

The Acetone Extract of *Tarchonanthus Camphoratus* Inhibits Migration, Invasion and Adhesion of MDA-MB 231 Triple Negative Breast Cancer

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Abstract

Statement of the Problem: Breast cancer is the most commonly diagnosed and is responsible for the majority of cancer-related deaths in women worldwide. According to the World Health Organisation, approximately 685 000 breast cancer-related deaths occurred worldwide in 2020. Despite with the progress made with conventional treatments, toxicity and cancer metastasis complication remains a major problem [1,2]. Natural products, particularly plants, have established themselves as suitable alternative for the treatment of cancer. The aim of this study was to identify bioactive compounds from *Tarchonanthus camphoratus* leaf extracts that are effective inhibitors of breast cancer metastasis. **Methodology & Theoretical Orientation:** The cytotoxicity of the acetone and water extract of *Tarchonanthus camphoratus* leaves were tested against MDA-MB 231 triple negative breast cancer and Vero normal kidney cells using the MTT cytotoxicity assay [3,4]. The effects of the extracts were assessed on their inhibitory potential of cell adhesion, migration and invasion using the adhesion, wound healing and Boyden chamber invasion assay. Furthermore, active components of the extracts were identified using the IDA MS method. **Findings:** The acetone extract possessed the highest toxicity with an inhibitory concentration of 10.569 µg/ml with lower toxicity against the Vero normal kidney cells. Acetone extract was highly selective against the MDA-MB 231 breast cancer cells with a selectivity index greater than 3.93. Exposure to 150 µg/ml of the acetone extract significantly inhibited cell attachment, cell migration, and invasion of MDA-MB 231 breast cancer cells. 3,5-Ditert-butyl-2- hydroxybenzaldehyde, Dehydrocostus lactone, and Parthenolide are some of the active components identified from the acetone extract using IDA MS [5]. **Conclusion & Significance:** This study suggest that the acetone extract of *T.Camphoratus* can significantly inhibit major steps of the metastasis process and can selectively target breast cancer cells without any harmful effect on normal cells. The findings demonstrate the acetone extract of *T.Camphoratus* as a potential antimetastatic agent for combating breast cancer metastasis (Figure 1).



Figure 1: Image of the *Tarchonanthus camphoratus* bush in the Northern parts of South Africa.

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