ORGANIC SOLVENT FRACTIONS OF *OCIMUM GRATISSIMUM* LEAVES EXHIBIT GREATER ANTI-PROLIFERATION ACTIVITY ON PROSTATE ADENOCARCINOMA (PC-3) CELLS THAN ITS AQUEOUS CRUDE EXTRACT

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**Abstract:** Prostate Cancer is the third leading cause of cancer death of men 50 years and older in the U.S. It affects African Americans disproportionately. Unlike other cancers where early detection is key for successful treatment, there is currently no effective treatment for prostate cancer even when detected early. Radical prostatectomy or radioactive seed implantation (brachytherapy) are the most prescribed treatments for the early stage of the disease. Unfortunately, erectile dysfunction (ED) and urinary incontinence (UI) are usually the resultant undesirable side effects of these treatment options. That is why work continues in research laboratories around the world to discover and develop new, more affordable, highly efficacious and better tolerated anti-cancer drugs. The hope and belief is that such drugs are likely to be developed from novel cancer-fighting compounds in medicinal plants. We have evidence from previous studies that physiologically relevant concentrations of aqueous leaf extract of the edible medicinal herb *Eb’amwọnkwọ, Ocimum gratissimum (Og)*, inhibit the proliferation of prostate adenocarcinoma (PC-3) cells in a dose dependent manner, in the presence or absence of serum. This leads us to believe that *Og* may harbor novel cancer-fighting compounds that need to be isolated. In this study, *Og* powder was sequentially extracted with different organic solvents to obtain P1-2, P2, P3-1, P3-2, P4-1 and P4-2 fractions. We hypothesized that the anti-proliferation activity of one or more of these fractions will be significantly greater than that of the aqueous extract. This hypothesis was tested by treating serum-starved sub-confluent PC-3 cells with 5.0µg/ml of each fraction for 18 hours, followed by 4-6 hours labeling with [\(^3\)H]-thymidine and counting in a Scintillation Analyzer. Results show P4-2 > [P4-1≈P3-2] > P3-1 > P2 > P1-2. Compared to treatment with 500µg/ml of aqueous extract, all organic solvent fractions showed greater anti-proliferation activity against PC-3 cells than the aqueous extract with P4-2 being the most active fraction, showing a 21-fold and 14.6-fold higher anti-proliferation activity than unheated and heated aqueous extract respectively. These findings suggest that the organic solvent fractions of *Og* may contain more of its bioactive component(s).

**Keywords:** *Eb’amwọnkwọ, Ocimum gratissimum, Og*, prostate adenocarcinoma (PC-3) cells, [\(^3\)H]-thymidine, organic solvent fractions.

**Acknowledgements:** This research was supported in part by grants from NAFEO BEAT CANCER PROJECT (Grant # YS2MP9700308011) and the National Institutes of Health RCMI (Grant# 1G12RR13459) awarded to Jackson State University