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Analysis of avian cell proliferation by flow cytometry

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Abstract

Cell proliferation for both T- and B-lymphocytes play an important role in the specific immunity against infectious diseases and other mitogens. Techniques traditionally available for determining cell proliferation show a limited number of cell divisions. Other techniques give indication of the overall division, without showing the history of the division. In addition, these methods mostly use radioactivity of incorporated thymidine and bromodeoxyuridine into the DNA of mitotic lymphocytes. The current paper discuss a safe flow cytometric technique to measure cell proliferation in vitro. This techniques allows analysis of the proliferation history such as the average number of divisions, the division index, the proliferation index and the % of division. This technique is based on the use of carboxyfluoroscein succinimidyl ester stain (CFSE), a colourless and non-fluorescent until it is cleaved by intracellular esterases to yield highly fluorescent CFSE. This fluorescence is retained by the cells throughout development and meiosis, and so it is inherited by daughter cells. The divided cells can be displayed as a histogram of FITC-CFSE staining against cell count. For analysis of data, a marker is set on the control sample, to include at least 98.5% of the un-stimulated cells. The sensitivity of this protocol is critically affected by the original cell concentration, mitogen concentration, incubation time, and the method of lymphocyte purification.

Biography

She graduated as honor student from Kuwait University with Zoology as major and Microbiology as minor. She joined KISR in 1996 as a Research Assistant and was promoted to get her MSc in Immuno-Parasitology from University of Manchester in 2003 and Ph-D in Immunology from University of Reading in 2010, united Kingdom. She was the leader of three client funded projects, and three general activities. She participated in eight client-funded and in-house projects. Dr. Hanan authored and co-authored 25 refereed articles. She also authored and co-authored 20 papers presented in international conferences and 7 progress and final in-house KISR (Kuwait Institute for Scientific Research) reports.