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

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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 (NF κ B 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 and HeLa 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 μ M/ml) in NF κ B 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 μ M/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

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Breast cancer is by far the most common cancer in women world wide 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 \geq 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.