

Curriculum Vitae

Dr. Suresh Dinkar Kharche

B.V.Sc. & A.H.; M.V.Sc. and Ph. D. (IVRI)

Year of birth :1962

Principal Scientist

(Animal Reproduction & Gynaecology)

Animal Physiology & Reproduction Division



1. Academic background

Ph D (1998) – Thesis title - Studies on pretreatment effect of hCG & Estradiol-17 β on ovarian response and embryo quality in superovulated cattle. Indian Veterinary Research Institute, Izatnagar, Bareilly, INDIA.

M V Sc (1989) – Thesis title: “Studies on superovulatory response and hormonal profile in crossbred cattle. Indian Veterinary Research Institute, Izatnagar, Bareilly, INDIA.

B V Sc & A. H.(1986) – J.N.K.V.V. Jabulpur, INDIA

2. Area of interest

- Reproductive herd health care and management of cattle, buffalo, sheep and goat.
- Treatment of reproductive disorders including infertility.
- Frozen semen technology and AI.
- Synchronization, superovulation, non surgical embryo collection and transfer, surgical embryo collection and transfer.
- Cryopreservation of gamete and embryos.
- In vitro maturation, fertilization, culture, in vitro embryo production and Assisted Reproductive Technologies.
- Stem cell Technology (Embryonic, spermatogonial & Mesenchymal)
- Teaching and training.

3. Awards :

- Prof. Nil’s Lagerlof Memorial Award – 2001
- G. B. Singh Memorial Award – 2003
- Awarded third prize for presentation of Hindi shodh patra on . Bakari Andakon ki Akatrite Karane ki Vidhiyon ka Tulanatmak Adhyan during Hindi Pakhwada 2003.
- Awarded third prize for presentation of Hindi shodh patra entitled “Vibhinna aakaar ke putakon se prapt andakon ka tulanatmak adhyayan” during Hindi Pakhwada on dated 18-09-04.
- Gaon Gyan Paritoshik Award – 2006
- Awarded third prize for poster presentation in a National seminar organized by ISSGPU.

4. Foreign deputation:

1. To attend 36th Annual Conference of International Embryo Transfer Society from 9th to 12th January, 2010 t Cordoba, Argentina (SA)
2. Deputed as an expert for imparting training on A. I., goat management and finalization of action plan to promote and accelerate the progress of research and development in Zambia, South Africa.

Indian assignment:

Invited as expert to trained the scientific and student manpower in the field of surgical and laparoscopic embryo transfer in goat at Animal Biotechnology Center at ICAR-NDRI, Karnal.

5. National training attended :

2 (ii) Trainings attended in the relevant field of specialization*			
Title	Duration	Institution	Year
1. Embryo Transfer Technology	One Month	IVRI, Izatnagar	1987
2. Short term training course (workshop) On Techniques in Production of Transgenic Animals.	Twenty one days	Bose Institute , Calcutta	1994
3. New Technologies in Animal Reproduction	Twenty one days	Madras Veterinary College, Chennai	2000
4. Laparoscopy in Veterinary Practice	Five days	Madras Veterinary College, Chennai (TN)	2001
5. Statistical Techniques and Computer Application for Analysis of Animal Breeding Data	Six days	C.I.R.G., Makhdoom, Farah, Mathura (UP)	2002
6. Ovum pick-up technology for in-vitro production of embryos from elite farm animals	Twenty one days	Indian Veterinary Research Institute, Izatnagar (UP)	2003
7. Biotechnological methods in Advanced Reproductive Technologies in Farm Animals	Twenty one days	Tamilnadu Veterinary and Animal Science University, Chennai-600007	2003
8. Laparoscope aided intrauterine artificial insemination and embryo transfer in sheep	Six days	Central Sheep and Wool Research Institute, Avikanagar, Rajasthan	2004
9. Use of ultra sonography in veterinary practices	Ten days	Chaudhary Charan Singh Hisar Agricultural University, Haryana	2004
10. Developing Winning Research Proposal.	Six days	NAARM, Hyderabad	2007
11. Workshop on Ovine and Caprine AI and ET 2009. Sponsored by IMV India Pvt. Limited at CIRG Makhdoom, Farah (Mathura) UP on 13.4.2009.	One day	CIRG Makhdoom	2009
12. Analysis of Animal Science Data using SAS	One week	Consortium Partner IVRI at CIRG makhdoom	2012
13. Embryonic and Spermatogonial Stem Cell Biology	Twenty one days	Animal Biotechnology Centre, National Dairy research Institute, Karnal-132001, Haryana, INDIA	2012
14. 25 th Workshop on Developing Winning Research Proposals sponsored by National Fund scheme of ICAR.	Three days	National Academy of Agricultural Research Management, Hyderabad	2012
15. Management Development programme on Leadership Development (A Free RMP Programme), NAARM Hyderabad	Twelve days	National Academy of Agricultural Research Management, Hyderabad	2015

