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M.V.Sc, Ph.D

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Personal Details

Gender	: Male
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Residence	: Officers flat No-19, CIRG residential complex, CIRG, Makhdoom, Farah, Mathura (UP)-281122.
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Languages Known	: Kannada, Hindi, Telugu and English

Educational Qualifications

Degree	Year of Passing/ Graduation	Grade obtained (%)	Subjects	Institution
Ph.D in Veterinary Pathology	2013	8.43/10.00	Veterinary Pathology (Minor: Immunology, Biochemistry)	Indian Veterinary Research Institute (Deemed University), Izatnagar, Bareilly-243122, UP, India
Master of Veterinary Science (M.V.Sc) in Veterinary Pathology	2008	8.34/10.00	Veterinary Pathology (Minor: Immunology)	Indian Veterinary Research Institute (Deemed University), Izatnagar, Bareilly-243122, UP, India
Bachelor of Veterinary Science and Animal Husbandry (B.V.Sc &A.H)	2006	8.23/10.00	Veterinary Science	Bidar Veterinary College, KVAFSU, Bidar. Karnataka, India

Professional Experience

- Dec, 2009 – Present: Scientist (ARS/ICAR), Veterinary Pathology, Division of Animal Health Central Institute on Research on Goats (CIRG), Makhdoom Farah, Mathura (UP), 281122, India
- 2006 – 2008: Junior Research Fellow (M.V.Sc Scholar), Division of Veterinary Pathology, Indian Veterinary Research Institute (Deemed University), Izatnagar, Bareilly, Uttar Pradesh, India.

Research Interests

- Molecular Pathology and Neuropathology
- Molecular epidemiology and diagnosis of infectious diseases of livestock and wild life

Research Experience

September 2007-August 2008: Master's dissertation entitled “**Involvement of TLR-3 and TLR-3 induced cytokines in the pathogenesis of rabies in laboratory mouse model.**”

The study was designed with an objective to investigate involvement of TLR-3 and its associated cytokines (IL1 α , IL2, TNF- α , and IFN- α) in the pathogenesis of rabies. A total of 80 adult Swiss albino mice were used, out of which 20 mice were inoculated on day 0 by I/C route with Challenge Virus Standard (CVS) strain of rabies virus @ 100 LD₅₀ / mouse (GI) and another 20 mice were inoculated with both CVS and Poly IC (TLR-3 agonist) @ 25 μ g/ mouse by I/C route (GPI). Remaining 40 mice, divided into two groups of 20 mice each, were inoculated with Poly IC (GP) and PBS (GC) and kept as controls. The clinical score, histo-pathological scores in H&E sections in sub-anatomical sites of cerebral hemisphere and hippocampus, demonstration of viral antigen in paraffin embedded brain sections by dFAT and IHC, TUNEL assay in paraffin embedded brain sections, kinetics of NK cells and macrophages in blood and spleen by FACS, expression of TLR-3 and its cytokines in brain tissue by Real Time PCR and detection of viral genome using N gene specific primers by conventional and Real Time PCR were studied at 2, 4, 6, 8, 10 and 12th DPI. Clinical history score revealed less severe and delayed onset of clinical signs and better survival of mice on different time points in GPI than in GI, although all mice in both the infected groups died on 12th DPI. The non-suppurative meningo-encephalitis in the form of perivascular cuffing, focal to diffuse gliosis and neuronal changes (necrosis/ apoptosis) scored less in GPI than in GI. The location and extent of lesions were demonstrated by the presence of positive signals, both in dFAT and IHC stained sections of the brain. The TUNEL staining detected positive apoptotic signals on 12th DPI in GI but not in GPI, which was

supported by the increased expression caspase 1 in GI on 12th DPI. TLR-3 and its associated cytokines, at different time intervals, showed higher expression in GPI than in GI. The percentage of NK cells and macrophages in blood and spleen were found to be more in GI than GPI. Further, the presence of virus in brain was detected by both conventional and Real Time PCR using N gene specific primers (533 bp) as early as on 2nd DPI in both the infected groups. The study clearly showed that TLR-3 induction by rabies virus has some role in reducing the development of disease, through pro-inflammatory cytokines. Further studies are needed to explore the possibility of TLR-3 for therapeutic purposes in rabies and other diseases.

