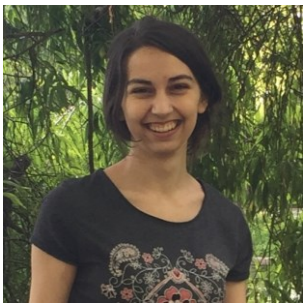


Title: Analysis of convergent efects of doxorubicin, quercetin and menadione in treatments of human leukemia Jurkat T cells

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Given the major diversity of cancer forms, development of treatments with specific functions is of great importance. In this in-vitro study, leukemia Jurkat cells interactions with antitumoral antibiotic Doxorubicin (DOX) were investigated, and their modulation by flavonoid Quercetin (QC) and Menadione (MD). Cell cycle, apoptosis/necrosis and oxidative status were assessed by flow cytometry.

DOX acts on malignant cells via cell-cycle arrest, mitochondrial depolarisation, oxidative stress. Cellular viabilty dose-dependently decreased after 18 h and 48 h exposure to DOX (IC_{50} = 571 nM and 93 nM, respectively), while the sub-G_0 cell fraction increased (IC_{50} = 385 nM and 128 nM, respectively). Also, 0.1 μM and 1 μM DOX arrested the cell cycle in G_2/M (63% cells) and S phase (70%), respectively.

In 18 h treatments, the 15 μM equimolar QC/MD combination produced by itself 52% cell death rate, by oxidative stress generation and apoptosis induction, and enhanced DOX cytotoxicity, dramatically decreasing the viable cell fraction (IC_{50} = 1.25 μM). 15 μM QC with 7.5 μM MD produced 69% viable cells; association with DOX exhibited additive cytotoxicity (IC_{50} = 2.26 μM). 48 h exposures further enchanced the effects. Addition of QC/MD up to 7.5 μM and 2.5 μM, respectively, to the 0.1 μM and 1 μM DOX-plan, increased the S-cell fraction, with higher levels progressively increasing the G_0/G_1 cell fraction.

Therefore, QC/MD combination appears to be a good addition to DOX-treatments.

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Biography:

Oana Baran is an undergraduate student at "Carol Davila" University of Medicine and Pharmacy. She is taking part in the research activities of the Department of Biophysics and participated in 2015 at the 10th European Biophysiscs Congress in Dresden, Germany. She also participated at international science olympiads in South Africa and Switzerland (2011, 2013).

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