Hedera nepalensis: A novel source of natural cancer chemopreventive and anticancerous compounds

Laila Jafri1, Samreen Saleem1, Ihsan-ul-Haq1, Tamara P Kondrytuk2, John M Pezzuto2 and Bushra Mirza1
1Quaid-i-Azam University, Pakistan
2University of Hawai’i at Hilo, USA

Traditionally medicinal plants are used for prevention as well as for the treatment of several diseases. Considering the medicinal importance of Hedera nepalensis based on traditional information, the present study was undertaken to analyze in vitro cancer chemopreventive and anti-proliferative sulforhodamine B (SRB) properties of the plant and a compound isolated from it i.e. lupeol. The in vitro cancer chemopreventive testing was performed using quinone reductase (QR) induction assay, inhibition of TNF-α activated nuclear factor kappa-B (NFκB assay), Inhibition of lipopolysaccharide (LPS)-activated nitric oxide (NO) production in murine macrophage RAW 264.7 cells (iNOS assay) and aromatase inhibition assay by crude extract and its three fractions (n-hexane, ethyl acetate and aqueous). The anti-proliferative assay was evaluated on three types of cancer cell lines: MCF-7, MDA-MB-231 andHeLa using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) reduction assay. The results of cancer chemopreventive assays show that n-hexane and ethyl acetate fractions of tested plant were having promising cancer chemopreventive potential while lupeol has shown lowest IC50 (0.20 µM/ml) in NFκB assay. Crude extract and its fractions inhibited the growth of three cancer cell lines by more than 60% while IC50 value of lupeol varied from 2.32-10.2 µM/ml. HPLC-DAD based quantification of lupeol in different plant tissues demonstrated that only leaves of H. nepalensis contain lupeol (0.196 mg/100 mg dry weight). In the light of the data generated the novel properties of H. nepalensis harboring cancer chemopreventive and anti-proliferative agents have been discussed.

Biography
Laila Jafri (age of 31 years) is PhD student of biochemistry Department, Quaid-i-Azam university Islamabad Pakistan. She has published 2 papers and 4 papers are submitted in well reputed journals.

Evaluation of serum levels of HER2, MMP-9, nitric oxide and total antioxidant capacity in Egyptian breast cancer patients: Correlation with clinico-pathological parameters

Yara A Rashad, Tawfic R Elkhodary, Amal M El-Gayar and Laila A Eissa
Mansoura University, Egypt

Breast cancer is by far the most common cancer in women worldwide and the main cause of cancer related mortality. Breast cancer accounts for 38% of malignancies among Egyptian women. The aim of our study was to evaluate the serum levels of human epidermal growth factor receptor-2 (HER2), Matrix metalloproteinase-9 (MMP-9), nitric oxide (NO) and total antioxidant capacity (TAC) in breast cancer patients and to correlate these markers with clinico-pathological parameters. Serum HER2, MMP-9 and Carcinoma Antigen 15-3 (CA15-3) were assessed in 80 breast cancer patients and 10 healthy subjects as a control group by enzyme linked-immuno- sorbent assay (ELISA) technique while NO and TAC were assessed by colorimetric method. Serum HER2 was ≥ 15 ng/mL in 9 patients (11.3%). High HER2 ECD levels were significantly associated with tissue HER2 (P<0.0001), metastasis (P=0.0024), and negativity of both estrogen (P=0.0075) and progesterone (P=0.0239) receptors. Serum MMP-9 (P=0.0013), NO (P<0.0001) and CA15-3 (P<0.0001) were significantly increased while serum TAC was significantly (P=0.01) decreased in breast cancer patients as compared to control group. Serum MMP-9 was increased significantly (P=.028) in metastatic patients as compared to non-metastatic patients. We found a positive correlation between serum HER2 and CA 15-3 (r=0.36, p=0.005). In conclusion serum HER2 reflects the tissue HER2 status of breast cancer, so determination of serum HER2 is helpful in assessment the HER2 status, but in addition a high level may reflect metastatic disease. Also Serum MMP-9 can be useful for denoting the development of metastasis in breast cancer patients. Follow up is needed to evaluate the value of serum HER2 and MMP-9 as prognostic markers.