

Exploitation of wastewater disposal sites and river banks in the cultivation of *Vernonia spp.* (Ndolé) in urban areas in Cameroon

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Abstract

Bitter leaf (*Vernonia*) is obtained from the leaves of an evergreen shrub, which grows throughout Africa. The genus *Vernonia* comprises roughly 1,000 species of which belong to the Asteraceae family. This plant is employed for treating various conditions such as fever, diabetes and a non-pharmaceutical solution has been developed to cure AIDS related diseases. Though eaten by a large proportion of the population, cultivation is limited to the southern parts of Cameroon and mostly in the rainy season. Wastewater irrigation provides the necessary plant nutrients, especially nitrogen and phosphorous.

Key words: Cultivation, *Vernonia spp.* (Ndolé), wastewater, food security

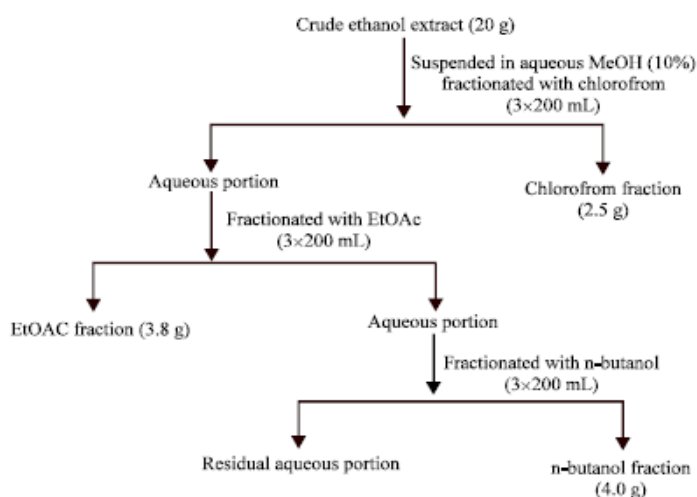
Material and Methods:

The standard methods applicable in the study of *Vernonia* are presented below (Kokwaro, 2009; Ijeh II et al., 2011; Abirami et al., 2012): Collection and Extraction of samples, Preparation of assay by Biosynthesis, Gas chromatogram-Mass spectrophotometry, The absolute configuration is deduced by X-ray diffraction, HPLC/MS/DAD analysis and antimicrobial assay, Identification of Phytochemicals

Table 1: Classification

<i>Vernonia amygdalina</i>	
Scientific classification	
Kingdom:	Plantae
(unranked):	Angiosperms
(unranked):	Eudicots
(unranked):	Asterids
Order:	Asterales
Family:	Asteraceae
Genus:	<i>Vernonia</i>
Species:	<i>V. amygdalina</i>
Binomial name	
<i>Vernonia amygdalina</i>	

Figure 1: Extraction



RESULTS AND DISCUSSION

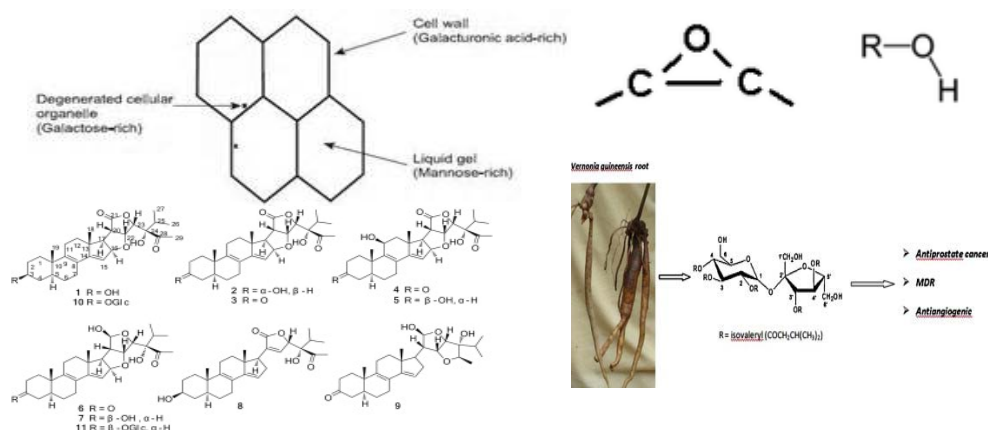
Table 2: Therapeutic importance

HEALTH PROBLEM	TREATMENT
DIABETES	Reduce blood sugar level and to repairs the pancreas
HEART ATTACK	Regulate the blood's cholesterol level
STOMACHE ACHE	
MALARIA	Antimalarial activities and reversing chloroquine resistance
Toothache	prevent Gingivitis and toothache due to antimicrobial activity
Skin infections	antimicrobial effect
Healthy liver	antioxidant (prevents cell death) activity
Hasten Childbirth	uterine stimulation (oxytocic)
Deworming	Presence of anti-oxydants
Stop bleeding	
Protects prostate	antioxidant (prevents cell death) activity
Calming and Vitalising	Inhibit the accumulation of of Cyclic AMP and reducing excitation
Inhibits cancer	cancer growth and even kill cancer cells

Table 3: Chemical composition

Phenolic compounds	Phytochemicals Present	Compounds
Caffeoyl quinic acid	Tannins	Protein
Chlorogenic acid	Saponin	Lipid
Luteolin	Flavonoids	Ash
Apigenin	Alkaloids	Fibre
Dicafeoyl quinic acid	Glycosids	C,N,S,O
	Squalene	
	Guaiol	
	Oxalates	
	Phytates	

Figure 2; Chemical Structure



The plant presents many bio-active anti-microbial and immunological properties, a relaxation effect on muscles (Utoh, 2011) and optimal functioning of body organs (Imaga and Bamigbetan, 2013). It is beneficial as nutraceuticals, therapeutic and nutritive (Abirami P., Rajendran A., 2012). It is important to properly prepare and also disinfect, bitter leaf that is farmed in wastewater before consumption so as to prevent diseases (Tables 1-3, Figures. 1-2)

CONCLUSION

V. amygdalina possesses various phytochemical and bio-oxidative properties with very negligible side effects. With its great health promoting effect, it may be more advantageous to incorporate *V. amygdalina* into health supplement for human benefits after proper harvesting and processing in farmland.

RECOMMENDATION

Study Potential pharmacological effects of extracts such as: Induction of apoptosis in cell culture. Enhance chemotherapy sensitivity and growth signals of cancerous cells. Suppression of metastasis of cancerous cells in the body. Reduction of estrogen level in the body by the suppression of aromatase activity. Enhancement of the immune system through many cytokines regulation.

REFERENCES

Abirami P., Rajendran A., 2012, GC-MS, analysis of Methanol extracts of *Vernonia cinerea*, European journal of Experimental Biology, 2(1):9-12
 Ijeh II, Ejike CECC (2011). "Current perspectives on the medicinal potential of *Vernonia amygdalina* Del". *J Med Plant Res* 5 (7): 1051-1061.
 Egedigwe CA (2010). *Effect of dietary incorporation of Vernonia amygdalina and Vernonia colorata on blood lipid profile and relative organ weights in albino rats* (Thesis). Department of Biochemistry, MOUAU, Nigeria.
 Kokwaro, John (2009). *Medicinal Plants of East Africa 3rd ed.* Nairobi, Kenya: University of Nairobi Press. ISBN 9966-846-84-0.
 Imaga N., Bamigbetan D., 2013, In vivo biochemical assessment of aqueous extracts of *Vernonia amygdalina* (Bitter leaf), International journal of Nutrition and Metabolism, 5(2), 22-27