM5 signaling in doxorubicin cardiotoxicity using genetically modified mice to interrupt the PGAM5 pathway and relying on gene chip technology to identify new therapeutics.
Role: **Principal Investigator**

AHA **(Singh, PI)** 01/01/19 –12/31/21
Sulforaphane as an Adjunct for Doxorubicin Chemotherapy
Major goals: To characterize the mechanism by which electrophiles protect heart from Doxorubicin.
Role: **Principal Investigator**

ORAL PRESENTATIONS (no complete records were kept, but some examples follow):

Catalytic mechanism of mGSTA4-4, an enzyme involved in the response to oxidative stress, Frontiers in Pharmacology and Therapeutics in 21st Century, December 1-4, 1999 in India

Membrane association of murine GSTA4-4, a glutathione transferase that acts on lipid peroxidation products, Society of Toxicology, March 17-21, 2002 in USA

Mutagenic effects of 4-HNE triacetate, a chemically protected form of the lipid peroxidation product 4-hydroxynonenal, as assayed in L5178Y/*Tk+/-* mouse lymphoma cells. Central Drug Research Institute, March 2005 in India

Modulation by 4-hydroxynonenal (4-HNE) of the phosphorylation status of acetyl-CoA carboxylase (ACC) as a determinant of ectopic fat levels in mouse skeletal muscle, Arkansas Claude Pepper Older Americans Independence Center, Univ. Arkansas for Medical Sciences, September, 2011 in Little Rock, AR

The lipid peroxidation product 4-hydroxynonenal as a modulator of fat accumulation and aging, National Institute on Aging (NIA) Grants Technical Assistance Workshop (TAW), November 13-14, 2012 in San Diego

Mitochondrial-nuclear signaling for protection against doxorubicin induced cardiotoxicity: Role of 4-HNE signaling, National Institute on Aging (NIA) Grants Technical Assistance Workshop (TAW), November 13-14, 2012 in San Diego

Mitochondrial-nuclear signaling for protection against doxorubicin cardiotoxicity, Center for Studies of Host Response to Cancer Therapy (COBRE) External Advisory Committee- Internal Advisory Committee (EAC-IAC) joint Meeting November 2015 at UAMS, Little Rock

Prevention of Doxorubicin Cardiomyopathy in Cancer Treatment, DRH lecture series, June 14, 2016 at UAMS, Little rock

Novel approach for protection against doxorubicin induced cardiotoxicity: Role of Sulforaphane signaling, At Texas Tech University Health Sciences Center, Lubbock, Texas on 10/24/2016

Prevention of Doxorubicin Cardiomyopathy in Cancer Treatment, Center for Studies of Host Response to Cancer Therapy (COBRE) External Advisory Committee- Internal Advisory Committee (EAC-IAC) joint Meeting November 2016 at UAMS, Little Rock

The lipid peroxidation product 4-hydroxynonenal as a modulator of fat accumulation and aging, Garrison Research Seminar Series in October, 2017 at TTUHS, Lubbock

ADMINISTRATIVE RESPONSIBILITIES

2012 – 2017: Member, CAVHS Animal protocol review committee
2013 – 2017: Director, Department Seminar Series, Dept. of Pharmacology and Toxicology, UAMS
2018-Present: Director of Basic Research, Hematology & Oncology, TTUHSC, Lubbock, TX

TEACHING EXPERIENCE

1996-1998 C.C.S. University, Meerut, India, organic and bio-organic chemistry (100 lecture hours)
1996-1998 C.C.S. University, Meerut, India, reactive oxygen species, parasitology (150 lecture hours)
1996-1998 C.C.S. University, Meerut, India, major metabolic pathways in helminth parasites (225 lecture hours)
1996-1998 C.C.S. University, Meerut, India, practical training courses for Strategies of antibody development against mycobacterium" in collaboration with National Institute of Immunology, New Delhi, India (150 lecture hours)
2011-2017: Department of Pharmacology and Toxicology, UAMS, C. elegans laboratory demonstrations, Experimental Pharmacology and Toxicology graduate Course (PCOL 5203) (16 lecture hours/ year)
2011- 2017: Department of Pharmacology and Toxicology, UAMS, basics of molecular biology, Molecular & Systems Toxicology Graduate Course (INTX 5123) (4 lecture hours/year)
2011- 2017: Reynolds Institute on Aging, UAMS, biology and genetics of aging, Basic Biology of Aging (PHYO 6073) (10 lecture hours/year)

