

Electron Paramagnetic Resonance in the Experimental Oncology: Implementation Examples of the Conventional Approaches

Burlaka A., Gafurov M., Iskhakova K., Lukin S., Rodionov A., Sidorik E., Vovk A.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2016, Springer Science+Business Media New York. This paper presents a mini-review of application of electron paramagnetic resonance (EPR) in the experimental oncology studies based on the authors' experience acquired at the R.E. Kavetsky Institute of Experimental Pathology, Oncology, and Radiobiology of the National Academy of Science of Ukraine in cooperation with the EPR group at Kazan Federal University. We show some applications of the conventional X-band EPR measurements combined with the spin trapping techniques to study the mechanisms of the chemical, radiation-induced, and hormonal carcinogenesis; to investigate the influence of the regulators of the cell proliferation; to diagnose and differentiate the tumors; and to monitor the effectiveness of the therapeutic treatment of the malignant tumors.

<http://dx.doi.org/10.1007/s12668-016-0238-5>

Keywords

Cell proliferation, EPR, ESR, Mitochondrial electron transport chain, Tumor