6. National and International Training Imparted / organized :

Training Courses Programmes imparted/Organized (Title)	Year	Duration	No. of beneficiaries	Co-ordinator/ associated
1. Training courses on Embryo Transfer Technology	1993	21 days	20	Associated
2. IVM, IVF and Embryo Culture in Domestic Ruminants	1998	21 days	24	Associated
3. Recent Advances in Embryo Transfer Technology	1999	30 days	25	Co-Coordinator
4. Artificial Insemination and veterinary First Aid	1999	40 days	14	Associated
5. Introduction to Nuclear cloning	2000	21 days	25	Co-Coordinator
6. Infertility control and fertility management in farm animals	2000	7 days	20	Associated
7. Artificial insemination	2000	14 days	16	Associated
8. National Training Programme on Commercial goat farming (30 No.)	2001-2013	10 days	30 to 60 twice in a year	Associated
9. Semen freezing, Artificial insemination & Female reproduction in goats	2004	10 days	6	Co-Coordinator
10. Current Reproductive Techniques for Enhancing Goat Production	2005	10 days	14	Coordinator
11. Scientific Goat Rearing	2007	10 days	25	Associated
12. International/special training programme on Semen and embryo transfer	2007-08	30 days	3	Associate Coordinator
13. Recent Advances in Improvement of Productive and Reproductive Efficiency of Goats Through Physiological and Nutritional Interventions	2008	21 days	25	Co-Coordinator
14. Demonstrations and training on Artificial Insemination and management in goat at Lusaka, Zambia.	2011	12 Days	25	Coordinator
15. Organized a training programme to the officers of Animal Husbandry Department, Lucknow on "Scientific Goat Production" from From 14-18 June, 2016	2016	5 Days	14	Coordinator
16. Organized a 21 days summer school as Course Director on "Increasing reproduction rate through assisted reproductive and stem cell technologies for enhancing production in small ruminant" from 6 th to 25 th July, 2017.	2017	21 Days	25	Course Director
17. Organized a 10 days National training programme as Course Coordinator on "Spermatogonial stem cell biology" from 13 th to 22 th November, 2017.	2017	10 Days	7	Coordinator
18. Organized a training programme to the officers of Animal Husbandry Department, Rajasthan on "Advances in Goat Production and Health Management" from From 22-28 April, 2018	2018	7 Days	13	Coordinator

