INTRODUCTION

- The role of diet and development of cancer is made clear by numerous studies.
  - High fat and red meat intake increase breast and colorectal cancer incidence.
  - Antioxidants have an anti-cancer effect.
  - Diet combined with therapeutic drugs can have a synergistic, favorable outcome.
  - Dietary nutrients are effective in terms of preventative medicine.

- Metformin, an anti-diabetes medication, has shown anti-cancer function in many tumor cells (1) and in many human cancer patients.

- Bitter melon (BM) Momordica charantia, a tropical vegetable, which is widely used in Asia, South America, and Africa, has also been shown to have an anti-diabetic effect. (2, 3)

- Reports indicate that BM is effective in reducing cancer cell proliferation as compared to untreated cells. (4-7)

- Regulation of angiogenesis is another molecular mechanism that has a potential in controlling cancer growth.

- Angiogenesis is essential for growth and metastatic spread of cancer as well as in cancer-relapse (4, 5).

- Vascular endothelial growth factor (VEGF) is an important "tumor angiogenesis factor" (TAF) (6) and its role in tumor-angiogenesis and metastatic spread of cancer is firmly established (7-12).

- Anti-VEGF therapy in conjunction with standard cancer therapies could control tumor-angiogenesis quite effectively but the therapeutic effect is found to be relatively short (13-16).

OBJECTIVE

- In order to understand how BM extract might be involved in reducing breast cancer cells we began analyzing the cell growth assay.

- To investigate whether BM extract has an anti-angiogenic activity, we have begun investigating its effect on VEGF expression.

RESULTS

Cells treated with BM extract show less growth as compared to untreated cells

Treatment with BM causes decreased proliferation into wounded areas

Expression of VEGF is reduced in BM treated breast cancer cells

CONCLUSIONS

- Breast cancer cells seem to grow less while in the presence of 2.5% and 5% BM extract.

- In addition, the cells can be observed to proliferate less when treated with BM as seen in the wound healing assay as compared to the untreated control.

- A decline in breast cancer cell proliferation is quantitated by the MTT assay where up to a 78% decrease is seen (MCF-10A cells).

- VEGF expression is higher in breast cancer tissue cells, mainly MDA-MB-231, in untreated cells as compared to lower VEGF expression in BM treated cells.

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REFERENCES