

The New Biologically Active Products Obtained from Fullerene-containing Soot

Gregory N. Churilov, Victoriya G. Isakova, Sergry G. Ovchinnicov

L.V.Kirensky Institute of Physics SB RAS,

660036, Krasnoyarsk, Academgorodok, Fax: (3912)438923, E-mail: churilov@post.krasccience.rssi.ru

In this work a biological activity of water-soluble compounds, which create as organic fullerenes derivations by an interaction between fullerene-containing soot and acetil-acetons, is researched. The fullerene-containing soot was synthesised in plasma chemical reactor (PCR) in carbon plasma jet under helium flow in the atmospheric pressure condition. A composition of the products, which were synthesised in our PCR, distinguishes from a composition of products, which were obtained by classical method of Kreachmer. The main difference is an increasing of highest fullerenes outcome. Soluble in organic solvents derivations of C60, C70 and acetil-aceton are the main products of an interaction between fullerene-containing soot and acetil-aceton among the water. Methods of their separation are found. Compounds are researched by IR, UV-spectroscopy and RFA methods. Chromotography methods of investigation of water-soluble products of synthesis have shown that there presents a mixture of compounds in these solutions. Individual products have not been studied yet, because the total outcome of the last one is small for the time being. Solutions of compounds are researched by spectroscopy methods and method of electronic microscopy. A water-soluble products influence on a kinetics of reactive oxygen forms (ROF) generation by granulocyt macrophage cells and cells of a mononuclear phagocytes system in a system of whole blood is investigated by hemiluminescence technique with 36-channel Chemiluminescence analyzer-3601. Their inhibit influence is established. On this way a change of the inhibit influence depth depended on quantity of fullerene C60 in initial fullerene-containing soot. The most of inhibit ability have products, which are obtained with using of fullerene-containing soot, remaining after fullerene extraction. We have observed changes of influence of these water-soluble products on the generation of ROF in 50 times. It can be explained by more higher inhibit ability of highest fullerenes. And it's quite possible that there are other biological-active forms in our fullerene-containing soot.

In development of this work we have researched an interaction between acetil-aceton and individual samples of C60 and C70. Preliminary information about a composition and properties of forming compounds is obtained.