Fawzia Sha'at et al., Organic Chem Curr Res 2016, 5:3(Suppl)
http://dx.doi.org/10.4172/2161-0401.C1.014

CANPE–Analysis of antiproliferative effect of four plant extracts on cancerous SH-SY5Y cell line using impedance-based real-time monitoring assay

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In this study we investigated the antiproliferative activity of four plant extracts on SH-SY5Y human neuroblastoma cell line (including both adherent and floating cells) using the method of real-time monitoring of cell growth (impedance measurements). SH-SY5Y cells were grown in direct contact with gold electrodes integrated to the bottom surface of micro-titer plate well. Cells were incubated with 6 concentrations of each plant extract 24h after the cells were seeded. Low intensity AC signals (μA) were periodically applied to electrodes and the magnitude of electric impedance was measured. The impedance changes were reflecting the overall interaction of the cells with the electrodes including when various compounds modified cellular features like cell metabolism and capacity of proliferation (the cell growth was evaluated for 72h). The four plant extracts containing 5mg total phenols, expressed as gallic acid equivalents [GAE], per 1mL sample were: GE(*Geranium robertianum*), EP(*Epilobium hirsutum*), FG (*Fagus sylvatica*) and JG (*Juglans regia*). The extracts of 0.5, 5, 10μg GAE/mL showed no antiproliferative effect, while at higher concentrations (20, 30, 40 μg GAE/mL) of extracts the cellular growth decreased rapidly. We found the 10μg GAE/mL extract was the concentration for which the antiproliferative effect of extracts on SH-SY5Y becomes significant. This concentration will be used for further studies to evaluate the antitumor effect of combinations of extracts with cytostatic agents (mixtures with potentiated activity). Our results represent the first evidence of anticancer activity of the four extracts using a method of real-time monitoring of cellular growth.

Biography

Fawzia Sha'at is now a Junior Researcher at National Institute for Chemical-Pharmaceutical Research and Development-ICCF Bucharest and associated with the Department of Biophysics and Cell Biotechnology, University of Medicine and Pharmacy Carol Davila, Bucharest. She graduated from Faculty of Pharmacy (2013) and has done her Master's Program in Medical Biophysics and Cellular Biotechnology (2015). She has 13 presentations in international and national congresses and 1 paper published in a Romanian journal.

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