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Anticancer Activity of *Balanitis aegyptiaca* Extract on Human Hepatoma Cells and Prostate Cell Line Culture

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Abstract : Cancer is a public health problem all over the world. Medicinal plants have been on the forefront whenever we talk about anticancer remedies, Herbal medicines have a vital role in the prevention and treatment of cancer. Large number of plants and their isolated constituents has been shown to potential anticancer activity. To establish an efficient protocol for cell suspension culture and growth of *Balanites aegyptiaca*, the effects of different plant growth regulators 2,4-D (2,4-Dicholorophenoxy acetic acid)and NAA (Naphthaline acetic acid) at 1,2,3,4 and 5 mg/l on callus induction of three explants parts and cell suspension culture of *B. aegyptiaca* were evaluated in Tissue Culture Lab during years 2012-2014. The maximum percentage of callus induction (91.39%) and highly percentage of callus were obtained in MS medium supplemented with 3 mg/L 2,4-D and leaves explants (88.92 %), respectively. Elicitation process was obtained by applying $AgNO_3$ at 25, 50 and 75 µM, jasmonic acid at 15, 50 and 100 µM and tryptophan at 50,100 and 200 ppm to cell suspensions. The addition of 25 µM silver nitrate ($AgNO_3$) to the medium was effective in increasing amount of cell suspension dry weight (21.08 µg) for stem cell suspension. In cell suspension cultures, MS medium supplemented with 200 mg/l tryptophan gave maximum cell dry weight during two cell cycle 46.4 and 49.5 µg, respectively. Jasmonic acid was more effective than $AgNO_3$ and tryptophan for packed cell volume (PCV) and electrical conductivity (EC) of *B. aegyptiaca* cell suspension cultures. The diosginin yield of *B. aegyptiaca* cell suspension at 12 days after culture by spectrophotometric and HPLC were 0.760 mg/g and 0.801 mg/g dry weight, respectively which was significantly higher than that obtained from callus (0.69 mg/g dry weights).Methanol extracts of *B. aegyptiaca* cell suspension showed *in vitro* cytotoxicity against two different human cancer cell lines such as liver (Hep-G2), and prostate (PC-3). The 3-4,5-dimethyl thiazolyl-2)-2,5-diphenyltetrazolium bromides (MTT) viability was done using various doses 100, 50, 25, 12.5, 6.25 and 3.125 µg/ml of the extract compared with methanol (control). Against hepatic carcinoma (Hep-G2) cell line plant extract at 12.5 showed 97.43 % growth of viability decreasing to 34.89 % for 100 ug. Where as in case of PC-3 cell line treated with plant extract at 3.125 ug showed maximum activity 98.47 decreasing to 26.74 % for 100%.
Key words: *B. aegyptiaca,* Cell suspension, Hepatic carcinoma, Prostat Carcinoma, Diosgenin, Callus.

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