HONORS AND AWARDS

1983: Master of Science in Biochemistry/chemistry, first position in college (highest GPA)
1983: Qualified National Education Test held separately by Council of Scientific and Industrial
1983: Research (CSIR), New Delhi, and Univ. Grant Commission (UGC), New Delhi
1985: Junior Research Fellowship, Univ. Grant Commission, New Delhi
1986: Junior Research Fellowship, Council of Scientific and Industrial Research, New Delhi
1988: Senior Research Fellowship, Council of Scientific and Industrial Research, New Delhi
2012: Travel Grant, National Institute on Aging (NIA) to attend Grants Technical Assistance Workshop (TAW) and 65th Annual Scientific Meeting, November 13-18, 2012 in San Diego

PROFESSIONAL SOCIETIES

Member of American Federation of Medical Research, USA
Member of Society of Toxicology, USA
Member of American Society for Biochemistry and Molecular Biology, USA
Member of Society of Biological Chemists, India
Member of American Heart Association, USA
Member of Gerontological Society of America, USA
Member of American Association for the Advancement of Science, USA
Member of American Association for Cancer Research, USA

Member of International 4-hydroxynonenal (HNE)-Club, USA

PUBLICATIONS

1. Seawright JW, Sridharan V, Landes RD, Cao M, **Singh S.P.**, Koturbash I, et al. Effects of low-dose oxygen ions and protons on cardiac function and structure in male C57BL/6J mice. *Life Sciences in Space Research*. (**2019)**;20:72-84.
2. Meda S, **Singh S.P.**, Palade PT, Tonk S, Awasthi S. Oxidative stress in intensive care unit patients: A review of glutathione linked metabolism and lipid peroxidation. *The Southwest Respiratory and Critical Care Chronicles*. (**2019)**;7:1-29.
3. Bose C, **Singh S.P.**, Igid H, Green WC, Singhal SS, Lee J, et al. Topical 2'-Hydroxyflavanone for Cutaneous Melanoma. *Cancers (Basel)*. (**2019**);11.
4. Bose, C., Awasthi, S., Sharma, R., Beneš, H., Hauer-Jensen, M., Boerma, M., and **Singh, S. P**. **(2018)** Sulforaphane potentiates anticancer effects of doxorubicin and attenuates its cardiotoxicity in a breast cancer model, *PloS one 13*, e0193918.
5. Awasthi, S., Tompkins, J., Singhal, J., Riggs, A. D., Yadav, S., Wu, X., **Singh, S. P**., Warden, C., Liu, Z., Wang, J., Slavin, T. P., Weitzel, J. N., Yuan, Y.-C., Awasthi, M., Srivastava, S. K., Awasthi, Y. C., and Singhal, S. S. **(2018)** Rlip depletion prevents spontaneous neoplasia in TP53 null mice, *Proceedings of the National Academy of Sciences*.
