OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference and Exhibition on
Biowaivers & Biosimilars
September 23-25, 2013 Hilton Raleigh-Durham Airport at RTP, NC, USA

Use of apoptosis assays as tools to compare biosimilarities of anticancer drugs or agents

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The term "biosimilar" refers to products marketed after expiration of patents and claimed to have similar properties to the existing biologic products. Our laboratory is looking for the potential anticancer drugs or agents to kill breast and colon cancers by initiating apoptosis in these cells. We have used Colo-205 and three highly metastatic breast carcinoma cells (SKBR-3, MCF-7, and MDA-468) to test the drugs for the biosimilar cause. At least five different cancer-killing agents (D-/L-PPMP, Betulinic Acid, Tamoxifen, and cis-platin) have been identified. All those chemicals killed SKBR-3 and MDA-468 cells by activating caspase-3, -8, or -9 pathways. Caspase-3 pathway is inactive in MCF-7 cells. The degree of apoptosis was evaluated by the fluorescence microscopic studies using PSS-380 dye binding to the phosphatidyl serine excluded on the outer leaflet from the inside of the cells. Varied glycolipid glycosyltransferases were modulated differently during induced apoptosis. However, different agents could not use these parameters for biosimilar comparison because of the unknown mechanisms of gene regulations. On the other hand simple DNA laddering experiments after treatment with biosimilar drugs could be used for quick comparisons of these drugs. In addition to the above agents the apoptotic killing effect of at least three common disialosylgangliosides (GD3, GM1a, and GD1b) were also compared for biosimilar effect.

Biography

Subhash Basu is the President of CDDRF (Cancer Drug Delivery Research Foundation) and Emeritus Professor in the Department of Chemistry and Biochemistry at the University of Notre Dame. He completed his Ph.D. from University of Michigan in 1966 and after finishing his postdoctoral training he joined faculty of University of Notre Dame in 1970. He has published more than 230 papers in reputed journals and serving as an editorial board member of three-reputed journal. He was recipient of Jacob Javits Neurochemical research award (1989-98) from NIH and became a fellow of AAAS in 1988 and Johns Hopkins Honor Society in 1995.

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