Hossein Tavana, J Cancer Sci Ther 2014, 6:10
http://dx.doi.org/10.4172/1948-5956.S1.032

OMICS Group Conferences
Accelerating Scientific Discovery

4th World Congress on
Cancer Science & Therapy
October 20-22, 2014 DoubleTree by Hilton Hotel Chicago-North Shore Conference Center, USA

Phytochemicals potently inhibit migration of metastatic triple negative breast cancer cells

Hossein Tavana
University of Akron, USA

Metastatic triple negative breast cancer (TNBC) is an aggressive malignancy that comprises 15-20% of breast cancers in the US but claims disproportionately high patient mortality. Migration of cells is an essential process toward metastatic progression of the disease; however, existing chemotherapeutic compounds do not effectively inhibit cell migration. We explored the potency of a series of natural compounds, phytochemicals, to block the motility of TNBC cells. We used a novel, high throughput cell migration assay technology to robotically generate a migration niche of well-defined size within each well of standard microwell plates. This approach enabled screening a collection of phytochemicals, each compound at a wide range of sub-lethal concentrations, on the migration of two metastatic TNBC cells. Our screening showed that phytochemicals can effectively interfere with deregulated cell motility. Specially, fisetin and quercetin potently blocked migration of both MDA-MB-231 and MDA-MB-157 TNBC cells. Our results suggested that the anti-migratory property of these compounds is in pat due to the scavanging of intracellular reactive oxygen species (ROS) and interference with MAPK signaling pathway.

Biography

Hossein Tavana has developed robotically operated, high throughput microtechnologies to expedite compound screening against breast cancer cells. These technologies enable identifying compounds that block the growth and compromise the viability of cancer cells in 3D tumor spheroid models, and inhibit the migration of metastatic breast cancer cells. He was selected as one of Top 20 Young Investigator Frontiers in Bioengineering in 2013 and as a Young Innovator in Cellular and Molecular Bioengineering in 2014. He has published five book chapters, over 30 peer-reviewed journal articles, and filed five US patents. His research is funded by NIH and NSF.

tavana@uakron.edu