6. Sims, C. R., **Singh, S. P**., Mu, S., Gokden, N., Zakaria, D., Nguyen, T. C., and Mayeux, P. R. **(2017)** Rolipram Improves Outcome in a Rat Model of Infant Sepsis-Induced Cardiorenal Syndrome, *Frontiers in pharmacology 8*.
7. Marquis, B. J., Louks, H. P., Bose, C., Wolfe, R. R., and **Singh, S. P. (2017)** A New Derivatization Reagent for HPLC–MS Analysis of Biological Organic Acids, *Chromatographia 80*, 1723-1732.
8. Wang X, Ding Z, Yang F, Dai Y, Chen P, Theus S, **Singh SP**, Budhiraja M, Mehta JL. Modulation of Myocardial Injury and Collagen Deposition Following Ischemia/Reperfusion by Linagliptin, Liraglutide, and Both Together. Clin Sci (Lond). 2016.
9. Sridharan V, Thomas CJ, Cao M, Melnyk SB, Pavliv O, Joseph J, **Singh SP**, Sharma S, Moros EG, Boerma M. Effects of local irradiation combined with sunitinib on early remodeling, mitochondria, and oxidative stress in the rat heart. Radiother Oncol. 2016.
10. Boerma M, Sridharan V, Mao X-W, Nelson GA, Cheema AK, Koturbash I, Singh SP, Tackett AJ, Hauer-Jensen M. Effects of Ionizing Radiation on the Heart. Mutation Research/Reviews in Mutation Research. 2016.
11. Singhal SS, **Singh SP**, Singhal P, Horne D, Singhal J, Awasthi S. Antioxidant role of glutathione S-transferases: 4-Hydroxynonenal, a key molecule in stress-mediated signaling. Toxicol Appl Pharmacol. 2015;289(3):361-70.
12. Singh P, Sharma R, McElhanon K, Allen CD, Megyesi JK, Benes H, **Singh SP**. Sulforaphane protects the heart from doxorubicin-induced toxicity. Free Radic Biol Med. 2015;86:90-101.
13. Boerma M, Singh P, Sridharan V, Tripathi P, Sharma S, **Singh SP**. Effects of Local Heart Irradiation in a Glutathione S-Transferase Alpha 4-Null Mouse Model. Radiat Res. 2015;183(6):610-9.
14. Beneš H, Vuong, MK, Boerma M, McElhanon, KE, Siegel, ER, **Singh SP**. Protection from oxidative and electrophilic stress in the *Gsta4*-null mouse heart. *Cardiovasc Toxicol*. 13:347–356, 2013.
15. McElhanon KE, Bose C, Sharma R, Wu L, Awasthi YC, **Singh SP**. *Gsta4* null mouse embryonic fibroblasts exhibit enhanced sensitivity to oxidants: Role of 4-hydroxynonenal in oxidant toxicity. *Open J Apoptosis*. 2(1): 1-11, 2013.
16. **Singh SP**, Niemczyk M, Saini D, Sadovov V, Zimniak L, Zimniak P. Disruption of the *mGsta4* gene increases life span of C57BL mice. *J Gerontol Ser. A: Biol Sci & Med Sci.* 65(1):14-23, 2010.
17. **Singh SP**, Zimniak L, Zimniak P. The human hGSTA5 gene encodes an enzymatically active