2009-2013: Doctoral dissertation entitled “The Experimental T-2 Toxicosis in goats: a systematic patho morphology and molecular pathogenesis”

Abstract: The experimental T-2 toxicosis was induced in goats to study the systematic pathomorphology and molecular pathogenesis of T-2 toxicosis. A total of 18 Barbari kids of age 2-3 months were divided into three groups each comprised of six animals of which Group I received 10 ppm of toxin mixed concentrate feed, Group II received 20 ppm and Group III with standard concentrate feed in basal ration. The onset of clinical signs, body weights and haematological parameters were studied on 0, 5, 10, 15, 20, 25 and 30th day post feeding. From each group three animals were sacrificed on 15th and 30th day to assess oxidative stress parameters, gross and histopathology, relative organ weights, ultra-structural pathology, apoptosis by TUNEL and quantification of HSPs, apoptotic genes and pro-inflammatory cytokine genes in liver, intestine, MLN, kidneys, spleen and brain. Both the toxin groups showed variable degree of clinical signs, which included dullness, weakness, lethargy, retardation in growth, disinclination to move, diarrhea and reduced feed intake with feed refusal at 15th day onwards. Significant ($p < 0.05$) reduction in body weight gain was observed in dose and duration dependent manner. Anemia, leucocytopenia, lymphocytopaenia and thrombocytopenia were observed in 20 ppm group on 30th day. Significant ($p < 0.05$) increase in catalase, superoxide dismutase and melonaldehyde levels in liver, intestine, MLN, kidneys, brain and spleen were recorded on 30th day in both the toxin treated groups. T-2 toxin induced severe pathomorphological changes in liver, intestine, lymphoid tissues and kidneys in both the groups in a dose and duration dependent manner. Hepatocellular degeneration, sinusoidal engorgement, individual cell necrosis, centri-lobular necrosis, bile duct hyperplasia, peri-portal fibrosis and fatty change were important lesions observed in liver of higher dose group on 30th day. Crypt epithelial hyperplasia, necrosis and apoptosis of cryptic epithelium, infiltration and necrosis of lymphocytes in lamina propria were consistent changes in intestine of 20 ppm group on 30th day. It also caused severe lymphoid depletion and lymphocytolysis in lymphoid organs mainly in MLN, spleen and Peyer’s patches in 20 ppm group on 30th day. Kidneys showed severe degeneration and necrosis of PCT and DCT epithelium in duration

and dose dependent manner. Brain revealed varying degree of neuronal degeneration, microglial cell reaction, satellitosis and neuronophagia in higher dose group. Hepatocytes, enterocytes, epithelial cells of kidneys showed condensation and margination of heterochromatin, degeneration and vacuolation of mitochondria, collagen hyperplasia and dilatation of rough endoplasmic reticulum (rER) in hepatocytes. Brain revealed myelin figures due to degeneration of myelinated fibres in both the toxicated groups on 30th day. Significant ($p < 0.05$) apoptotic changes were observed in liver, intestine, MLN, kidneys, spleen and brain on 15th and 30th day in both the groups. Liver in 10 ppm and intestine in 20 ppm group on 30th day showed widespread apoptotic cells. Apoptosis was extensive in Peyer's patches, MLN and spleen in 20 ppm group. Kidneys showed apoptosis in PCT and DCT epithelial cells in 20 ppm group. HSP-72, 90 and 27 genes were significantly ($p < 0.05$) up regulated in liver, intestine, MLN, kidneys, spleen and brain in higher dose group than in 10 ppm on 30th day. Caspase 3 mRNA was significantly ($p < 0.05$) up regulated in liver, intestine, MLN, kidneys, spleen and brain of 10 ppm group. But there was low level of expression of anti-apoptotic Bcl2 gene in both the groups. IL-1 α , IL-6 and TNF- α were significantly ($p < 0.05$) up regulated in liver, intestine, MLN, kidneys, spleen and brain in higher dose group on 30th day. T-2 toxicosis in goats produced significant pathomorphological changes mainly in gastrointestinal and lymphoid tissues and induced significant up regulation of HSPs, apoptotic gene and pro-inflammatory cytokines in different organs which proved role of these genes in the development of lesions. This work is first of its kind in goats about T-2 toxicity and its molecular pathogenesis.

