



IMMUNOLOGY

Handout: Complement Activation

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Soluble regulators of complement activation :

C1 inhibitor (C1 INH) : acts on C1r and C1s, binds to activated C1r and C1s blocking their action. Binds to inactive C1 preventing spontaneous activation.

C4bp (C4b binding protein) : acts on C4b, it accelerates decay of the classical pathway C3 convertase (C4b2a).

Factor H : acts on C3b, accelerates decay of the alternative pathway C3 convertase (C3bBb).

Factor I : acts on C4b and C3b, it cleaves and thus inactivates C3b and C4b.

S protein : acts on MAC (membrane attack complex), binds fluid phase C5-7 and prevents its insertion into cell membranes.

Anaphylatoxin inactivator (AI) : acts on the anaphylatoxins, cleaves C3a, C4a and C5a making them inactive.

Membrane bound regulators of complement activation :

Membrane cofactor protein (MCP) : present on most blood cells (except erythrocytes), epithelial and endothelial cells and fibroblasts, acts as cofactor for factor I in the inactivation of C3b and C4b that are bound to cell surfaces.

Decay accelerating factor (DAF) : present on most blood cells, endothelial and epithelial cells. It accelerates the dissociation of both classical and alternative pathway C3 convertases that are bound to cell surfaces.

Homologous restriction factor (HRF) or C8 binding protein : present on erythrocytes, lymphocytes, monocytes, neutrophils and platelets, it acts on C8 and C9, blocks binding of C8 and C9 to autologous cells thus preventing their lysis.

CD 59 (membrane inhibitor of reactive lysis, MIRL) : present on erythrocytes, lymphocytes, monocytes, neutrophils, platelets, endothelial and epithelial cells, it blocks C9 binding to C8 preventing MAC formation and autologous cell lysis.

COMPLEMENT RECEPTORS

CR1 & CR2