8. Research projects (PI/Co-PI) : 27

Title of the Project	Whether PI/CO-PI/Associate	Duration	Category
1. UNTEA HI-TECH In house R&D Project on Embryo Transfer Technology at Korundah Estate, Ooty, TNAU	PI	3 years	R&D Project Contractual
2. Ultra rapid freezing of mouse Embryos.	Co-PI	2 years	Institute
3. Isolation and partial purification of FSH from experimental menopausal pig urine.	Co-PI	2 years	Institute
4. Control of folliculogenesis, embryo development and ultra low embryo preservation in ruminants.	Co-PI	3 years	Institute
5. Development and evaluation of crossbred grades of cattle for sustainable milk production under intensive management.	Co-PI	5 years	Institute
6. Network programme on Murrah Buffalo.	Co-PI	5 years	Sponsored by ICAR
7. Multiplication of superior germplasm of Jamunapari goats through embryo transfer technology (ETT)”	Co-PI	3 years	Institute
8. Development of non- invasive technique of embryo collection and transfer for enhancing goat production.	Co-PI	3 years	Sponsored by NATP
9. Automation of semen freezing protocol for higher post thaw motility and fertility in goats	Co-PI	3 years	Institute
10. In-vitro production of caprine embryos and their survival following fresh and frozen embryo transfer.	PI	4 years	Institute
11. The Effect of freeze-thawing of goat semen at different spermatozoal density on cell viability, keeping quality (storage), microbial contaminants and fertility.	Co-PI	3 years	Institute
12. AICRP-Improvement of feed resources and nutrient utilization in raising animal production.	Co-PI	5 years	Sponsored by ICAR (AICRP)
13. Use of ultra sonography for ascertaining pregnancy related profiles in goats.	Co-PI	2 years	Institute
14. Augmentation of prolificacy using biotechnological tools in goats.	PI	5 years	Institute
15. Studies on refinement of frozen semen technology and strengthening of goat semen bank.	Co-PI	5 years	Institute
16. AICRP-Genetic evaluation and improvement in Muzaffarnagari sheep for body weight and wool yield.	Co-PI	5 years	Sponsored by ICAR (AICRP)
17. Developmental potency of parthenogenetic goat embryos.	CCPI	3 years	Sponsored by NAIP
18. Development of parthenogenetic goat from embryonic stem cells	PI	4 years	Sponsored by NFBS-FARA
19. To Analyse Genetic Trait and Expression Analysis of Goat ESR1 Gene for Buck Fertility and Sperm Quality	Mentor	3 years	Sponsored by DST

20. ICAR Flagship Programme on Artificial Insemination in Goats	Co- PI	3 years	Institute
21. Improvement of post-thaw quality and fertility of frozen semen of different breeds of goats using various additives.	Co- PI	3 years	Institute
22. Hormone profile during different reproductive stages in goats	Co-PI	3 years	Institute
23. Allele mining in caprine KISS 1 and GPR54 genes and its association with prolificacy of Goats	Co-PI	3 years	Institute
24. Optimization of Semen Freezing Protocol and Artificial Insemination in Goats	Co-PI	3 years	Institute
25. Study the effect of mesenchymal stem cell transplantation on ovarian function and fecundity in goat	PI	3 years	NASF
26. Isolation, characterization and development of a culture method for long term preservation of spermatogonial stem cells from Duroc pig	Co-PI	3 years	DBT
27. Transcriptome profiling of spermatozoa for the development of biomarker for the selection of fertile bucks	Mentor	3 years	Sponsored by DST

9. Student guided :

- a). M. Sc. -Eight,
- b). M. V. Sc. -Four,
- c). Ph. D. -Seven
- d). PDF -One (From Dr. JUSTIN KOUAMO, PhD. Senior Lecturer, School of Veterinary Medicine and Sciences, The University of Ngaoundere, PO BOX: 454. Ngaoundere-Cameroon South Africa)

10. Achievements:

1. Successful Induction of lactation and fertility in barren heifers.
2. Development of insulin protocol for higher conception rate in cattle.
3. Improved fertility in cattle and buffalo by incorporating drugs/hormones following A.I.
4. Development of a new superovulation protocol for cattle and goat.
5. Development of vaginal sponges for short term progesterone treatment for estrous synchronization in goats
6. Successful birth of calves and kids through embryo transfer
7. Birth of kid through *In-vitro* fertilization and Embryo Transfer.
8. Refinement of goat semen freezing protocol.
9. Production of cattle, buffalo and goat through Artificial Insemination
10. Reproductive herd health management and treatment of reproductive disorders in Cattle, Buffalo, Sheep and Goats.
11. Development of Parthenote up to 34 days in surrogate mother.
12. Development of tetraploid, chimeric embryos and in vivo development of parthenogenetic foetus up to 73 days.
13. Isolation, purification, culture and characterisation of Embryonic, spermatogonial and mesenchymal stem cells.

11. Parent, Technology, Methodology, Genetixc stock, variety etc:

1. Patent:

- Low cost Intra vaginal sponges were developed and patented (THE PATENT REGISTRATION NUMBER IS : 1872/DEL/2010) for induction of oestrus, synchronization of oestrus, shortening post partum interval, inter kidding interval and for more frequent kidding in goats.
- Area specific mineral mixture (G Min forte)
- Goat Semen Diluent Composition (TCFEYG) and Cryopreservation Protocol.

