

ABSTRACT

Neutrophils are the main cells that play a significant role in the innate immune system. Upon a pathogenic invasion, these cells are recruited to the site of infection and perform many different functions. Targeting the neutrophils for therapeutic interventions has been a great challenge due to the complexity of their signaling pathway and mechanisms. Therefore, the search for drug candidates that enhance neutrophil function remains questionable. DX23 is a type of CFTR potentiator originally used to treat patients with cystic fibrosis. However, this research would like to test the potential of DX23 as one of the drug candidates tested for enhancing neutrophil activity. Moreover, the experiment utilizes spectrophotometry, flow cytometry, and luminometer to elucidate the molecular mechanisms underlying the responses of neutrophils and identify targets for treating neutrophil-associated diseases. In this study, DX23 was found to enhance superoxide anion production, reactive oxygen species generation, and elastase release in human neutrophils. Additionally, DX23 is able to promote the formation of NETs in order to initiate immune defense. Further study also shows that DX23 promotes the generation of primary and secondary granules during degradation in CD marker detection.

Keywords : DX23, neutrophils, enhancing, novel drug target, immune response, activation.