protein. *Biochim Biophys Acta.* 1800(1): 16-22, 2009.
18. **Singh SP**, Niemczyk M, Zimniak L, Zimniak P. Fat accumulation in *Caenorhabditis elegans* triggered by the electrophilic lipid peroxidation product 4-hydroxynonenal (4-HNE). *Aging*. 1**:** 68-80, 2009.
19. **Singh SP**, Niemczyk M, Saini D, Awasthi YC, Zimniak L, Zimniak P. Role of the electrophilic lipid peroxidation product 4-hydroxynonenal in the development and maintenance of obesity in mice. *Biochemistry*. 47(12):3900-3911, 2008.
20. Ayyadevara S, Dandapat A, **Singh SP**, Siegel ER, Shmookler Reis RJ, Zimniak L, Zimniak P. Life span and stress resistance of Caenorhabditis elegans are differentially affected by glutathione transferases metabolizing 4-hydroxynon-2-enal. *Mech Ageing Dev*. 128(2):196-205, 2007.
21. Ayyadevara S, Dandapat A, **Singh SP**, Benes H, Zimniak L, Reis RJ, Zimniak P. Lifespan extension in hypomorphic daf-2 mutants of Caenorhabditis elegans is partially mediated by glutathione transferase CeGSTP2-2. *Aging Cell*. 4(6):299-307, 2005.
22. Gong H, Singh SV, **Singh SP**, Mu Y, Lee JH, Saini SP, Toma D, Ren S, Kagan VE, Day BW, Zimniak P, Xie W. Orphan nuclear receptor pregnane X receptor sensitizes oxidative stress responses in transgenic mice and cancerous cells. *Mol Endocrinol*. 20(2):279-290, 2006.
23. Ayyadevara S, Engle MR, **Singh SP**, Dandapat A, Lichti CF, Benes H, Shmookler Reis RJ, Liebau E, Zimniak P. Lifespan and stress resistance of Caenorhabditis elegans are increased by expression of glutathione transferases capable of metabolizing the lipid peroxidation product 4-hydroxynonenal. *Aging Cell*. 4(5):257-271, 2005.
24. **Singh SP,** Chen T, Chen L, Mei N, McLain E, Samokyszyn V, Thaden JJ, Moore MM, Zimniak P. Mutagenic effects of 4-hydroxynonenal triacetate, a chemically protected form of the lipid peroxidation product 4-hydroxynonenal, as assayed in L5178Y/*Tk+/-* mouse lymphoma cells. *JPET.* 313:855–861, 2005.
25. Sharma S, Brown, D, Awasthi S, Yang Y, Sharma A, Patrick B, Saini MK, **Singh SP**, Zimniak P, Singh SV, Awasthi YC. Transfection with 4-hydroxynonenal-metabolizing glutathione S-transferase isozymes leads to phenotypic transformation and immortalization of adherent cells. *Eur J Biochem*. 271: 1-12, 2004.
26. Engle MR, **Singh SP**, Czernik PJ, Gadd, D, Montague DC, Ceci JD, Yang Y, Awasthi S, Awasthi YC, Zimniak P. Physiological role of mGSTA4-4, a glutathione S-transferase metabolizing 4-hydroxynonenal: generation and analysis of *mGsta4* null mouse. *Toxicol and App Pharmacol.* 194: 296-308, 2004.
27. Sawicki R, **Singh SP**, Mondal AK, Benes H, Zimniak P. Cloning, expression, and biochemical characterization of one Epsilon-class (GST-3) and ten Delta class (GST-1) glutathione S-transferases from Drosophila melanogaster, and identification of additional nine members of the Epsilon class. *Biochem J*. 370: 661-669, 2003.
28. **Singh SP,** Janecki AJ, Srivastava SK, Awasthi S, Awasthi YC, Xia PJ, Zimniak P. Membrane association of glutathione S-transferase mGSTA4-4, an enzyme that metabolizes lipid peroxidation products. *J Biol Chem.* 277(6): 4232-9, 2002.
29. Bose C, Guo J, Zimniak L, Srivastava SK, **Singh SP**, Zimniak P, Singh SV. Critical role of allyl groups and disulfide chain in induction of Pi class glutathione transferase in mouse tissues in vivo by diallyl disulfide, a naturally occurring chemo preventive agent in garlic. *Carcenogenesis*. 23(10): 1661-1665, 2002.
30. Cheng JZ, Yang Y, **Singh SP**, Singhal SS, Awasthi S, Pan SS, Singh SV, Zimniak P, Awasthi YC. Two distinct 4-hydroxynonenal metabolizing glutathione S-transferase isozymes are differentially expressed in human tissues*. Biochem Biophys Res Commun.* 282(5): 1268-74, 2001.
31. **Singh SP**, Coronella JA, Benes H, Cochrane BJ, Zimniak P. Catalytic function of Drosophila melanogaster glutathione S-transferase DmGSTS1-1 (GST-2) in conjugation of lipid peroxidation end products. *Eur.J.Biochem*. 268: 1-13, 2001.
32. Engle MR, **Singh SP**, Nanduri B, Ji X, Zimniak P. Invertibrate glutathione transferases

