

EFFECTS OF QUINTON[®] SOLUTION ON HUMAN NEUTROPHILS' RESPIRATORY BURST

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INTRODUCTION

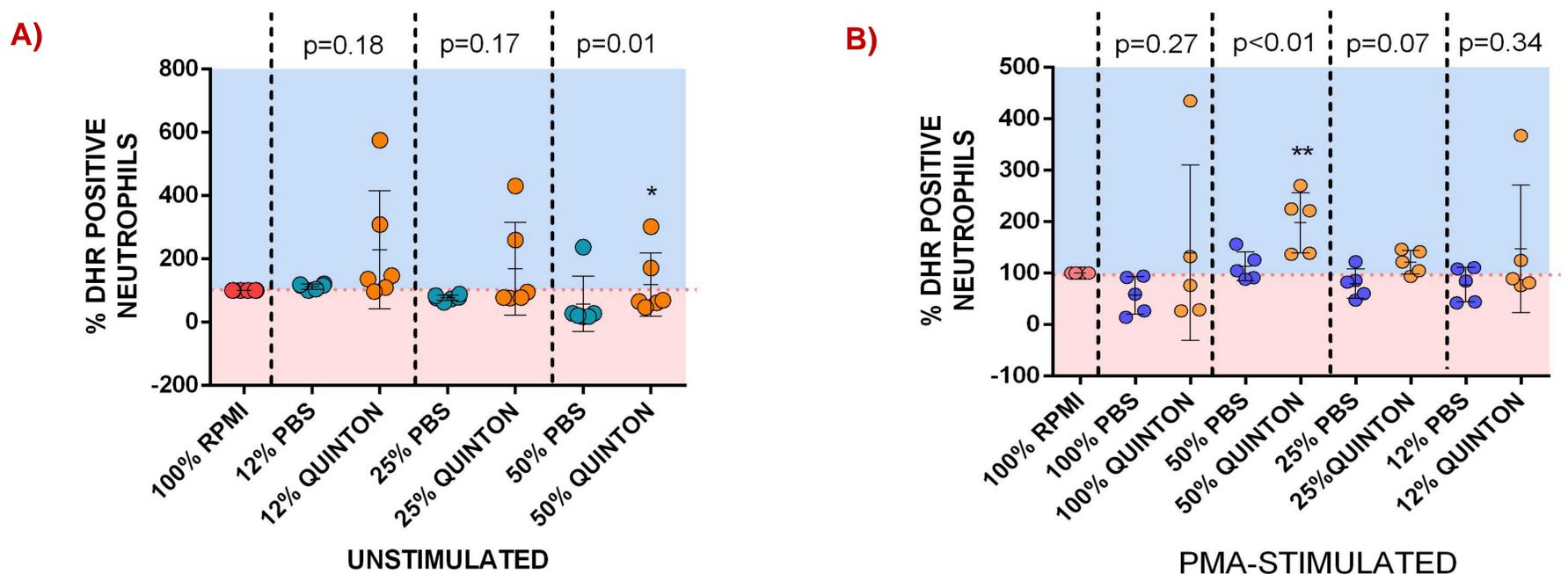
Quinton[®] isotonic solution consists in ultrafiltered diluted seawater with a final concentration of 9 g/l NaCl, obtained from nutrient-rich areas (marine vortices). The solution contains most of the mineral elements necessary for the correct functioning of the body's cells. In our previous studies, Quinton[®] isotonic solution has shown different immunomodulatory activities on lymphocytes. Neutrophils phagocytic response generates reactive oxygen species (oxidative burst), with a key role in the defence against pathogens. The aim of this study is to analyse the effect of Quinton[®] isotonic solution on neutrophils function.

MATERIALS AND METHODS

Human neutrophils were isolated by density gradient centrifugation with Percoll, from anticoagulated blood samples of healthy donors. 100.000 neutrophils were cultured in rounded 96-well plates, with different ratios of RPMI and Quinton[®] isotonic solution (100%, 50%, 25%, 12,5%, 0%) for 12 hours, in a final volume of 200 μ L. PBS solution was used as a control. Respiratory burst was induced by incubating cells with phorbol 12-myristate 13-acetate (PMA) (0,3 ng/mL) for 30 minutes at 37 °C, 5% CO₂, and measured by flow cytometry after adding dihydrorhodamine 123 (DHR).

RESULTS

Quinton[®] isotonic solution increased the percentage of positive neutrophils for respiratory burst, with and without stimulation. In the case of non-stimulation (A), the increase was significant for the 50% concentration (p=0.01). Furthermore, in the stimulated cultures (B), the increase was significant for the 50% concentration (p<0.01), with nearly significant p-value for the 25% concentration (p=0.07).



CONCLUSION

Quinton[®] isotonic solution, under proper concentrations, seems to modulate neutrophils' function in vitro through an increase in their respiratory burst, which could translate into a higher bactericidal activity.