Research Projects (Funded by ICAR)

1. Pathology of important neurological diseases in goats and sheep (2010-2012). **As Principal Investigator**
2. Monitoring and Surveillance of important diseases in goats and sheep (2010-2012). **As Co-Principal Investigator**
3. All India Coordinated Research Project on Muzaffarnagari sheep at CIRG, Makhdoom (2010-2011) - **As Co-Principal Investigator.**
4. All India Coordinated Research Project on Barbari goats at CIRG, Makhdoom (2010-2011) – **As Co-Principal Investigator.**
5. Toll like receptors (TLRs) expression and characterization in different breeds of goats and their role in disease resistance with special reference to brucellosis (2012 onwards) **As Co-Principal Investigator.**
6. Patho-epidemiological studies on emerging and existing diseases of goats (2012 onwards) **As Co-Principal Investigator.**

Peer Reviewed Publications

1. A.K.Sharma, **N. Shivasharanappa**, P.S. Banerjee, Mohini Sahini, S.S. Raut, Gauri A. Chandratre and A. Das (2012). Intestinal coccidiosis in a Nilgai calf (*Boselaphus tragocamelus*) *Indian J. Vet. Pathol.*, 36(2) : 266-268.
2. Manjunatha Reddy, G.B, **Shivasharanappa N**, A.K. Mishra, Souvik Paul and D.K.Sharma (2012). Pathomorphological and Histopathological Lesions in Naturally Occurring Caprine Paratuberculosis. *Indian J. Vet. Pathol.*, 36(2) : 270-272.
3. G.B. Manjunatha Reddy, A.K. Mishra, **Shivasharanappa N**, D. K. Gupta., D. K. Sharma, V. K. Gupta and Ashok Kumar (2012). Prevalence and Identification of Shiga toxin producing E.coli in healthy and diarrheic goats. *Indian J of Comp. Microbiol. Immunol. Infect. Dis.* Vol. 33 (1&2): 25-30.
4. **Shivasharanappa N**, K. Gururaj, D.K. Sharma, Manjunatha Reddy, G.B and V.S. Vihan. (2011). Acute Hepatic and Pneumonic Cysticercosis in Barbari Goats. *Indian J of Vet. Pathol*, 35(1): 80-81.
5. **Shivasharanappa, N.** Manjunatha Reddy, G.B., Nitika Sharma and V.K. Gupta (2011). Parasitic encephalitis caused by larvae of *Oestrus ovis* in Sirohi goat. *Indian J. Vet. Pathol.*, 35(2) : 204-205.
6. **Shivasharanappa, N.**, Singh, R. Singh K.P. and Madhu B.P (2011). NK cell and macrophage activity in experimentally induced rabies in mice. *Indian J. Vet. Pathol.*, 35(2) : 159-161.

Popular/Review Articles

- **Shivasharanappa N**, Gupta V K, Nitika Sharma, A K Mishra and Souik Paul. (2012). *Goat Genome Project; Future goat research may find new avenues*. C.I.R.G Newsletter, July-Dec, 2012, volume VII, Page 2.
- Nitika Sharma, **Shivasharanappa N.**, A.K Mishra and Vinay Chaturvedi. (2012). *Coccidiosis in goats and its prevention*. *Ajamukh* 7:5-5 (article in Hindi).
- Nitika Sharma, Ashish Srivastava, A.K Mishra and **Shivasharanappa N.** (2012). *Alternative therapies for mastitis in animals*. Livestockline.
- D. Swarup, R.V.S. Pawaiya and **Shivasharanappa N** (2010). Scope of ethnoveterinary medicine in treatment of animal cancer. Annual workshop on animal tumor pathology and diagnosis at IVRI, Izatnagar.
- Singh R, **Shivasharanappa N**, Vidya Singh, Pawan Kumar and Arya, R.S. (2009). Tissue Microarray and its Applications in Veterinary Pathology. XXVI Annual Conference of IAVP October 28-30, 2009, Ludhiana).

Papers/abstracts/oral presentations in Symposia/conferences.

