IJAE Vol. 115, n. 1/2 (Supplement), 2010

Cell-to-cell communication triggered by Fas-FasL

Marcella Arcangeletti[1], Barbara Canonico[1], Erica Cesarini[1], Mauro Degli Esposti[2], Loris Zamai[1], Stefano Papa[1] and Francesca Luchetti[1]

[1] Dipartimento di Scienze dell'Uomo, dell'Ambiente e della Natura, Università degli Studi di Urbino "Carlo Bo", Urbino, Italy
[2] Faculty of Life Sciences, University of Manchester, Manchester, UK

Eukaryotic cells have developed a variety intercellular communication mechanisms for the exchange of molecular information between neighbouring cells (trogocytosis) including immunological synapse, tunnelling nanotubes formation and uptake of exosomes. These lead to the intercellular transfer of organelles, plasma membrane components and cytoplasmic molecules. It has been demonstrated that the information transfer between immune cells plays an important role in modulation of immune responses (IR). Apoptosis is a physiological process essential to the development and homeostatic maintenance of the immune system through the extinction of the IR and the deletion of autoreactive lymphoid cells. In this work we have evaluated cell to cell communication during FasL-mediated apoptosis in CD4 and Jurkat T cells. The omotypic exchange has been demonstrated by fluorescent probes PKH67, PKH26, CFSE, DiI. We analysed labelled cells after 30, 60 and 120 min of co-incubation and FasL treatment. Furthermore, pre-treatments with two trogocytosis-specific inhibitors were performed: latrunculin A (actin filament-disrupting agent) and PP2 (inhibitor of Src family kinases). Our results show that Fas stimulation induces membrane transfer (PKH67 and PKH26 labeling), a large exchange of CFSE fluorescence (cytosolic elements) and also transfer of DiI fluorescence (labeled endocytic vesicles). In addition, the pre-treatment with latrunculin A has shown a strong decrease of exchange mechanisms compared to PP2-treatment in both cell lines. Our data suggest that Fas also promotes intercellular communication among T cells highligthing its important role in the immune response regulation.

Key words
Cell-to-cell communication, FasL, T lymphocytes