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ANALYSIS OF SARQAQIYA LEAVES TRADITIONALLY USED FOR THE TREATMENT OF CANCER IN NIGERIA

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Abstract

In spite of incredible advances in modern science, technology and allopathic medicine a large we are unable to provide quality healthcare to all. Traditional medicine particularly herbal medicine considered as a major healthcare provider around the globe particularly in rural and remote areas. A large section of people depends on such medicine for their primary healthcare mainly in underdeveloped or developing countries. Nigerian traditional medicinal system like sarqaqiya has a very rich history of their effectiveness in the treatment of cancer traditionally. Fresh leaves of Sarqaqiya was thoroughly washed with clean water and allowed to dry under shade. The dried leaves was grinded to fine powder using pestle and mortar. The powdered samples was put into three transparent plastic bags (30 mm × 15 mm) and labeled L hand held XRF, SEM and XRD. The XRF result shows that calcium has the highest concentration of 59507 (ppm). Further studies reveal that presence of calcium in appreciable amount within the metabolic system of human being helps to reduce the risk of cancer and related ailments. Other benefits of calcium in man include strengthening bones and teeth.

Key words; Cancer, TM, SEM, XRD, XRF

Introduction

Cancer is a major public health problem in Nigeria and many other parts of the world [1-18]. It is an ailment that affects more or less 200 types of cells [4]. Cancer is the uncontrolled growth of abnormal cells anywhere in a body. There are over 200 types of cancer [5]. Anything that may cause a normal body cell to develop abnormally potentially can cause cancer. General categories of cancer-related or causative agents are as follows: chemical or toxic compound exposures, ionizing radiation, some pathogens, and human genetics.

Cancer is a leading cause of death worldwide. According to the World Health Organization, it has accounted for 7.6 million deaths (around 13% of all deaths) in 2008, and deaths from cancer worldwide are projected to continue to rise to over 11 million in 2030 (WHO,2016). Conventional treatment for cancer, such as surgery and chemo/radio therapy, aims at curing the disease or prolonging life while improving the patient's quality of life (QOL) [15]. However, it is acknowledged that most cancer patients suffer from both the disease itself and symptoms induced by conventional treatment. However, alternative therapies for the treatment of cancer include among others the Chinese acupuncture, moxibustion, breathing exercise and herbal medicine or traditional medicine (TM).

Currently, medicinal plants are widely used as home remedies by both rural and urban inhabitants

of Nigeria, which can be explained in part by the high cost of industrialized medicine. Looking for new compounds, doctors and scientists are increasingly focusing on substances from plants used in TM.

According to WHO TM is a comprehensive term used to refer both to TM systems such as traditional Chinese medicine, Indian ayurveda and Arabic unani medicine, and to various forms of indigenous medicine [16]. TM therapies include medication therapies — if they involve use of herbal medicines, animal parts and/or minerals — and non medication therapies — if they are carried out primarily without the use of medication, as in the case of acupuncture, manual therapies and spiritual therapies. In countries where the dominant health care system is based on allopathic medicine, or where TM has not been incorporated into the national health care system, TM is often termed "complementary", "alternative" or "non-conventional" medicine [17].

Despite the increased amount of modern drugs in the pharmaceutical market, medicinal herbs have maintained their popularity as an alternative medicine due to low cost, their effectiveness, historical, cultural, and religious preferences [18-21]. The World Health Organization (WHO) estimated that approximately 80% of people in developing countries rely mainly on natural products for their primary healthcare [22].

Keeping this in mind therefore, this study aimed at studying elemental constituents of *Sarqaqiya* leaves for cancer treatment. An established method reported by Bichi *et al.,* (2015) will be used to carry out the analysis.

Experimental Procedures

Sample Preparation

Fresh leaves of Sarqaqiya was thoroughly washed with clean water and allowed to dry under shade. The dried leaves was grinded to fine powder using pestle and mortar. The powdered samples was put into three transparent plastic bags (30 mm × 15 mm) and labeled X hand held XRF,SEM and XRD machines were used to determine the elemental constituents, physical, mineralogical properties of the leaves which appear on the screen of the machine. The data was transferred to a personal computer using USB code wire for further analysis.