conjugating 4-hydroxynonenal: CeGST 5.4 from Caenorhabditis elegans. *Chemico-Biological Interactions.* 133:244-248, 2001.
33. **Singh SP**, Benes H, Coronella JA, Cochrane BJ, Zimniak P. Drosophila melanogaster glutathione transferase conjugating 4-hydroxynonenal. *Chemico-Biological Interactions.* 133: 224-227, 2001.
34. Xiao B, **Singh SP**, Nanduri B, Awasthi YC, Zimniak P, Ji X. Crystal structure of murine glutathione S-transferase in complex with a glutathione conjugate of 4-hydroxynon-2-enal in one subunit and glutathione in the other: evidence of signaling across the dimer interface. *Biochemistry*. 38:11887-11894, 1999.
35. Srivastava JK, **Singh SP**, Katiyar JC, Srivastava VML. Effect of methyl[5[(-4(2-pyridinyl)-l-piperazinyl] carbonyl-H-benzimidazole-2yl]carbamate on antioxidant and mixed function oxidase system in hamster liver. *Med Sci Res*. 22: 197-199, 1994.
36. **Singh SP,** Srivastava JK, Katiyar JC, Chatterjee RK, Srivastava VML. Potential of amino acids to support maintenance of A. ceylanicum in vitro. *Indian J Exp Biol*. 34: 609- 611, 1994.
37. **Singh SP**, Srivastava JK, Katiyar JC, Srivastava VML. Role of reactive oxygen species in the chemoprophylactic action of methyl [5-[[4-(2-pyridinyl)-l- piperazinyl] carbonyl] 1H-benzimidazole-2yl]carbamate in hamster against Ancylostoyma ceylanicum. *Biochem Pharmacol*. 47: 2253-2257, 1994.
38. Srivastava JK, **Singh SP**, Gupta S, Katiyar JC, Srivastava VML. Metabolic disposition of methyl [5-[[4-(2-pyridinyl)-l-piperazinyl)carbonyl]-1H-benzimidazole-2yl]carbamate in hamster: A study to understand chemoprophylactic action against experimental Ancylostomiasis. *Indian J Exp Biol*. 32: 533-539, 1994.
39. Batra S, **Singh SP**, Fatma S, Sharma S, Chatterjee RK, Srivastava VML. Effect of 2,2'-dicarbomethoxylamino-5, 5'-dibenzimidazolyl ketone on antioxidant defence of A. viteae and its laboratory host M. natalensis. *Biochem Pharmacol*. 44: 727-731, 1992.
40. **Singh SP**, Chhabra R, Srivastava VML. Respiratory burst in peritoneal cell in response to modified tuftsin. *Experientia*. 48: 994-996, 1992.
41. **Singh SP**, Batra S, Gupta S, Katiyar JC, Srivastava VML. Effect of A. celyanicum on antioxidant system in hamster tissue. *Med Sci Res*. 20: 605-608, 1992.
42. **Singh SP**, Gupta S, Katiyar JC, Srivastava VML. On the potential of amino acids to support survival and energy status of N. brasiliensis in vitro. *International J Parasitol*. 22:131-133, 1992.
43. **Singh SP**, Katiyar JC, Srivastava VML. Enzymes of tricarboxylic acid cycle in A. ceylanicun and N. brasilienesis. *J Parasitol*. 178:24-29, 1992.
44. Jain MK, **Singh SP**, Gupta S, Katiyar JC, Srivastava VML. Alteration in the metabolic activity of C. fasciolaris following antihelmentic treatment in situ. *Indian J Exp Biol.* 30:320-23, 1989.
45. **Singh SP**, Gupta S, Katiyar JC, Srivastava VML. Amino acid decarboxylases of A. ceylanicum and N. brasiliensis. *Current Science.* 58:1353-1356, 1989.
46. Batra S, **Singh SP**, Gupta S, Katiyar JC, Srivastava VML. Xanthine oxidase, superoxide dismutase, catalase, and lipid peroxidation in M. natalensis infected with D. viteae. *Indian J Exp Biol.* 27:1067-1070, 1989.
47. Batra S. **Singh SP**, Gupta S, Katiyar JC, Srivastava VML. Reactive oxygen intermediates metabolizing enzymes in A. ceylanicum and N. brasiliensis. *Free Radicals in Biol and Med*. 8:271-274, 1989.
48. **Singh SP**, Batra S, Gupta S, Katiyar JC, Srivastava VML. Effect of A. ceylanicum infection in hamster on enzymes, which metabolize oxygen intermediates. *Med Sci Res*. 17: 493-495, 1989.
49. **Singh SP**., Batra S, Gupta S, Katiyar JC, Chatterjee RK, Srivastva VML. Leucine amino peptidase in host tissues during A. ceylanicum and D. viteae infection. *Indian J Parasitol.* 13: 187-190, 1989.
50. **Singh SP,** Srivastva VML. Amino acid metabolism in Setaria cervi: decarboxylation reaction. *Indian J Parasitol*. 12: 297-299, 1988.

