

Preface

Cytokines, produced by immune cells, are soluble molecules by which the immune system communicates with other cell types within or outside the immune system. Cytokines form a central coordinating network of soluble effector molecules that plays a crucial role at every step of the development of autoimmune disease: in the generation of pathogenic or protective effector cells, in the trafficking of pathogenic cells to the target organ, and in mediating tissue damage or tissue tolerance in the target organ.

Upon activation, naive autoreactive T cells differentiate into cells that produce proinflammatory or anti-inflammatory cytokines. Cells producing proinflammatory cytokines are pathogenic and induce organ-specific autoimmune diseases, whereas autoreactive cells producing anti-inflammatory cytokines may inhibit autoimmune diseases, although they do not always do so. Thus, interventions targeted to inhibit the secretion of proinflammatory cytokines or the differentiation of cells to a proinflammatory phenotype, or alternatively to enhance anti-inflammatory cytokines or the differentiation of cells to an anti-inflammatory phenotype, may inhibit and/or reverse an autoimmune disease. This highlights the enormous therapeutic potential of cytokine modulation in the treatment of autoimmune diseases.

Over 18 different cytokines with both overlapping and distinct functions in the activation, expansion, and differentiation of other cell types in the immune system have been discovered. In addition there are over 20 different chemokines, molecules that are chemotactic and affect the accumulation of different types of cells at the sites of inflammation and tissue injury. In an immune response there is a complex interplay between these various cytokines and chemokines that determines the outcome of inflammation and the probability of developing autoimmune disease.

The current literature contains a large amount of primary data on the role of various cytokines in the induction and regulation of autoimmunity; however, there is no clear consensus. *Cytokines and Autoimmune*

Diseases aims to synthesize the available information on this single topic, the role of cytokines in autoimmunity, to help develop a clear understanding of how cytokines and chemokines are involved in the pathogenesis of autoimmune diseases.

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