EDITORIAL

AN UPDATE OF CAMELOLOGY IN GENOMICS, MOLECULAR EVOLUTION, NABOBODIES, CAMEL MILK AND ASSISTED REPRODUCTIVE BIOTECHNOLOGY

Camel science, often referred to as Camelology, has transitioned from niche natural history observations to a cutting-edge field of biotechnology and medicine. In recent years, particularly leading into 2026, research has shifted from simple "survival studies" to exploring camels as a "livestock of the future" due to their climate resilience and unique molecular biology. Out of four key domains the first relates to genomics and molecular evolution. Scientists have developed high-quality whole-genome drafts for both the dromedary (one-humped) and Bactrian (two-humped) camels. Specific genes (like CYP2J) have been identified that evolved rapidly to help camels manage salt metabolism and prevent dehydration. Genetic markers in camels, including microsatellites (STRs), mitochondrial DNA (mtDNA), and SNPs, are essential for identifying breeds, assessing genetic diversity, and selecting traits like milk production or disease resistance. Key markers commonly used include microsatellite loci such as LCA66, VOLP03, YWLL08, and CVRL01. Second key domain is camel nanobodies, or VHH single-domain antibodies, are a specialised class of antibody fragments (approx. 12–15 kDa) derived from the heavy-chain-only antibodies (HCAbs) found in Camelidae (camels, llamas, alpacas). Their small size, high stability, and ability to bind cryptic epitopes (hidden, recessed areas) have made them a revolutionary tool in biomedical research, diagnostics, and therapy. These "nanobodies" are currently being used to develop new treatments for cancer, rheumatoid arthritis, and viral infections (including COVID-19 and MERS). Their small size allows them to reach targets in the human body that conventional drugs cannot. The third key domain is camel milk which is a functional food. Medical researchers have found its therapeutic properties for diabetes management. Clinical studies have confirmed that camel milk contains insulin-like proteins that do not coagulate in the stomach, allowing them to be absorbed into the bloodstream. It has been shown to reduce the required insulin dose in Type-1 diabetic patients by up to 30%. Additionally the camel milk possess hypoallergenicity property because u nlike cow's milk, camel milk lacks beta-lactoglobulin, making it a safe alternative for children and adults with severe dairy allergies. The fourth key domain is Assisted Reproductive Technologies (ART). New techniques involving specialised "vaginal condoms" and better cooling extenders have made artificial insemination (AI) more viable for breeders. Embryo Transfer has become very popular in camels. Elite racing and milking camels are now frequently used as "genetic donors," with their embryos transferred to surrogate "recipient" camels to speed up the propagation of superior traits.

The Journal of Camel Practice and Research (JCPR) has now entered in the 33rd year of its continuous publication. JCPR is indexed in Scopus under Animal Science & Zoology. The journal is also indexed in CABI databases (important for agriculture & veterinary sciences). It has been submitted to the Web of Science for a consideration. The April 2026 issue has two review papers, i.e. the first one relates to camel production-dynamics and constraints in Morocco and other is on general anaesthesia. It has two important papers from UAE, i.e. correlation of selenium and the electrocardiogram in dromedary and a new concept of bacterial defense mechanism of the pleural lung curtain in dromedary. Scientists have contributed papers from Argentina, Algeria, Australia, Ethiopia, India, Italy, Qatar, Japan, Morocco, Saudi Arabia, Sudan, and UAE.

My greetings of new year 2026 to all the camel scientists and practitioners. I am sure that the journal would continue with your support as a biggest platform of camelid literature at global level.

With my best wishes

(Dr. Tarun Kumar Gahlot)
Editor