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Activity of milk leukocytes in response to a biological response modifier during bovine subclinical mastitis

Ujjwal Kumar De

Indian Veterinary Research Institute, India

Abstract

The objective of the present investigation was to evaluate the activity of milk leukocyte in response to intramammary infusion of a Nocardia globerula derived biological response modifier (BRM) in bovine subclinical mastitis (SCM). The somatic cell count (SCC), total bacterial count (TBC) in milk, milk differential leukocyte count (DLC), cyclooxygenase (COX) activity, phagocytic activity, production of hydrogen peroxide (H_2O_2), nitric oxide (NOx) and myeloperoxidase (MPO) activity in milk leukocytes were evaluated before as well as after intramammary infusion of BRM in cows inflicted with SCM. Intramammary infusion of BRM significantly enhanced the SCC in earlier phase with subsequent reduction on day 7 onwards after initiation of treatment. Similarly, the COX activity in milk cell lysate increased on day 3 and reduced on day 5. However reduction in TBC could be observed from day 3 onwards. The significant enhancement in milk lymphocyte%, phagocytic activity, H_2O_2, NOx production and MPO activities was recorded in post treated quarters with BRM. Significant enhancement of phagocytic activity, H_2O_2, NOx and MPO activities indicate the priming of resident milk leukocytes in response to BRM infusion. Initial influx of SCC and raised COX activity also indicate the immunomodulatory activity of BRM. Reduction of TBC could be due to increased leukocytosis or direct microbicidal activity of activated milk cells. In the present study, the biological activity of BRM at standardized dose against bovine SCM is reported for the first time. Development of such therapy is warranted to reduce the drug resistance microorganisms and contamination of milk with antibiotic residue.

Biography

Dr. Ujjwal Kumar De has completed his Ph.D. at the age of 32 years from Indian Veterinary Research Institute, Bareilly, Uttar Pradesh, India. He is a scientist at Division of Medicine of Indian Veterinary Research Institute, a premier institute of Veterinary and Animal Sciences of India. He has published more than 26 research papers in journals of national and international repute and is serving as an editorial board member of Journal of Medicinal Plants Research and Asian Journal of Biomedical and Pharmaceutical Sciences.