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Lymphocyte subpopulations as affected by dietary fatty acids

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Abnormal numbers of specific types of leukocytes may indicate immuno-suppression or immunocompetence in response to an immunomodulator. The objective of this study is to investigate the effect of feeding broilers on diet containing flaxseed on splenocyte T and B-cells. Upon hatching, all chicks were given the same basal diet for 13 days. Dietary supplementation of flaxseed started at 14 days of ages until the end of the cycle at 35 days of age. At slaughter, samples of spleen were collected. Spleen cells were harvested in cell suspensions. Immune cells were then enumerated using the flow haemocytometer in the Physiology Laboratory. The overall differences between the dietary treatments were analyzed using one-way analysis of variance (ANOVA) and the general linear model procedure of Minitab. Statistically, there was no significant effect of flaxseed on the percentage positive or mean fluorescence intensity of the leukocyte subsets under investigation. However, there was a trend towards an increase in the proportion of B-cells in the spleen after feeding 15% of flaxseed, which approached significance ($P=0.058$). There was also a trend towards a decrease in the mean fluorescence intensity of CD8⁺ subsets in the spleen, which was close to statistical significance ($P=0.054$). This trend is particularly interesting, given the fact that the bursa in these chickens were significantly observed to be smaller and thinner. It suggests that flaxseed may either prevent the homing of B-lymphocytes to the bursa or encourage the release of B-lymphocytes from the bursa into the circulation and then in the spleen.

Biography

Hanan Al-Khalifa has obtained her Master's degree in Parasitological Diseases and Immunology at University of Manchester and completed her PhD in 2007 in the University of Reading, UK, investigating the effect of n-3 fatty acids on the immune response and general health status. Her interests include but are not limited to immunological techniques, parasitological diseases, effect of nutrition, especially fatty acids, on the immune status in both humans and experimental animals. She executed many research projects that focused on the effect of nutrition on immunology. She has attended many scientific events and published more than 60 papers in refereed journals and conference proceedings.

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