1. **Shivasharanappa N**, Gupta VK, Singh VK, Sharma DK, Nitika Sharma, Mishra AK, Pawaiya RVS, Ashok Kumar, Paul Souvik, Naveen Kumar and Singh SV. 2012. *Sero-prevalence study of caprine brucellosis in small ruminants using dot ELISA in different parts of India*. In the compendium of National Seminar on “Future challenges and opportunities to improve health and production of small ruminants” and Annual Conference of Indian Society for Sheep and Goat Production and Utilization (ISSGPU) held at Central Institute for Research on Goats, Makhdoom, Mathura, U.P., during Dec. 22-23, 2012. Abst. RDHM-C34, pp. 167-168.
2. **Shivasharanappa N**, Gupta VK, Nitika Sharma, Mishra AK, Singh VK, Pawaiya RVS, Sharma DK, Ashok Kumar, Paul Souvik, Naveen Kumar and Singh SV. 2012. *Diagnosis of foot rot in small ruminants by polymerase chain reaction assay*. In the compendium of National Seminar on “Future challenges and opportunities to improve health and production of small ruminants” and Annual Conference of Indian Society for Sheep and Goat Production and Utilization (ISSGPU) held at Central Institute for Research on Goats, Makhdoom, Mathura, U.P., during Dec. 22-23, 2012. Abst. RDHM-C35, pp. 168.
3. **Shivasharanappa N**, Mishra AK, Gupta VK, Pawaiya RVS, Naveen Kumar, Nitika Sharma, Paul S, Ashok Kumar, Sharma DK and Singh SV. 2012. *Etio-pathological studies of pneumonia in goats*. In the compendium of XXIX Annual Conference of Indian Association of Veterinary Pathologists (IAVP) and National Symposium on “Challenges in diagnostic pathology in domestic, pet, wild and aquatic animals” and National Seminar on “Emerging trends in diagnosis and control of poultry diseases” held at Department of Veterinary Pathology, LLRUVAS, Hisar, Haryana during Nov. 5-7, 2012. Abst. 2.1.28; pp. 37-38.
4. Nitika Sharma, Ashok Kumar, Ravindra Kumar, Sharma DK, Paul Souvik, Vinay Chaturvedi, Pawaiya RVS, Mishra AK and **Shivasharanappa N**. 2012. *Haematological and biochemical parameters in peri-parturent goats*. In the compendium of National Seminar on “Future challenges and opportunities to improve health and production of small ruminants” and Annual Conference of Indian Society for Sheep and Goat Production and Utilization (ISSGPU) held at Central Institute for Research on Goats, Makhdoom, Mathura, U.P., during Dec. 22-23, 2012. Abst. RDHM-C39, pp. 170.
5. Anil Kumar Mishra, Nitika Sharma, A Kumar, G B M Reddy, **Shivasharanappa N**. and S Paul. 2012. *Prevalence of subclinical mastitis in different breeds of goat*. In the compendium of National Seminar on “Future challenges and opportunities to improve health and production of small ruminants” and Annual Conference of Indian Society for Sheep and Goat Production and Utilization (ISSGPU) held at

Central Institute for Research on Goats, Makhdoom, Mathura, U.P., during Dec. 22-23, 2012. Abst. RDHM-C18, pp. 158.

