Therapeutic efficacy of Genistein-Cytoreg® combination in breast cancer cells

Johnson MM*, Kumi-Diaka KJ, Zoeller R, Graves BS, Merchant KT and Hörmann VP, Hassanhi M

Department of Biological Sciences, Department of Biological Sciences, College of Sciences, Florida Atlantic University at Davie, 3200 College Avenue Davie FL 33314 USA; Department of Exercise and Health Sciences, Florida Atlantic University at Davie 3200 College Avenue Davie FL 33314 USA; Department of Blood Bank, University of Zulia, Maracaibo, Venezuela

*Corresponding author: Johnson MM; Department of Biological Sciences, Department of Biological Sciences, College of Sciences, Florida Atlantic University at Davie. 3200 College Avenue Davie FL 33314 USA

Submission date: March 27, 2012, Acceptance date: May 19, 2012; Publication date: May 20, 2012

ABSTRACT:

Background: In spite the heavy investments in therapeutic research breast cancer still impacts the lives of women globally. The projected incidence of new cases of in situ breast cancer in the USA for 2011 is 57,650, with estimated 39,520 deaths. The phytoestrogen, genistein and the synthetic compound, Cytoreg® have been shown to inhibit growth and proliferation in many cancer cell lines.

Purpose of the Study: In this study, we investigated the therapeutic efficacy of Cytoreg©-genistein combination on growth inhibition in the MCF-7 human breast cancer cells.

Method: MCF-7 cells were treated with genistein and Cytoreg® single and combination treatments for 24-48hrs; and post treatment chemosensitivity assessed, using: Trypan Blue exclusion and MTT assays for cell viability, Ethidium bromide/Acridine orange to assess apoptosis induction, and FAM Poly-Caspase binding assay for mechanism of action.

Results: The overall data indicated dose- and time- dependent cell death in the MCF-cells and apoptosis as the major means of treatment-induced growth inhibition with all the treatment regimens.

Conclusion: Comparatively, the genistein-Cytoreg® combination treatment was significantly more efficacious in growth inhibition in the MCF cells than either genistein or Cytoreg® alone. Genistein seems to act additively with Cytoreg® in combination treatment-induced apoptosis in
MCF-7 cells. The normal human breast epithelial cells were not significantly inhibited by either single or the combination treatments.

**Key words:** Cytoreg®, Genistein, Combination treatment, MCF- cancer cells, apoptosis