

Development of recombinant cells encoding surface proteins of *Corynebacterium pseudotuberculosis* against caseous lymphadenitis in goats

ABSTRACT

Caseous lymphadenitis is an infectious disease caused by an intracellular bacterium, *Corynebacterium pseudotuberculosis*. Control is via vaccination. This report describes construction of two recombinant cells; one that carried the putative surface-anchored protein, the SpaA (pET32/LIC-SP31) and the other the glyceraldehyde-3-phosphate dehydrogenase protein, the GAPDH (pET32/LIC-SP40). The recombinant cells were introduced into goats before an antibody response by the goats and protective capacities of the recombinant cells were measured. Fifteen goats were divided into 3 groups. Group 1 was injected intramuscularly with PBS, Groups 2 and 3 were injected on days 0 and 14 with 10⁶CFU/ml of recombinant pET32/LIC-SP31 and pET32/LIC-SP40 cells, respectively. Serum samples were collected weekly to determine the antibody levels using ELISA. Two weeks after the last vaccination, all goats were challenged subcutaneously with 10⁹CFU/ml of live *C. pseudotuberculosis*. The results revealed that goats exposed to the recombinant cells showed significantly ($p < 0.05$) higher IgG level compared to the control that lasted for 11 weeks. Generally, the exposed groups showed similar antibody pattern although those exposed to pET32/LIC-SP40 showed insignificantly ($p > 0.05$) higher level in the first 7 weeks than the recombinant pET32/LIC-SP31. Following challenge at week 6, abscesses were observed in the lymph nodes of all groups while *C. pseudotuberculosis* was successfully isolated. The recombinant cells were able to induce humoral response but failed to protect the goats against challenge by live *C. pseudotuberculosis*.

Keyword: *Corynebacterium pseudotuberculosis*; Caseous lymphadenitis; Recombinant cells; Surface proteins