Targeting Neutrophils for Inflammatory Disorders

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Neutrophils play a crucial role in enhancing the immune defense against infections. However, overactivated neutrophils can contribute to initiating and progressing inflammatory diseases and autoimmune disorders such as acute respiratory distress syndrome (ARDS) and psoriasis. The reactive oxygen species, proteases, and neutrophil extracellular traps released by activated neutrophils can damage cells and cause immune-inflammatory disorders. The abundant neutrophils in damaged lesions can be a histopathological hallmark of inflammatory diseases and autoimmune disorders. Neutrophil counts may correlate with the disease severity. Hence, neutrophils can not only be used as pathogenic markers but also as candidate drug targets. Nevertheless, the pathogenic mechanism behind neutrophil activation is intricate, and the exact details of this mechanism remain elusive. Furthermore, the availability of neutrophil-targeting drugs for clinical use is currently limited. A better understanding of the precise regulation of neutrophils in human health and disease is fundamental for designing novel therapies. The pharmacological approaches to discovering drug-lead compounds with specific targets for neutrophilic inflammation will be discussed.