2. Innovative Technologies :

- a. Multiple Ovulation & Embryo Transfer in cattle & goat
- b. *In-vitro* Fertilization and Embryo Transfer in goat
- c. Frozen semen technologies & Artificial Insemination in cattle and goat.
- d. Early pregnancy diagnosis using ultrasonography in goat.
- e. Induction of lactation in barren heifers.
- f. Oestrus induction and synchronization in anoestrus & cyclic goats.
- g. Area specific mineral mixture for cattle, buffalo sheep and goat.

3. Products :

- a. Cow calves, buffalo calves and kids through Frozen Semen Artificial Insemination with acceptable conception rate.
- b. Cow calves and kids through *in-vivo* embryo production & ET.
- c. Kids through *in-vitro* embryo production.
- d. Parthenote (34 days) through parthenogenetic activation of goat oocytes.
- e. Elite genetic stock of Muzaffarnagari sheep.
- f. Germ plasm production and preservation.

4. Concepts :

- a. Introduction of insulin for enhancing conception rate in cattle and buffalo.
- b. Use of progesterone for improvement of conception rate in cattle and buffalo.
- c. Application of GnRH for the treatment of infertility in cattle.
- d. Development of a new protocol for superovulation in cattle and goat.
- e. Development of parthenogenetic goat from embryonic stem cells.
- f. Development of low cost intra vaginal sponges.
- g. To relieve cases of dystocia in goat and sheep.
- h. Treatment of suboestrus cattle and buffalo.
- i. Induction & synchronization of oestrus in cattle with PG through different doses and routes.
- j. Semen freezing protocol for buck semen.
- k. In-vitro maturation of prepubertal and pubertal goat oocytes.
- l. In-vitro fertilization and embryo culture of matured goat oocytes.
- m. Parthenogenetic goat embryo production.
- n. Chimeric goat embryo production.
- o. Developed a new method for isolation of MSCs from goat bone marrow.
- p. Techniques/protocols have been standardized for bone marrow aspiration from live goat.
- q. Developed method of MSCs isolation, enrichment and cryopreservation from goat model.

- r. Protocol for isolation of spermatogonial stem cells and their enrichment by different techniques such as differential plating and percol density centrifugation is standardized in the lab.
- s. Developed methodology for induction of estrus and production of lambs from anestrus ewes.