CHAPTERS IN BOOKS/ PROCEEDINGS

1. Zimniak P, **Singh SP**. Families of glutathione transferases. In: Toxicology of glutathione transferases. (Awasthi, Y.C., ed.), pp. 11-26, CRC Press, Boca Raton, FL, 2006.
2. Batra S, **Singh SP**, S Fatma, S Sharma, RK Chatterjee, Srivastava VML. Effect of 2,2'-dicarbomethoxylamino-5, 5'-dibenzimidazolyl ketone on antioxidant defence of A. viteae and its laboratory host M. natalensis. II. Catalase as a target. Proc.of CSIR Golden Jubilee Symposium on Tropical Disease: Molecular biology and control strategies (ed. S.Kumar), pp. 29-33, 1994.
3. **Singh SP,** Nanduri B, Xiao B, Ji X, Awasthi S, Awasthi YC, Zimniak P. Catalytic mechanism of mGSTA4-4: An enzyme involved in the response to oxidative stress. Pharmacology and Therpeutics in the New Millinium (ed. S.K.Gupta), pp. 684-697, 2001.

PAPERS PRESENTED IN SEMINARS/ SYMPOSIA

1. Sulforaphane attenuates doxorubicin-induced cardiotoxicity without inhibiting anti-cancer activity. Kaplan M, Manavalan M, Hauer-Jensen M, Boerma M, **Singh SP**. NIH, NIGMS Biennial National IDeA Symposium of Biomedical Research Excellence (NISBRE) Washington DC, June 26-28, 2016.
2. Non-monotonic relationship between tissue levels of 4-hydroxynonenal (4-HNE) and lifespan in *C. elegans.* McElhanon KE, Bennett KC, Zimniak L, Zimniak P, **Singh SP.** 18th international meeting of C.elegans, UCLA California, June 22-26, 2011.
3. **Singh SP**, Ayyadevera S, Zimniak L, Zimniak P. Life span of C.elegans is inversely proportional to the tissue level of the lipid peroxidation product 4-HNE. 16th international meeting of C. elegans, UCLA California, June 24-28, 2009.
4. Awasthi YC, Sharma S, Brown D, Yang Y, Sharma A, Patrick B, **Singh SP**, Zimniak P, Singh SV and Awasthi S. Alterations in 4-HNE homeostasis profoundly affect cell cycle signaling events. 2nd Meeting of the HNE club, HNE and lipid peroxidation products: from basic science to medicine. Berlin, July 6-9, 2004.
5. Engle MR, **Singh SP,** Czernik PJ, Shammas S, Ceci JD, Yang Y, Awasthi S, Awasthi YC, Zimniak L, Zimniak P. mGsta4 null mouse: Generation and characterization. 2nd Meeting of the HNE club, HNE and lipid peroxidation products: from basic science to medicine. Berlin, July 6-99, 2004.
6. Feng YP, Mondal A, Robinson M, **Singh SP**, Zimniak P, Beneš H. Isolation and characterization of mutants in the Drosophila Glutathione S-transferase S1 (GST S1) gene. 44th Annual Drosophila Research Conference (USA), March 5-9, 2003.
7. Mondal, A, **Singh SP,** Feng YP, Beneš H, Zimniak L, Zimniak P. Effect of modifying metabolism of lipid peroxidation on life span. 44th Annual Drosophila Research Conference (USA), March 5-9, 2003.
8. Sawicki R, **Singh SP**, Zimniak P, Benes H. Cloning and localization of Drosophila melanogaster glutathione transferases (GSTs) belonging to Delta and Epsilon families. 43rd Annual Drosophila Research Conference (USA), April 10-14, 2002.
9. **Singh SP,** Sawicki R, Zimniak P, Benes H. Characterization of Drosophila melanogaster glutathione transferases (GSTs) involved in metabolism of lipid peroxidation products. 43rd Annual Drosophila Research Conference (USA), April 10-14, 2002.
10. **Singh SP**, Janecki A, Srivastava SK, Awasthi S, Awasthi YC, Xia SJ, Zimniak P. Membrane association of murine GSTA4-4, A glutathione transferase that acts on lipid peroxidation products. Society of Toxicology (USA), March 17-21, 2002.
11. **Singh SP,** Benes H, Coronella JA, Cochrane BJ, Zimniak P. Drosophila melanogaster glutathione transferase conjugating 4-hydroxynonenal. GST 2000: International Conferanca on Glutathione Transferase, Uppsala, Sweden, May 19-23, 2000.
12. Engle MR, **Singh SP**, Nanduri B, Ji X, Zimniak P. Invertebrate glutathione transferases conjugating 4-hydroxynonenal: CeGST 5.4 from *Caenorhabditis elegans*. GST 2000:

International Conferanca on Glutathione Transferase, Uppsala, Sweden, May 19-23, 2000.

