Myeloperoksidase

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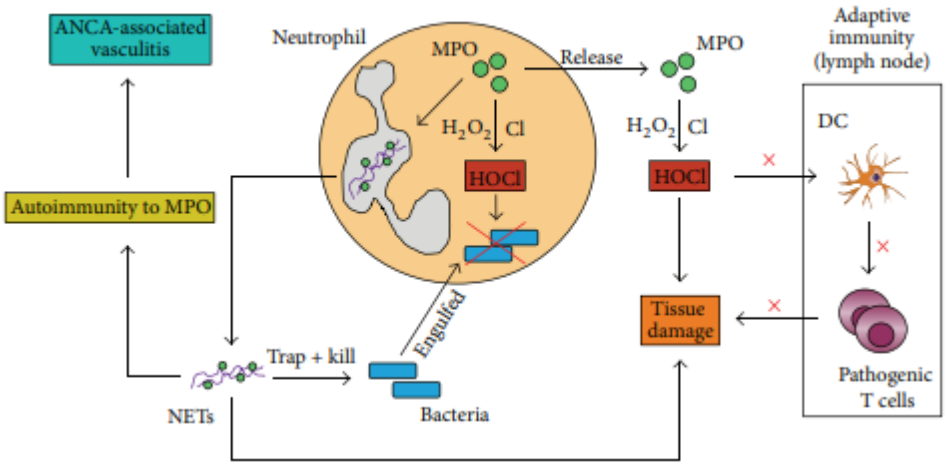
Myeloperoksidase (MPO) adalah protein lisosom yang dilepaskan ke dalam fagosom neutrofil selama degranulasi. Di dalam fagosom, MPO bereaksi dengan hidrogen peroksida dan halida untuk membentuk asam hipoklorit atau dengan tirosin untuk menghasilkan radikal tirosil. Produk-produk ini sangat sitotoksik dan dapat dilepaskan untuk menghancurkan mikroorganisme asing. Namun, agen toksik tersebut juga dapat merusak jaringan normal dan berkontribusi pada peradangan. MPO sering diekspresikan dalam berbagai penyakit inflamasi, termasuk penyakit radang usus (IBD)

Selain berperan dalam mengurangi jumlah mikroba secara intraseluler melalui produksi asam hipoklorit, MPO juga berfungsi secara ekstraseluler melalui pelepasan *neutrophil extracellular traps* (NETs). Pelepasan NETs dapat menyebabkan vaskulitis terkait antibodi sitoplasma neutrofil (ANCA). Asam hipoklorit yang dihasilkan setelah pelepasan MPO dapat menyebabkan kerusakan jaringan yang signifikan. Sebaliknya, MPO yang dilepaskan oleh neutrofil di kelenjar getah bening dapat menghambat aktivasi sel dendritik, yang mengarah pada respons sel T adaptif dan mengurangi kerusakan organ.

Pada tingkat imun adaptif, neutrofil yang cepat menyusup melepaskan MPO di kelenjar getah bening setelah terpapar antigen. MPO yang terdeposit dapat menghambat berbagai fungsi sel dendritik, seperti ekspresi molekul kostimulatori dan produksi serta migrasi sitokin (IL-12, IL-23), yang mengakibatkan penurunan respons sel T CD4, termasuk aktivasi, proliferasi, dan diferensiasi sel T menjadi Th1.



Neutrofil MPO menekan fungsi sel dendritik dan kekebalan adaptif. Neutrofil yang menyusup melepaskan MPO di kelenjar getah bening setelah terpapar antigen, yang menghambat ekspresi molekul kostimulatori (misalnya, CD86) serta produksi dan migrasi sitokin (IL-12, IL-23), yang akhirnya mengurangi aktivasi, proliferasi, dan diferensiasi CD44, Th17, dan Th1.

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