6. Pawaiya RVS, Naveen Kumar, Paul S, **Shivasharanappa N**, Mishra AK, Nitika Sharma, Ashok Kumar, Gupta VK, Sharma DK and Singh SV. 2012. *An outbreak of suspected contagious ecthyma (orf) in sheep flock in an organized farm*. In the compendium of XXIX Annual Conference of Indian Association of Veterinary Pathologists (IAVP) and National Symposium on “Challenges in diagnostic pathology in domestic, pet, wild and aquatic animals” and National Seminar on “Emerging trends in diagnosis and control of poultry diseases” held at Department of Veterinary Pathology, LLRUVAS, Hisar, Haryana during Nov. 5-7, 2012. Abst. 2.1.10; pp. 28-29.
7. Mishra AK, **Shivasharanappa N**, Sharma DK, Reddy GBM, Naveen Kumar, Nitika Sharma, Paul S, Ashok Kumar, Gupta VK, Pawaiya RVS, Singh SV and Chaturvedi Vinay. 2012. Seroprevalence of Peste des Petits virus infection in goats. In the compendium of National Seminar on “Future challenges and opportunities to improve health and production of small ruminants” and Annual Conference of Indian Society for Sheep and Goat Production and Utilization (ISSGPU) held at Central Institute for Research on Goats, Makhdoom, Mathura, U.P., during Dec. 22-23, 2012. Abst. RDHM-C20, pp. 159.
8. G B Manjunatha Reddy, AK Mishra, VK Gupta and **Shivasharanappa N** (2012). *Molecular detection of shiga toxin producing Escherichia coli (STEC) in healthy and diarrhoeic goat kids*. Presented in XXVI IAVMI annual convention and international Seminar on “Future of livestock health: A paradigm change to maximize productivity for economic gains” held at Madras Veterinary college, TANUVAS, Chennai from 6th - 8th Sept 2012. Page no.104.
9. Manjunatha Reddy, Souvik Paul, D.K.Gupta, V.K.Gupta, **Shivasharanappa, N** and D.K.Sharma. 2012. Intestinal Coccidiosis in Kids: A Study on Histopathological Changes”. XXII national congress of Indian association for the advancement of veterinary Parasitology to held at Mathura, from 23-25th, Feb 2012.
10. Nitika Sharma, Reena Mukherjee, **N. Shivasharanappa** and Ashish Srivastava. (2012). *Sarcocystis muris* –a rare and incidental finding in laboratory mice. Submitted to XXII National Congress of Veterinary Parasitology NCVF on “Integrated research approaches in Veterinary Parasitology from basic to molecular techniques” held at Mathura, from 15-17th, Mar 2012.
11. Manjunatha Reddy, V.K.Gupta, D.K.Gupta, Souvik Paul, Ashok Kumar and **Shivasharanappa**. 2011. Etio-Pathology of Kid Diarrhoea in Barbari and Jamunapari Goats. National seminar on prospects and retrospect of small ruminant

and rabbit production: Contribution to socio-economic security, 7-9th December, 2011, held at Jaipur.

12. Madhu B P, Singh K P, Singh R and **Shivasharanappa N** (2009). Pathogenesis and pathology of CVS in experimentally infected mouse with reference to role of nitric oxide. XXVI Annual Conference of IAVP October 28-30, 2009, Ludhiana).
13. Vidya Singh, Pawan Kumar, **Shivasharanappa, N** and R. S. Arya (2009). Rare Case of Fibromatous Epulis in a Black Bear (*Ursus thibetanus*). XXVI Annual Conference of IAVP October 28-30, 2009, Ludhiana).
14. Gowthaman, V, Arya, R.S, **Shivasharanappa, N**, Pawan Kumar, Vidya Singh and R, Singh. (2009). A Case of Pulmonary Tuberculosis in Black Bear (*Ursus thibetanus*). XXVI Annual Conference of IAVP October 28-30, 2009, Ludhiana.
15. Vidya singh, **Shivasharanappa N**, Pawan kumar, Rahul S A and Gowthman V (2009). Pathological diagnosis of Infectious Canine Hepatitis in Black bear (*Ursus thibetanus*). XXVI Annual Conference of IAVP October 28-30, 2009, Ludhiana).
16. **Shivasharanappa N**, Singh R, Singh K P and Madhu B P, (2008). Involvement of TLR-3 and TLR-3 induced cytokines in the pathogenesis of rabies in laboratory mouse model. Silver Jubilee Annual Conference of IAVP- 2008, IVRI, Izatnagar. 10-12 November.2008.
17. **Shivasharanappa N**, Singh R, Singh K P and Madhu B P (2008). Caspase 1 mRNA expression and apoptosis in brain of CVS infected laboratory mouse. Silver Jubilee Annual Conference of IAVP- 2008, IVRI, Izatnagar. 10-12 November.2008.
18. Madhu B P, Singh K P, Singh R and **Shivasharanappa N**. (2008). Molecular pathogenesis of rabies virus in experimentally infected mouse with reference to role of nitric oxide. Silver Jubilee Annual Conference of IAVP- 2008, IVRI, Izatnagar. 10-12 November.2008.

