Somya Shanmuganathan et al., J Mol Biomark Diagn 2014, 5:2
http://dx.doi.org/10.4172/2155-9929.S1.023

OMICS Group Conferences
Accelerating Scientific Discovery

5th International Conference on
Biomarkers & Clinical Research
April 15-17, 2014 St. Hilda's College - University of Oxford, UK

Discovery of novel markers and targets for therapy of breast cancervia phyto-chemoprevention

Somya Shanmuganathan[1], Allal Ouhtit[1], Ishita Gupta[1], Hamad Al-Riyami[1] and Madhwa Raj[2]
[1]Sultan Qaboos University, Sultanate of Oman
[2]Louisiana State University Health Science Center, USA

Complementary Alternative Medicine (CAM) is increasingly being practiced worldwide due to its safety and beneficial therapeutic effects. A number of phyto-compounds have been used in CAM, individually or in combination for cancer therapy, particularly at late and desperate stages. In the present study, we hypothesized that a combination threewell documented phyto-compounds (Resveratrol - RE, Indole 3 Carbinol - I3C and Quercetin - QURC) used at sub-optimal levels can induce 100% killing of breast cancer (BC) cells in-vitro without toxic effects on normal cells.

To test the hypothesis, normal breast epithelial cells (MCF-10A; Control) and also two Breast Cancer (BC) cell lines (MDA-MB-231 and MCF-7) were treated with RE, I3C, QURCboth individually and in combination at sub-optimal levels. Alamar-Blue assay and Flow Cytometryrevealed that the combination of RE+I3C+QURC induced 100% death of BC cell lines but not normal cells. In addition, wound healing and invasion assays revealed loss of cell migration/invasion through Matrigel. Western Blot analysis was used to examine the expression of genes associated with apoptosis(BcL-2 family members andSurvivin), cell motility (CD44) andcell proliferation, (PCNA, Rb, CDK4) in the BC cell lines. Microarray analysis revealed several differentially expressed key genes andfour unique genes were highly and differentially up-regulated (ARC, GADD45B, MYLIP and CDKN1C).The present study identified RE+I3C+QURCas a powerful combination that induced 100% BC cell death and determined its underlying molecular players.

Ongoing *in vivo* experiments aim to evaluate the efficacy of this 3-SC in preventing tumor growth using xenograft mouse BC model, and further validate the functional relevance of its underlying key genes.

somya.2003@gmail.com