Determination of Elemental Constituents

A hand held XRF machine pn_103201 by INNOV X system (Delta TM) is calibrated and was used to determine the elemental constituents of the leaves of the plants. The plastic containing each sample is placed on a work bench and the nozzle of the machine would be directed at the sample and was be set on to determine the elemental constituents. Data for the constituents of the samples appear on the screen of the machine. The data was be transferred to a personal computer using USB code wire for further analysis (Bichi *et. al*, 2013).

Scanning Electron Microscopy (SEM)

SEM Instrument was used to study the morphology of the samples. Small amount of the samples powder was poured on the carbon tape which will be attached to the holder. Then the excess powder was blown off with air gun to ensure that only small pieces of the powder remain on the

tape. After that, it will be put into in the SEM chamber for analysis. The SEM machine was operated at 10 kV. A magnification of X100 was used to capture the photo of the sample.

X-Ray Diffraction (XRD)

The samples was subjected to X-Ray Diffraction (XRD) analysis using an X-Ray Diffractometer to determine their silica structure. Prior to analysis, the samples was grinded to a powder form by simple pounding using a mortar and pestle due to its brittle nature. The grounded samples was analyzed by Cu Kα radiation with a scanning rate of 0.05 per second 40kV/20A, at $3° \geq 2\Theta \leq 70°C$. The X-Ray Diffractometer (Model Bruker D8Advance) was used for the study.

Results and Discussions

Figure 1 shows the result of XRD (called a diffractogram) of sarqaqiya the pattern indicated the crystalline phases determined are the romiete (ICDD 96-901-2772) which is a is a calcium antimonate mineral with a hexoctahedral crystal system.

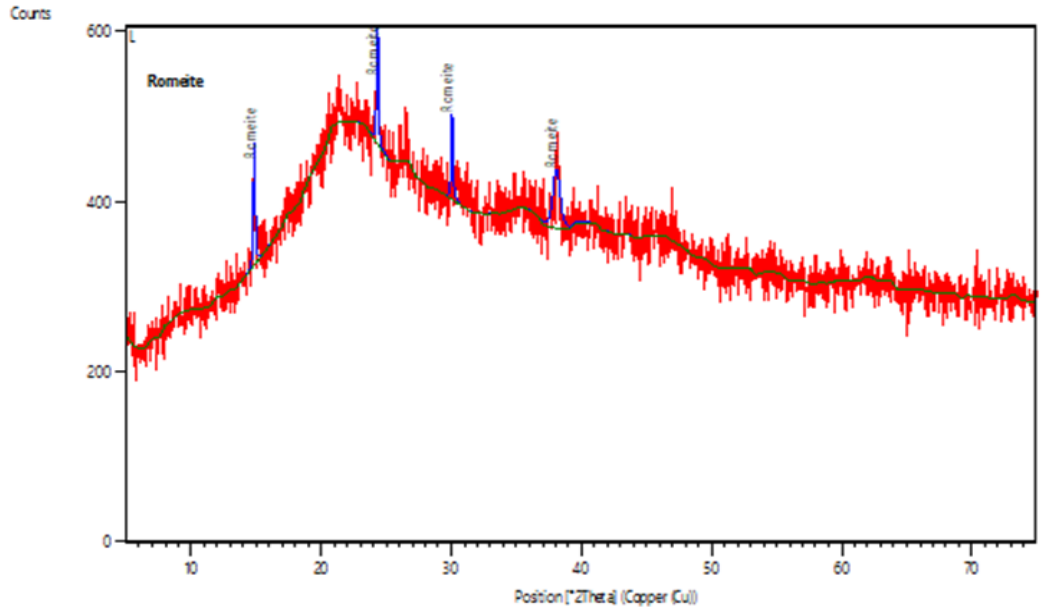

Figure 1: XRD of Sarqaqiya Leaves

Figure 2 shows the Sarqaqiya particles; the particles were irregular in shape and having porous texture.