Posters Presented in Symposia conferences

1. **N. Shivasharanappa**, V. K. Gupta, G. B. Manjunatha Reddy, R. V. S. Pawaiya, Ashok Kumar and S.B. Barbuddhe. *Isolation and Characterization of Listeria monocytogenes from goat brains*. Accepted for International Symposium on Problems of Listeriosis (ISOPOL) XVIII will be organized at ICAR complex, Goa, during 19-22 September, 2013.
2. **Shivasharanappa N**, Manjunath reddy GB, VK Gupta, Ashok Kumar, Sharma DK, Pawaiya RVS, Nitika Sharma, Mishra AK, Paul S, Naveen Kumar and Singh SV. 2012. *Incidence of neuro-pathological lesions and isolation of listeria monocytogenes in brains of small ruminants*. In the compendium of National Seminar on "Future challenges and opportunities to improve health and production of small ruminants"

and Annual Conference of Indian Society for Sheep and Goat Production and Utilization (ISSGPU) held at Central Institute for Research on Goats, Makhdoom, Mathura, U.P., during Dec. 22-23, 2012. Abst. RDHM-C36, pp. 168-169.

3. Nitika Sharma, **Shivasharanappa N**, Mishra AK, Vinay Chaturvedi, Pawaiya RVS, Sharma DK, Gupta VK, Ashok Kumar, Paul Souvik, Naveen Kumar and Singh SV. 2012. *Abnormal neurological signs in oestrous ovis infection in goat*. In the compendium of National Seminar on “Future challenges and opportunities to improve health and production of small ruminants” and Annual Conference of Indian Society for Sheep and Goat Production and Utilization (ISSGPU) held at Central Institute for Research on Goats, Makhdoom, Mathura, U.P., during Dec. 22-23, 2012. Abst. RDHM-C21, pp. 160.

Books/Manual chapters

1. **Shivasharanappa N.**, Nitika Sharma, A.K. Mishra and R.V.S. Pawaiya. *Collection and dispatch of morbid materials for disease investigations*. Training Manual on “Nutrition, Management and Prevention of Goat Diseases for Optimum Productivity” held during 10-16 April, 2013 for Veterinary Officers of State Animal Husbandry Department of UP and UK under Under Trainer’s Training Programme (Skill Development) Sponsored by Department of DADF, Ministry of Agriculture, Government of India.
2. V K Gupta, **Shivasharanappa N** and Ashok Kumar. *Diagnosis of Brucellosis in Goats*. Training Manual on “Nutrition, Management and Prevention of Goat Diseases for Optimum Productivity” held during 10-16 April, 2013 for Veterinary Officers of State Animal Husbandry Department of UP and UK under Under Trainer’s Training Programme (Skill Development) Sponsored by Department of DADF, Ministry of Agriculture, Government of India.
3. V K Gupta, **Shivasharanappa N** and Ashok Kumar. *Vaccines and Vaccination in Goats*. Training Manual on “Nutrition, Management and Prevention of Goat Diseases for Optimum Productivity” held during 10-16 April, 2013 for Veterinary Officers of State Animal Husbandry Department of UP and UK under Under Trainer’s Training Programme (Skill Development) Sponsored by Department of DADF, Ministry of Agriculture, Government of India.
4. Mishra A K, Kumar A, Sharma N and **Shivasharanappa N** (2013). *Approaches for diagnosis and management of bacterial diseases in goats*. In: Training Manual on “Nutrition, Management and Prevention of Goat Diseases for Optimum Productivity” held at CIRG, Makhdoom, Farah, Mathura (UP) during April 10 to 16, 2013 for Veterinary Officers of State Animal Husbandry Department of Uttar Pradesh and

Uttarakhand under Under 'Trainer's Training Programme (Skill Development)' sponsored by DADF, Ministry of Agriculture, Government of India. Chapter ----, pp. ---

5. V.K. Gupta and **Shivasharanappa N.** *Molecular targets for the development of improved diagnostics and vaccines for Brucellosis in animals.* Instruction manual of ICAR Sponsored Short Training Course on "Multipronged approaches for the Surveillance and Diagnosis of Brucellosis", PD-ADMAS, Bangalore, 19th-28th February, 2013. Page no.81-88.
6. V.K. Gupta and **Shivasharanappa N.** *Brucellosis in Small Ruminants.* Instruction manual of ICAR Sponsored Short Training Course on "Multipronged approaches for the Surveillance and Diagnosis of Brucellosis", PD-ADMAS, Bangalore, 19th-28th February, 2013. Page No 98-105.
7. S.K. Singh, P.K. Rout, **Shivasharanappa N** and Nitika Sharma (2012). Annual Progress Report, 2011-2012 of All India Coordinated Research Project on Goat Improvement: Genetic improvement of Barbari goats for Meat and Milk production. Barbari unit.
8. S.K. Singh, P.K. Rout, **Shivasharanappa N** (2011). Annual Progress Report, 2009-2011 of All India Coordinated Research Project on Goat Improvement: Genetic improvement of Barbari goats for Meat and Milk production. Barbari unit.