12. List of Publications

Authors, Year of publication, Title of the paper	Journal Name, Volume and Page No.
1. Kharche, S.D. , Dutt, Triveni, Ansari, M.R., Mohanty, T.K. Majumdar, A.C. and Taneja, V.K. 1996. Estrus synchronization and superovulation response with PMSG in crossbred cows.	Indian J. Anim. Sci., 66 (1):49-51.
2. Kharche, S.D. , Dutta, T.K., Dutt, Triveni, Ansari, M.R. and Taneja, V.K. 1996. Effect of once or twice daily injection of FSH-P on superovulatory response, embryo recovery and their quality in crossbred cattle.	Indian J. Anim. Sci., 66 (4) 363-365.
3. Kharche, S D. Sharma G. Taru, Agarwal, S K., Majumdar, A C. Sanwal, P C and Sharma, N C. 2001. Pretreatment effect of human chorionic gonadotropin and estradiol-17 β on ovarian response, embryo quality and endocrine profile in cattle superovulated with FSH-P.	Indian J. Anim. Sci., 71 (7). 644-649.
4. Kharche S D and Srivastava S K. 2002. Induction of oestrus and fertility following tiaprost treatment in suboestrus crossbred cows.	Indian J. of Anim. Sci. 72 (2) : 141-142.
5. Kharche S D , Sharma G Taru, Agarwal S K, Majumdar A C, Sharma N C and Sanwal P C. 2002. Endocrine profile and embryo quality of cows superovulated with Super-Ov following human chorionic gonadotropins and estradiol-17 β pretreatment	Indian J. of Anim. Sci. 72 (8) : 623-624
6. Kharche S D , Majumdar A C and Srivastava S K. 2003. Effect of insulin administration at oestrus on fertility of crossbred cattle.	Indian J. Anim. Sci. 73 (8) : 888-889.
7. Kharche S D , Majumdar A C and Srivastava S K. 2003. Influence of exogenous insulin on conception rate in crossbred cattle.	Indian J. Anim. Sci. 73 (8) : 890-891
8. Kharche S D , Sharma G Taru, and Majumdar AC. 2005. In-vitro maturation and fertilization of goat oocytes vitrified at germinal vesicle stage.	Small Ruminant Research, 57 81-84.
9. Kharche S D , and Srivastava S K. 2005. Synchronization of oestrus and subsequent conception in dairy cows treated with PG F ₂ α .	Indian J. Anim. Science 75 (8) :932-933.
10. Kharche, S.D. , Goel, A.K., Jindal, S. K. and Sinha, N.K. 2006. A note on <i>in vitro</i> maturation of caprine oocytes using different concentrations of estrous goat serum.	Small Ruminant Research 64 : 186-189.
11. Kharche S D , and Srivastava S K. 2007. Dose dependent effect of GnRH analogue on pregnancy rate of repeat breeder crossbred cows.	Animal Reprod. Science 99:196-201.
12. Kharche S D , and Srivastava S K. 2007. Fertility responses in repeat breeder dairy crossbred cows treated with human chorionic gonadotropin	Indian J. Anim. Sci. 77(4): 297-299
13. Kharche SD , Goel AK, Jindal S K and Sinha NK. 2008. Birth of a female kid from <i>in vitro</i> matured and fertilized goat oocytes.	Indian J. Anim. Sci. 78 (7):680-685.
14. Kharche SD , Goel AK, Jindal SK, Yadav EN, Yadav P and Sinha N K. 2009. Effect of serum albumin supplementation on <i>in-vitro</i> capacitation and fertilization of caprine oocytes.	Small Ruminant Research. 81(2-3): 85 – 89.
15. Kharche SD , Goel AK, Jindal SK, Jha BK and Goel P. 2013. Assessment of Parthenogenetic Embryo Production by Activation of <i>In-vitro</i> Matured	Small Ruminant Research. 111: 100-