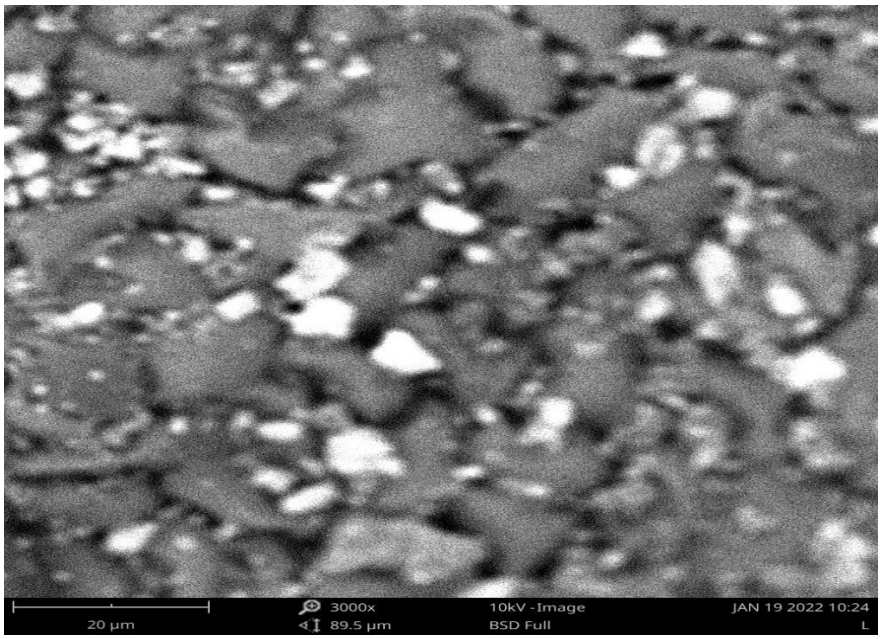

Figure 1: SEM of Sarqaqiya

Table 1: Chemical Constituent of Sarqaqiya Leaves

Element	Part Per Million
Ca	59507
Pb	19290
K	4576
Mg	37030
Bn	2336
Na	1908
S	1572
Bi	1320
P	1142
Fe	996
Cl	805
Al	533
Cr	228

The chemical constituents of the sarqaqiya leaves are shown in Table 1. From the results it shows that calcium has the highest concentration of 59507 (ppm), followed by Pb concentration of 19290 (ppm). According to the result, K, Mg, Bn, Na and P contents were in in good representation with the values of 4576 (ppm), 37030 (ppm), 2336 (ppm). 1908 (ppm), 1572 (ppm), 1320 (ppm) and 1142 (ppm) respectively. While Fe, Cl, Al and Cr contents low with values of 996 (ppm), 805 (ppm), 533 (ppm) and 228 (ppm) respectively.

Bichi *et al.*, (2013) established that several studies have suggested that food with higher percentage in calcium might help reduce the risk for colorectal cancer. They also accerts that in accordance

with the NIH report of 1994 has shown that women with higher dietary calcium intake seemed to have lower risk of breast cancer, Calcium supplement may be important for some people with cancer, depending on their stage, cancer type and type of treatment they get. The authors recommended that it is medicinal to supplement our calcium intake such that the intake conforms to the values in table 2. According to institute of medicine (IOM), we should consume calcium daily at the amount as shown in table

Concentration of Elemental Constituents in Boswellia

S/N	Ages	Male	Female	Pregnant Woman	Lactating Mother
1.	0-6 month	200mg	200mg		
2.	7-12 month	260mg	260mg		
3.	1-3 years	700mg	700mg		
4.	4-8 years	1000mg	1000mg		
5.	9-13 years	1300mg	1300mg		
6.	14-18 years	1300mg	1300mg	1300mg	1300mg
7.	19-50 years	1000mg	1000mg	1000mg	1000mg
8.	51-70 years	1000mg	1200mg		
9.	71+	1200mg	1200mg		

Source:-journal, calcium absorption in women relationship to calcium intake as cited by Bichi *et al.*, (2013)

Conclusion

SEM result shows the sarqaqiya that particles were irregular in shape and having porous texture. The XRD pattern indicated the crystalline phases determined are the romiete which is a calcium antimonate mineral with a hexoctahedral crystal system. The XRF shows the elemental compositions constituents. From the results it shows that calcium has the highest concentration of 59507 (ppm). It is therefore not a surprise that the Name sarqaqiya being used to treat cancer traditionally in Nigeria. Further studies reveal that presence of calcium in appreciable amount within the metabolic system of human being helps to reduce the risk of cancer and related ailments. Other benefits of calcium in man include strengthening bones and teeth.

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