Pharmacognosy-2013
International Conference and Exhibition on
Pharmacognosy, Phytochemistry & Natural Products
October 21-23, 2013 Radisson Blu Plaza Hotel, Hyderabad, India

Induction of Apoptosis in Human Lungs Carcinoma (A-549) Cell Line by Cytotoxic Compounds of Some Indian Medicinal Plants

MAHAPATRA ANITA

National Institute of Pharmaceutical Education and Research, India

Abstract

Apoptosis is a process of programmed cell death that plays an important role in many normal functions ranging from fetal development to adult tissue homeostasis. Activation of apoptotic pathways is a key mechanism by which cytotoxic drugs kill cancer cells. Bioactive molecules from plants are being increasingly used to treat a wide variety of clinical diseases especially, cancer. Majority of cancer drugs are from natural sources.

Our efforts on studies for *in vitro* anticancer activity of Indian Medicinal Plants led to identify some cytotoxic active principles from natural sources. In the present study we have evaluated the effect of fourteen methanolic extracts of different plant parts such as leaf, stem, bark, flower, fruit, seed and root of six plants on the human Lungs (A-549), Prostate (PC-3), Colon (HT-29), Cervix (HeLa) cell line for cytotoxicity employing MTT assay. The bark extracts of *Diospyros melanoxylon* and *Callistemon citrinus* were found to be highly active with IC_{50}: 39.92±0.007, 28.18±5.520 □□g/ml respectively against A-549 cells while, *D. melanoxylon* bark extract against PC-3 cells (IC_{50}: 23.71±1.230 □g/ml). The active extracts were fractionated and pure and single compounds from active fractions were purified by chromatographic techniques. One of the fractions of *D. melanoxylon* bark extract was highly active with IC_{50}: 24.59±1.250 □□g/ml against A-549 cells. The single compounds isolated and identified from the active fraction were inducing apoptosis by down regulation of bcl-2, up regulation of bax and increasing P-53 expression. In case of *C. citrinus* four fractions exhibited exceptionally potent activity with IC_{50} ranging from 3.00±0.100 - 5.88±0.212 □□g/ml against A-549 cells by inducing apoptosis. All the active extracts, fractions and compounds were found to be non toxic to normal rat macrophage cells at the concentration of 50-100 □□g/ml. The results show that the pure compounds from the active extracts can further be screened for the activity and detailed mechanism study.

Biography

Dr Anita Mahapatra has completed her doctorate degree in Chemistry from Utkal University, Odisha, India. She continued her research as a Postdoctoral Fellow at University of Pretoria, South Africa. She has been a faculty teaching and supervising the research work of Ph.D. and postgraduate students at NIPER-A. She has more than 20 publications in highly reputable peer-reviewed international and national journals. She has one US and two Indian patents and thirty monographs to her credit. Dr. Mahapatra has served as a reviewer for several journals