Caprine Oocytes with Different Concentrations of Ethanol.	103.
16. Kharche SD , Goel AK, Jindal SK, Goel P and Jha BK. 2011. Birth of twin kids following transfer of <i>in-vitro</i> produced goat embryos.	Indian J. Anim Sci. 81(11): 1132–1134.
17. Kharche SD , AC Majumdar, Agrawal SK and Sharma G Taru. 2008. Superovulatory response and embryo production efficiency in goats following pretreatment with hCG and oestradiol-17 β	Indian J. of Anim. Sci. 78(2): 150– 153.
18. Kharche SD , AC Majumdar, Agrawal SK and Sharma G Taru. 2008. Ovarian and endocrine response following pretreatment with human chorionic gonadotropin and estradiol valerate in PMSG treated crossbred cows.	Indian J. Anim. Sci. 78(4): 449-452.
19. Kharche, S.D. , Goel, A.K., Jindal, S. K. Sinha, N.K. and Yadav Parul. 2008. Effect of somatic cells co-culture on cleavage and development of in vitro fertilized caprine embryos.	Indian J. Anim. Sci. 78 (6):686-692.
20. Kharche SD , Yadav EN, Goel AK, Jindal SK and Sinha NK. 2008. Influence of culture media on <i>in-vitro</i> fertilization of goat oocytes.	Indian J. Anim. Sci. 78 (10) : 1075–77.
21. Kharche, SD , J Pathak, S Agarwal, B Kushwah and AKS Sikarwar (2016). Effect of Ca Ionophore On blastocyst production following intra cytoplasmic sperm injection in caprine oocytes.	Reprod Dom Anim 51; 611-617.
22. Kharche, SD , Agarwal S, Sharma J, Sikarwar AKS, Gangwar C, Ranjan R, Goel AK, Jindal SK and Agarwal S K. (2016). Influence of cysteamine supplementation during in vitro culture of early stage caprine embryos on blastocyst production.	Indian J. of Anim Sci. 86: 304-306.
23. Kharche SD , Goel AK, Jindal SK, Ranjan R, Rout PK, Agarwal SK, Goel P, Saraswat S, Vijnh RK, Malakar D, Bag S, Srkhel B and Bhanja SK. (2014). Development of parthenote following in vivo transfer of embryos in <i>Capra hircus</i> .	In Vitro Cell.Dev.Biol.— Animal (2014) 50:893–898. DOI 10.1007/s11626-014-9740-7.
24. Kharche SD , Jindal SK, Priyadhrashini R, Satish Kumar, Goel AK, Ramachandran N and Rout PK. (2013). Fertility following frozen semen artificial insemination in Jamunapari goats.	Indian Journal of Animal Sciences 83(10) 1071-1073.
25. Kharche SD , Goel AK, Jindal SK, Saraswat S, Pathak J and Agarwal S. (2015). <i>In vitro</i> maturation of nude caprine oocytes recovered during oocyte collection.	Indian Journal of Animal Sciences 85(2) 135-138.
26. Kharche SD , Goel AK, Jindal SK, Goel P, Kouamo J and Saraswat S. (2015). Effect of protein phosphorylation inhibitor on production of parthenogenetic caprine embryos.	Indian Journal of Animal Sciences 85(2) 139-142
27. Selvaraju S , Agarwal S K, Kharche S D , Majumdar A C and Shanker U. 2001. Ovarian response, embryo production and hormonal profile in superovulated goats treated with insulin.	Theriogenology, 59 : 1459-1468.
28. Saraswat, S ; Rout, P. K.; Kharche, S. D. , Jindal, S. K. and Goel, A. K. (2016). Molecular expression of estrogen receptor gene 1 in reproductive and non-reproductive tissues.	Reprod Dom Anim 2016; 1-6.
29. Selvaraju S , Agarwal S K, Kharche S D , Srivastava S K Majumdar A C and Shanker U. 2001. Fertility response and hormonal profile in repeat breeding cows treated with insulin.	Animal Reproduction Science, 73 : 141-149.
30. Sharma G Taru , Kharche S D and Majumdar A C. 2006. Vitrification of in-vitro matured goat oocytes and its effect on in-vitro fertilization	Small Ruminant Research 64 (1-2) : 82-86.
31. Pathak, J , Kharche SD , Goel AK and Jindal SK. 2013. A comparative study on parthenogenetic activation and embryo production from in vitro matured	Small Ruminant Research. 113: 136-

caprine oocytes	140.
32. Krishan, J., Surbhi Agarwal, Juhi pathak, Rakesh Kaushik. Mehtab S. Parmar, Sriti Pandey, Mukesh K. Bharti, Vikash Chandra, S.K. Jindal, S.D. Kharche , P.K. Rout.G. Taru Sharma (2016) Influence of follicular fluid and gonadotropin supplementation on the expression of germ cell marker genes during in-vitro maturation of caprine (<i>Capra hircus</i>) oocytes.	Small Ruminant Research 144 (2016) 41-47.
33. Goel, P, Goel AK, AK Bhatia and Kharche SD. (2016) Effect of capacitating agents on sperm pretreatment during in vitro fertilization for blastocyst production in caprines	Turk J Vet Anim Sci (2016) 40: 803-810
34. Pathak J, Kharche SD , and Goel A. (2017). Effect of different activation protocols on cleavage rate and blastocyst production of caprine oocytes.	Ir. J. Veterinary Research, 18 (4): 243-248.
35. Saraswat, S; Rout, P. K.; Kharche, S. D. ; Goel, A. K., Jindal, S. K. and Kumar, S. (2016) Estrogen receptor gene 1 expression in caprine and its effect on fertility	Ir. J. Veterinary Research No. 3, Ser. No. 56, Pages 207-209
36. Kouamo J and Kharche S D. (2015). A comparative study of parthenogenetic activation and <i>in vitro</i> fertilization of <i>in vitro</i> matured caprine oocytes.	Ir. J. Veterinary Research, 16 : 20-24.

14. Contact Address :

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