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## Comparison of the cytotoxic effects of anticancer drug liposomal lyophilized formulation LLF OR-2011 and OR-2011 substance from nitrosourea class

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**Objective:** To compare the cytotoxic effect of anticancer drugs OR-2011 on lyophilized liposomal formulation (LLF) and substance on human melanoma cells Mel KorandMel Ibr.A new lyophilized liposomal formulation (LLF) OR-2011 was developed for specialized and profound studies in I.M. Sechenov First Moscow State Medical University and in N.N. Blokhin Russian Cancer Research Center.

**Materials & Methods:** A comparison of cytotoxicity of liposomal drugs were performed using the MTT assay based on the restoration of dehydrogenases of metabolically active of living cells yellow salt 3-[4,5-dimethylthiazol-2]-2,5-diphenyltetrazolium bromide (MTT) to form a purple crystals of formazan. The amount of formazan obtained depends of the number of cells and their viability and were determined by photometrically. Cytotoxic effect characterizes the IC<sub>50</sub>-(concentration of substances that are caused by the death of 50% of the cells)liposomal formulationOR- 2011 and substances OR-2011 were studied in concentrations of 1 mg/ml; 0.5 mg/ml; 0.25 mg/ml; 0.125 mg/ml; 0.062 mg/ml; 0.031 mg/mL and 0.015 mg/ml. Cell lines were cultured in a RPMI-1640 medium containing 10% fetal calf serum (FCS), 10 mM HEPES (Sigma, USA), 2 mM-glutamine (Sigma, USA), 40 ng/ml gentamicin (ICN, USA) 0.1% 1000-fold solution of amino acid and 0.1% 1000-fold rastvorara vitamins (PanE-Co., Russia) at 37°C in an atmosphere of 5% CO<sub>2</sub> and 0.1% 1000-fold vitamin solution (PanEco, Russia), at 37°C in an atmosphere of 5% CO<sub>2</sub>. The cells were maintained in logarithmic growth phase of constant reseeding human culture within 3-4 days. For cell detachment with plastic was used versen solution. Cells were washed with serum-free pure RPMI-1640 medium and transplanted in a 96-well flat-bottomed plates (Costar, USA) at 4×10<sup>3</sup> cells 180 µl of complete medium RPMI-1640 per well. To evaluate the cytotoxic effect of liposomal drugs was added into each well of 20 microliters of various concentrations of drug and incubated with the cells for 24; 48 and 72 hours at 5 %-CO<sub>2</sub> incubator at 37°C.

**Results & Conclusions:** Cytotoxic effect of OR-2011 was most expressed especially in the liposomal forms; after incubating the cells with the drug for 24 hours, the IC<sub>50</sub> for liposomal form has been 0.025 mg/ml and for OR-2011 substances-0.125 mg/ml. Further at incubation, 48 and 72 hours IC<sub>50</sub> for liposomal formulation remained same values and for the OR-2011 substance has reached 0.062 mg/ml. Thus, study of lyophilized liposomal formulation LLF OR-2011 cytotoxic activity showed more effectively kills neoplastic cells in comparison with the substance OR-2011.

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