

FULLERENE C₆₀ SUPPRESS THE OXYGEN-DEPENDENT PHAGOCYTOSIS AND EXPRESSION CD54 IN IMMUNE CELLS

*Mamontova T.V., Vesnina L.E., Kaidashev I.P.
Research Institute for Genetic and Immunological Grounds of Pathology and
Pharmacogenetics, Ukrainian Medical Stomatological Academy, Poltava,
Ukraine*

Background. Fullerene C₆₀ (FC₆₀) provides a promising nanoparticle's class of drug delivery system in immune regulation and therapeutic application. Fullerene C₆₀ interaction with immune cells may influence on adhesion, phagocytosis, clearance and hence potentially affect distribution and delivery to the intended target sites.

Objectives. The aim of this study was to assess influence of fullerene C₆₀ on phagocytic activity of immune cells.

Materials and methods. Peripheral blood from 10 healthy donors were obtained. FC₆₀ was added at 0,01 and 0,1 μM/l to peripheral blood and incubated 10 min at 37°C. Level of phagocytosis, NBT-test, level of myeloperoxidase and lysosomal cationic proteins (LCP) activity, induced chemiluminescence's were assayed. Peripheral blood mononuclear cells (PBMCs) were obtained from peripheral blood. These cells were incubated with PE-conjugated monoclonal antibody to CD54 and analyzed by FACScan.

Results. The results demonstrate that FC₆₀ did not affect phagocytic activity of neutrophils at any doses. FC₆₀ decreased level of myeloperoxidase activity in neutrophils in doses 0,01 and 0,1 μM/l. FC₆₀ stimulate level of rate NBT-test in neutrophils in doses 0,01 μM/l. This study shows that FC₆₀ did not influence on LCP activity in eosinophils at any doses. Addition FC₆₀ to peripheral blood suppress zimosan-induced chemiluminescence's in doses 0,01 and 0,1 μM/l. Moreover, FC₆₀ strongly reduced level of expression CD54 on lymphocytes and monocytes in doses 0,01 and 0,1 μM/l, but did not effect on neutrophils.

Conclusion. The results of this study show that FC₆₀ fullerene C₆₀ can influence on phagocytosis of immune cells via different mechanism. FC₆₀ inhibits oxygen-dependent phagocytosis and expression of adhesion molecule CD54 in immune cells. Thus, FC₆₀ has potential perspective application in regulation functional activity of immune cells and requires more research.

КЛЮЧОВІ ПОКАЗНИКИ РОЗВИТКУ ПЕРЕДДІАБЕТИЧНОГО СТАНУ ЗА УМОВ СПОЖИВАННЯ ЕКСТРАКТУ ЛУШПИННЯ КВАСОЛІ ЗВИЧАЙНОЇ (PHASEOLUS VULGARIS) У ЩУРІВ З ЕКСПЕРИМЕНТАЛЬНИМ ОЖИРІННЯМ

*Креницька Д.І., Юрченко А.В.
Київський національний університет імені Т. Г. Шевченка, ННЦ «Інститут
біології та медицини»*

Вступ. Ожиріння є мультифакторним захворюванням, етіологія і патогенез якого пов'язані із сумарним впливом багатьох чинників і супроводжуються порушенням у функціонуванні більшості систем організму. До