Introduction and Objectives: Neutrophils are the major defense cells in the body and the first one to reach the site of infection. The formation of neutrophils extracellular traps (NETs) is a process that depends on reactive oxygen species (ROS) and that culminates with the release of DNA decorated with proteins, such as histones and elastase. These structures are able to capture and degrade pathogens. NETs can be induced by PMA, a known activator of PKC, and amyloid fibrils (AF), proteic fibrillar aggregates that are capable of triggering inflammatory response. Neutrophils are mainly glycolytic cells and the importance of glycolysis as source of ATP is well described. However, it remains unclear whether glycolysis is important for NETs release. Therefore, our work aims to understand the importance of glycolysis for NETs release.

Materials and Methods: Neutrophils purified from healthy human blood were incubated with PMA or AF in the presence or absence of glucose. NETs release was measured using PicoGreen.

Results and Conclusion: We observed that neutrophils stimulated by PMA or AF deprived of glucose did not release NETs, but remained viable. In the presence of fructose, neutrophils stimulated with PMA and AF failed in producing NETs, although it was capable of producing ATP and pyruvate as the controls. This data suggests that glucose, but not fructose, is essential for the formation and release of NETs. Knowing that glucose-6-phosphate can flow through the glycolytic pathway (GP) or pentose phosphate pathway (PPP), and is able to generate ROS, it was assessed the importance of this latter pathway. To address the importance of PPP in the NETs release, we used an inhibitor of glucose-6-phosphate dehydrogenase, observing that it was able to reduce NETs release. These data suggest that glucose flow into the PPP and not only GP is necessary for NET formation.

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Key words: NETs, glycolysis and pentose pathway.