Gene Sequences Published

- Rabies virus isolates ICAD1-RB phosphoprotein (P) mRNA, partial cds, PubMed. ACCESSION Nos. GU363385, GU363417, GU363407.

Training to farmers/Lectures delivered

- Mishra A K, Kumar A, Sharma N and **Shivasharanappa N** (2013). Approaches for diagnosis and management of bacterial diseases in goats. In: Training Manual on "Nutrition, Management and Prevention of Goat Diseases for Optimum Productivity" held at CIRG, Makhdoom, Mathura (UP) during April 10 to 16, 2013 for Veterinary Officers of State Animal Husbandry Department of Uttar Pradesh and Uttarakhand under Under 'Trainer's Training Programme (Skill Development)' sponsored by DADF, Ministry of Agriculture, Government of India. Chapter ----, pp. ---
- Lecture on Medication, dipping, examination of sick animals and collection, dispatch of materials for laboratory investigation of diseases (07/05/2011 at Jamunapari unit CIRG).
- Lecture on Goat rearing practices and public health issues/zoonotic diseases of goats (30/09/2010 at CIRG)

Trainings/Refresher courses/summer/winter schools attended

1. Short term course on “Open source software/free software tools in development of agricultural information and communication management system” sponsored by ICAR held at CIRG, Makhdoom from Sept 14-23rd, 2011.
2. ICAR Winter School training on “Advanced Molecular biology tools used in animal disease diagnosis and development of new generation vaccines” held at GADVASU, Ludhiana from Oct 3rd to 23rd, 2011.
3. NAIP Training course on “Genetic Dissection of complex traits analysis with special reference to genetic resistance to GIN in goats” held at CIRG, Makhdoom from 15-28 Nov 2011.

Membership of professional societies/bodies

- Veterinary Council of India(VCI)
- Life member in Indian Association of Veterinary Pathologists (IAVP)
- Life member of ARSSF (on 18-12-2012)
- Life member of Dr C M Singh Trust (on 25/06/2013)
- Life member in Indian Society of Sheep and Goat Production (ISSGPU),
- Life member in Karnataka Veterinary Council (KVC)

Supervision/Guide/Thesis Of Students

- Isolation and characterization of Listeria from goats” by “Mr. Mukesh Saxena”, M.Sc. in Microbiology from B.S.A College, Mathura (Dr. B.R Ambedkar University, Agra), supervision at “Central Institute for Research on Goats” (C.I.R.G), Makhdoom, Farah, Mathura (U.P.)

Reviewer

- 2012-Present: Indian Journal of Veterinary Pathology

Awards/ Scholarships

1. Recipient of Young Scientist award for best M.V. Sc work on “Involvement of TLR-3 and TLR-3 induced cytokines in the pathogenesis of rabies in laboratory mouse model.” At IAVP annual conference, 2008.
2. Achieved “First position” in M.V. Sc (Veterinary Pathology) from 2006-2008
3. Recipient of “Indian Council of Agricultural Research (ICAR) Junior Research Fellowship” for pursuing Master’s degree from 2006-2008
4. Achieved 13th rank in the All India post graduate entrance examination conducted by ICAR.
5. Merit scholarship during B.V. Sc & A.H

Research Skills

- Basic and Molecular Pathological techniques such as Histopathology, Immunohistochemistry, FAT and TUNEL.
- Basic microbiological techniques such as isolation, phenotypic and genotypic characterization of bacteria,
- Genomic/Tissue/Blood DNA/RNA isolation; PCR, RT-PCR and Real Time PCR; Plasmid isolation and restriction digestion; Cloning techniques; Antimicrobial Susceptibility testing; Direct and indirect ELISA; FACS.
- *In-vivo* pathogenicity tests using laboratory animals such as mouse and rat.