Bovine Neutrophil Chemotaxis in Neurolisteriosis

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Bovine Neutrophils; Migration study	
Index	CC22
Standardization	X
Counting	X
Viability	X
Volume	

The Challenge:

Identifying the specific factors—whether host-derived or bacterial—that trigger the massive infiltration of neutrophils (PMN) into the brain during Listeria monocytogenes (Lm) infection, which causes significant neural tissue damage.

CASY's Contribution:

The CASY Cell Counter was utilized for the high-precision quantification of bovine neutrophils at two critical stages of the study: first, to assess cell number and viability to standardize the initial concentration for every chemotaxis assay ; and second, to accurately enumerate the absolute number of viable neutrophils that had successfully migrated into the lower chamber during IL-8 antibody-blocking experiments.

Key Benefits to Researchers:

- **Precision Standardization:** Ensures identical neutrophil concentrations for every assay, guaranteeing technical comparability across multiple experiments and donors.
- **Automated Migration Analysis:** Delivers high-speed, absolute counts of migrated cells, eliminating the subjectivity and labor of manual microscopy.
- **Integrated Viability Check:** Simultaneously verifies cell health to ensure that migration data reflects the behavior of functional, viable neutrophils.

Figure 4C (Neutrophil chemotaxis during IL-8 neutralization). This graph illustrates the specific neutralization of recombinant bovine IL-8 using a monoclonal antibody. The data points representing the absolute number of migrated cells in this specific assay were quantified using the CASY counter.

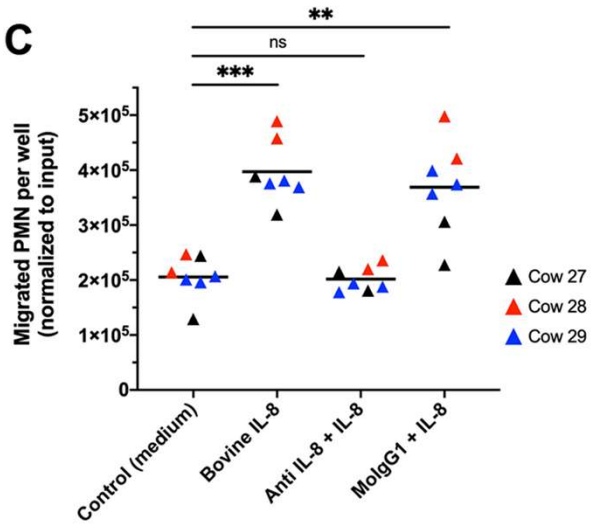

Fig. 4 Bovine microglia express IL-8 in vitro and in situ, but IL-8 blocking in supernatant of Lm-infected microglia does not prevent chemotaxis of bovine PMN. … C Bovine IL-8 chemotactic activity is specifically neutralized following incubation with a monoclonal anti-IL-8 antibody (Anti IL-8 + IL-8), while IL-8 chemotactic activity is not abrogated after incubation with mouse IgG1 (MoIgG1 + IL-8). Data are represented as means on a superimposed scatter dot plot of 3 independent experiments performed in duplicates or triplicates. Statistical analyses: Mann–Whitney U tests (**P < 0.01; ***P < 0.001; ns non-significant).