Investigation of Trace Elements in Nigerian Women with Breast Cancer Using Particle-Induced X-ray Emission (PIXE) Analysis

Department of Physics and Engineering, Obafemi Awolowo University, Ile Ife, Osun State, Nigeria,

([bunmiolaiya2012@gmail.com](mailto:bunmiolaiya2012@gmail.com)

**Presenting** OLAIYA, DAVID OLUBUNMI

Abstract:

This study determined the variations in trace elements level in cancer patients, non-cancer patients and compared concentrations of trace elements in cancerous and non-cancerous breast tissues. This was with a few to understanding the effects of trace elements in the etiology of breast cancer in Nigerian women as obtained from the Obafemi Awolowo University Teaching Hospitals Complex, (OAUTHC).

Consent and ethical approval for this study was obtained from the research and ethical committee of OAUTH, while informed consent obtained from the patients. The survey was conducted by means of well-structured questionnaire which include, duration of symptom, family history, and similar condition in the family, dietary habit, source of drinking water and the size of the mammary gland. This study involved all patients diagnosed of breast cancer and admitted for mastectomy from OAUTHC. The structured questionnaire was also administered on the patients without clinical evidence of breast cancer to serve as control. A 2.88 × 10-2  to 5.00 ml of blood samples were collected from each patient recruited for this work into a plain plastic container, stored in a freezer, and subsequently freeze-dried in freeze drying machine, BETA1-8 LD plus, at the Central Science Laboratory of O.A.U. Ile- Ife. Similarly, 600 - 1200 mg of breast tissue collected, stored in freezer and later freeze dried. All the samples after being freeze dried are then made homogenized by grinding in agate mortar, mixed with 10% by weight of ultra-pure graphite powder and prepared into thick pellets of 11 mm diameter without binder. The processed samples were then irradiated with 2.5 MeV proton beam from the 1.7 MV TANDEM accelerators facility at the Centre for Energy and Research Development, Obafemi Awolowo University (CERD).

The result showed that out of twenty-three (23) elements (Na, K, Ca, Cl, S, Al, P, Si, Zn, Pb, Br, Rb, Zr, Se, Sr, Mn, V, Ti, Cu, Fe, Ni, Cr and Mg) were detected and analyzed, Na, Mg, Al, Si, P, S, Cl, K, Zn, Br, Sr, Ca, Rb and Zr were significantly elevated in the malignant breast tissues of the cancer patients. In addition, the result showed that the elements Na, Mg, Al, Si, P, S, Cl, K, Ca, Fe, Zn, Br and Rb were elevated in the blood of cancer patients relative to the blood of non-cancer patients. Furthermore, the result showed that elevations of Cl, K, Ca, Zn, Br and Rb in the malignant tissues compared to the normal tissues obtained at a safety margin from the same patients were in good agreement with previous authors. The levels of Mn and Se in the malignant tissues were higher than the normal tissues.

The study established the role of variations of trace elements in the epipathogensis of the breast cancer in Nigerian woman

LEARNING OUTCOME

1. Understand that cancer is not spiritual, but comes as a result of lifestyle;
2. Cancer is not a dead sentence; it is curable, if detected on time;
3. I am a Physicist I applied Nuclear Physics to investigate the probability of having cancer, how this research might help in your job will depend on your ability to relate what you obtained.
4. Sure, this research can throw more light into solution of reducing the rate of cancer death in the society.

**Biography of presenting author**

Mr. David Olaiya, studied Physics from Obafemi Awolowo University, a self-made man, holding, M.Sc in Medical Physics, with no support/grant from any government or institution. Dr. would have been added to my name but because of financial incapability, I have not reached that level.

I love researching and but no financial help.

Name: OLAIYA, DAVID OLUBUNMI

Affiliation: OBAFEMI AWOLOWO UNIVERSITY, ILE IFE,

Country NIGERIA

**Other Details:**

Presentation Category: (Oral/Poster Presentation)

Session Name:

Email: bunmiolaiya2012@gmail.com

Alternative email:

Contact Number:+2348161552890

Facebook: Olaiya David Olubunmi