13. Zimniak P, **Singh SP**, Nanduri B, Awasthi YC, Xiao B, Ji X. Glutathione transferases and the defense against lipid peroxidation and oxidative stress: Insights into the molecular mechnism ofcellular protection. 3rd International Symposium on Cell/ Tissue injury and cytoprotection/ Organ protection, USA, January 20, 2000.
14. Zimniak P, **Singh SP**, Nanduri B, Awasthi YC, Xiao B, Ji X. Catalytic mechanism of mGSTA4-4, An enzyme involved in the response to oxidative stress. Frontiers in Pharmacology and Therapeutics in 21st Century, India, December 1-4, 1999.
15. **Singh SP**, Chabra R, Gupta CM, Srivastava VML. Superoxide burst in peritoneal exudates cells induced by Tuftsin. Indo-French Symposium on Immunomodulation, December 10-13, 1995.
16. **Singh SP**, Gupta HP, Singh NB, Srivastava VML. Enhancement of effecter activities of macrophages following M. habana vaccination in mice. 12th National Congress of Parasitology , India, January 23-25, 1995.
17. **Singh SP**, Haq W, Mathur KB, Srivastava VML. Bioactive peptides: Induction of respiratory burst in macrophages. 62nd Annual Meeting of Society of Biological Chemists, India, December 19-22, 1993.
18. Batra S, **Singh SP**, Fatima N, Sharma S, Chatterjee RK, Srivastava VML. Effect of 2-2'dicarbomethoxylmino-5, 5'-dibenzimidazolyl ketone on antioxidant defence of Acanthocheilonema viteae and its laboratory host Mastomys natalensis. CSIR Golden Jublee Symposium on Tropical Diseases: Molecular Biology and Control Strategies, India, February 17-20, 1992.
19. **Singh SP**, Srivastava JK, Katiyar JC, Srivastava VML. Mechanism for the chemoprophylactic action of anthelmintics against Ancylostoma ceylanicum. National symposium on Current Trend in Biotechnology, India, November 28-30, 1990.
20. Srivastava JK, **Singh SP**, Gupta S, Katiyar JC, Srivastava VML. Metabolic disposition of compound 81/470 and impact on MFO system of hamsters: A study to understand chemoprophylactic action against experimental ancylostomiasis. 10th National Congress of Parasitology, India, March 16-18, 1990.
21. **Singh SP**, Batra S, Gupta S, Katiyar JC, Srivastava VML. Impact of Ancylostoma ceylanicum infection on ROI metabolizing enzymes of hamster tissues. 10th National Congress of Parasitology, India, March 16-18, 1990.
22. Jain MK, **Singh SP**, Gupta S, Srivastava VML & Katiyar JC. Effects of anthelmintics on energy metabolism of Cysticercus fasciolaris. 9th National Congress of Parasitology, India, January 29-31, 1989.
23. Batra S, **Singh SP**, Srivastava VML, Chatterjee RK. Superoxide dismutase and catalase of Dipetaloma viteae. 9th National Congress of Parasitology, India, January 29-31, 1989.
24. Batra S, **Singh SP**, Chatterjee RK, Srivastava VML. Effect of antifilarial agents on superoxide dismutase and catalase of Mastomys natalensis. 57th Annual Meeting of Society of Biological Chemists, India, October 9-12, 1988.
25. **Singh SP**, Batra S, Gupta S, Katiyar JC, Srivastava VML. Impact of Ancylostoma ceylanicum infection of leucine amino peptidase activity of Hamster tissue. 57th Annual Meeting of Society of Biological Chemists, India, October 9-12, 1988.
26. Batra S, Chatterji RK, **Singh SP**. Protein biosynthesis in the filarial parasite Dipetalonema viteae. 56th Annual Meeting of Society of Biological Chemists, India, December 28-30, 1987.
27. **Singh SP**, Gupta S, Katiyar JC, Srivastava VML. Decarboxylation of amino acids by nematode parasites. 56th Annual Meeting of Society of Biological Chemists, India, December 28-30, 1987.