

The role of efferocytosis in autoimmune diseases

Abdolmaleki F.

Farahani N.

Hayat S.M.G.

Pirro M.

Bianconi V.

Barreto G.E.

Sahebkar A.

Apoptosis happens continuously for millions of cells along with the active removal of apoptotic debris in order to maintain tissue homeostasis. In this respect, efferocytosis, i.e., the process of dead cell clearance, is orchestrated through cell exposure of a set of "find me," "eat me," and "tolerate me" signals facilitating the engulfment of dying cells through phagocytosis by macrophages and dendritic cells. The clearance of dead cells via phagocytes is of utmost importance to maintain the immune system tolerance to self-antigens. Accordingly, this biological activity prevents the release of autoantigens by dead cells, thus potentially suppressing the undesirable autoreactivity of immune cells and the appearance of inflammatory autoimmune disorders as systemic lupus erythematosus and rheumatoid arthritis. In the present study, the apoptosis pathways and their immune regulation were reviewed. Moreover, efferocytosis process and its impairment in association with some autoimmune diseases were discussed. © 2018 Abdolmaleki, Farahani, Gheibi Hayat, Pirro, Bianconi, Barreto and Sahebkar.

Apoptosis

Autoimmune disease

Efferocytosis

Phagocytosis

Systemic lupus erythematosus

apoptotic protease activating factor 1

autoantigen

autophagy related protein

calreticulin

caspase

caspase recruitment domain protein 15

CD14 antigen

fractalkine

hepatitis A virus cellular receptor 2

interleukin 10

kidney injury molecule 1

lysophosphatidylcholine

protein bcl 2

purinergic P2X receptor

purinergic P2X7 receptor

purinergic P2Y receptor

Rho kinase

sphingosine 1 phosphate

toll like receptor 4

tumor necrosis factor receptor

tumor necrosis factor receptor associated death domain protein

anemia

apoptosis

autoimmune disease

autoimmune lymphoproliferative syndrome

Crohn disease

dendritic cell

efferocytosis

immunological tolerance

immunoregulation

insulin dependent diabetes mellitus

macrophage

mitochondrial permeability

multiple sclerosis

nonhuman

polyarthritis

protein expression

real time polymerase chain reaction

Review

rheumatoid arthritis

systemic lupus erythematosus

tumor microenvironment

TUNEL assay

ulcerative colitis