Regulatory T cells in draining lymph nodes of *Lawsonia intracellularis* infection in pigs - DTU Orbit (13/04/2019)

**Regulatory T cells in draining lymph nodes of *Lawsonia intracellularis* infection in pigs**

*Lawsonia intracellularis* infection in pigs cause diarrhoea and poor performance in growing pigs and is an important contributor to the high antibiotic usage in pig production. Experimentally, a primary subclinical *L. intracellularis* infection can induce protection against a secondary challenge infection. Although, immune responses to *L. intracellularis* infection have been investigated to a certain level, with IFN-γ being a key factor for development of protection, the role of Tregs is unknown. Activation of suppressive Tregs may play a role in the ability of *L. intracellularis* to survive in the infected host.

Four pigs were challenged twice with *L. intracellularis* infectious material, with four weeks interval. Lack of faecal shedding after the second challenge indicated the pigs were protected. The pigs developed *L. intracellularis* specific IgG responses and CMI responses in PBMCs confirmed TC cells (CD3+CD4-CD8β+) and memory TH cells (CD3+CD4+CD8α+) being main producers of IFN-γ. Pigs were slaughtered 8 week after the second challenge and ileocacal lymph node cells (iLNC) and PBMCs were prepared and frozen.

With focus on identification and characterisation of Tregs, iLNC were co-cultured with porcine IL-2 and *L. intracellularis* antigen (Ag), Con A, or IL-2 alone. Before culture iLNC showed 1.4-4.0% Tregs (CD3+FoxP3+), which were mainly CD25h. iLNCs were around 20% CD4+CD8α+ T cells of which 6.3-10.7% were Tregs, whereas within CD4+CD8α- T cells (37%) and CD4-CD8α+ T cells (35%) the levels of Tregs were 1.7-3.4% and 0.9-1.6%, respectively. The phenotype CD4+CD8α+ of Tregs may indicate these cells being induced (iTregs) compared to naturally occurring (nTregs) mainly CD4+CD8α-.

Co-culture for 6 days (CFSE proliferation assay) with IL-2 and Con A identified FoxP3+ cells among proliferating cells, however proliferation in Ag-cultures was at same level as without antigen.

Further characterisation of Tregs after *L. intracellularis* antigen culture of iLNC and PBMC will be performed.

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