Anticancer effects of *Citrus bergamia* juice in SH-SY5Y cultures

S. Delle Monache[1], P. Sanità[1], S. Cirmi[2], G.E. Lombardo[2], N. Ferlazzo[2], A. Angelucci[1], G. Calapai[3], M. Navarra[2,4]

[1]Dept. of Biotechnological and Applied Clinical Sciences, University of L'Aquila, Italy
[2]Dept. of Drug Sciences and Health Products, University of Messina, Italy
[3]Dept. of Clinical and Experimental Medicine, University of Messina, Italy
[4]IRCCS Centro neurolesi "Bonino-Pulejo", Messina, Italy

Based on the growing deal of data concerning the biological activity of flavonoid-rich natural products, the aim of the present study was to explore *in vitro* the potential antitumoral activity of *Citrus bergamia* (bergamot) juice (BJ), determining its molecular interaction with cancer cells. Here we show that BJ reduced growth rate of different cancer cell lines, with the maximal growth inhibition observed in human neuroblastoma cells (SH-SY5Y) after 72 hs of exposure to 5% BJ. The SH-SY5Y antiproliferative effect elicited by BJ was not due to a cytotoxic action and it did not induces apoptosis. Instead, BJ induced the arrest in the G1 phase of cell cycle and determined a modification in cellular morphology, causing a marked increase of detached cells. The inhibition of adhesive capacity on different physiologic substrates and on endothelial cells monolayer were correlated with impairment of actin filaments, reduction in the expression of the active form of focal adhesion kinase (FAK) that in turn caused inhibition of cell migration. In parallel, BJ seems to hinder the association between the neural cell adhesion molecule (NCAM) and FAK. Our data suggest a mechanisms through which BJ can inhibit important molecular pathways related to cancer-associated aggressive phenotype and offer new suggestions for further studies on the role of BJ in cancer treatment.

Funded by program project grant from PO FESR Sicilia 2007/2013 (CUP G73F11000050004).