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Comparison of immune cells subsets, *ex-vivo* and *in-vivo* expression of T cell activation and memory marker between LNC and corresponding PBMC from Calves Exposed to Natural *Mycobacterium bovis* Infection

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Cell-mediated immunity and development of necrotic granulomas in *Mycobacterium bovis (M. bovis)* infected lymph node (LN) is pathognomonic for bovine tuberculosis (BTB). This delayed hypersensitive host response involves a complex interaction of cellular and immune mediators within systemic circulation and LN. Hence, tuberculosis immunological response should be independently investigated at the peripheral blood and LN tissue level. The objective of this study was, therefore, to compare the cell surface and cytokine expression between immune cell from peripheral blood and lymph node cells (LNC) from calves on BCG efficacy trial. Twenty pairs of peripheral blood mononuclear cells (PBMC) and) LNC from M. bovis naturally infected calves during BCG vaccine experiment trial were isolated and investigated in two phases of the flow-cytometry experiment. In the first phase of a flow-cytometry experiment the proportion of *ex-vivo* CD25+ expressing cells was significantly higher ($P<0.05$) in CD4+ and CD8+ T node than that of peripheral blood. However, such difference in CD25+ expression was not observed in WC1 γδ T cells. Contrary to CD25+ *ex-vivo* expression, *in-vitro* IFN-γ and TNF-α producing cells were greater ($P<0.05$) in T cells of the peripheral blood than T cells of lymph node after PMA + ionomycin stimulation. This difference in IFNγ and TNFα responses was also statistically significant between a vaccinated and non-vaccinated group. An IL-4 producing cell was not evident in PBMC and LNC. During the second phase of flow-cytometry experiment additional surface marker; CD2, CD21, CD205, CD335 and CD1W2 were included to add more panels for immune cell subset. The second experiment revealed that PBMC CD4–WC1+ and CD8–WC1+ γδ T cells and CD205+D1W2+ DC subset exhibited lower percentage than γδ T cells and DC of LNC respectively ($p=0.0001$, $p=0.0061$). However, PBMC CD335+CD2+ NKT cells subset exhibited a higher percentage than NKT cells of LNC ($p=0.0129$). No difference was observed between groups in the percentage of the rest of T-cell and B-cell ($p>0.05$). Findings of this study suggest the existence of phenotypic immune compartmentalization between the two tissue compartments.

Biography

Fekadu Desta is a veterinarian with a dream and responsibility to control and prevent the existing endemic and emerging new diseases of livestock and companion animals, Ethiopia. For the last 6 years, he has been doing his PhD in Tropical Infectious Diseases with a PhD dissertation entitled "Comparison of Immune Cell Subsets, *ex-Vivo* and *in-Vitro* Expression of Activation and Memory Marker Between LNC and the Corresponding PBMC from Calves Exposed to Natural Mycobacterium bovis Infection in BCG Efficacy Trial" which is one of a research priority of the country. Currently, he is on data analysis, interpretation and result dissemination stage. He has published one paper on molecular epidemiology of M. bovis and preparing 3 more manuscript on bovine immunology.

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