OPU-IVF Calf Born in Badri Cattle: A Major Milestone for Conservation and Genetic Improvement of Uttarakhand's Indigenous Breed

Advanced Embryo Technology Opens New Path for Multiplication of Elite Badri Cattle Germplasm

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In a significant achievement for the conservation, multiplication and genetic improvement of indigenous cattle breeds, a healthy Badri female calf has been successfully born through Ovum Pick-Up and In Vitro Fertilization (OPU-IVF) technology at the Academic Dairy Farm, following the transfer of a Badri embryo into a Sahiwal recipient cow. The calf was born on 11 September 2026. Badri cattle are an important indigenous cattle genetic resource of Uttarakhand and are recognised as the state animal of Uttarakhand.

The achievement has been accomplished through a collaborative effort between ICAR–National Dairy Research Institute (ICAR-NDRI), Karnal, and G. B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, with financial support from the Uttarakhand Biotechnology Council, Haldi. The achievement demonstrates the potential of advanced reproductive biotechnology for the conservation, rapid multiplication and genetic improvement of valuable Badri germplasm.

Speaking on the achievement, Dr Dheer Singh, Director, ICAR-NDRI, Karnal, said that advanced reproductive technologies such as OPU-IVF can help multiply elite female germplasm at a faster rate and support the development of structured breed-improvement and germplasm-conservation programmes for Badri cattle. He highlighted that the successful birth provides an important foundation for further strengthening technology-based approaches for conservation and genetic improvement of the breed

The research programme was initiated in 2023 under the leadership and initiative of the then Vice-Chancellor of G. B. Pant University, Dr M. S. Chauhan. Under his leadership, scientific collaboration between G. B. Pant University and ICAR-NDRI, Karnal was initiated to establish advanced reproductive technologies for the conservation and multiplication of Badri cattle germplasm. Over the past three years, the collaborating scientific teams have worked towards establishing OPU-IVF, embryo production and embryo transfer procedures for Badri cattle.

Under the OPU-IVF programme, oocytes were collected from selected genetically valuable Badri donor cows through ultrasound-guided ovum pick-up. The collected oocytes were matured and subsequently fertilised in vitro using semen from a genetically superior Badri bull obtained through the Uttarakhand Livestock Development Board. The resulting embryos were cultured under controlled laboratory conditions and subsequently transferred into appropriately synchronised recipient cows. One such Badri embryo was successfully transferred into a Sahiwal recipient cow, which subsequently gave birth to the healthy Badri female calf.

Another synchronised crossbred recipient cow is also expected to deliver a Badri calf within the next 5–7 days.

The successful production of a Badri calf through OPU-IVF represents an important step towards establishing a technology-based programme for the conservation, multiplication and genetic improvement of Badri cattle germplasm in Uttarakhand. The technology enables the production of multiple embryos from genetically superior female animals and can thereby increase the rate of multiplication of elite germplasm compared to conventional reproductive approaches.

The programme is also exploring the cloning of elite and high-producing Badri cows. The collaborating team has successfully generated cloned Badri embryos through multiple stages of the ongoing research. In the next phase, OPU-IVF- and cloning-derived embryos are planned to be transferred into suitable Sahiwal, crossbred and Badri recipient cows. These efforts are aimed at accelerating the multiplication of superior Badri germplasm and contributing to the long-term conservation and genetic improvement of the indigenous breed.

The achievement highlights the potential of integrating indigenous genetic resources with advanced reproductive biotechnology for sustainable livestock development in the Himalayan region. The successful birth of the Badri OPU-IVF calf provides a foundation for expanding collaborative efforts towards the conservation, genetic improvement and wider dissemination of elite Badri germplasm in Uttarakhand.

ICAR-NDRI, Karnal and G. B. Pant University of Agriculture and Technology, Pantnagar remain committed to strengthening collaborative research and technology-transfer initiatives for the conservation, genetic improvement and sustainable utilisation of indigenous livestock breeds.

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