Reduction of drug residues in raw milk: management of bovine mastitis by ethno-veterinary medicine

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In India *small holder* dairy system is practiced where bovine mastitis impedes significantly on the livelihood of farmers. Data generated through Information Network for Animal Productivity & Health (*INAPH*) from selected dairy herds indicated that almost 22 percent of total clinical disorders treated in bovines are associated with udder ailments. Currently, animals with sub-clinical mastitis (SCM) diagnosed by California Mastitis Test (CMT) and clinical mastitis (CM) by clinical manifestations are both treated with antibiotics. In the present study lasting two years, detection of SCM through periodic screening of milk samples (n=1,60,913) by CMT and treatment of positive animals with oral regimen of tri-sodium citrate (TSC) resulted in reduction of SCM positivity from 55 to 18 percent. An alternative mastitis management approach was exploited for treatment of CM through Ethno-Veterinary Medicine (EVM) by topical application of herbal paste comprising *Aloe Vera*, turmeric powder and lime. The recovery rate observed in 12374 CM cases was around 88 percent. Various species of *Streptococci, Staphylococci* and gram-negative rods were isolated from mastitis cases which were effectively cured by EVM. Thus the use of TSC and EVM for management of mastitis without using antibiotics minimised the likelihood of development of AMR as well as antibiotic residues in milk.

Encouraged by the above findings, NDDB is implementing a mastitis control programme in 27 Milk Unions in eight states of India covering approximately 1,78,000 lactating animals in 1510 dairy co-operative societies. The project includes training of veterinarians, detection of SCM and use of EVM, rationalizing the usage of antibiotics for mastitis treatment and monitoring the impact by surveillance of antibiotic residue in raw milk.