



**31st Annual International Conference of The
Biotechnology Society of Nigeria (BSN)
Covenant University**



**EFFECT OF WATER SOLUBLE METHANOLIC EXTRACTS OF *CURCUMA LONGA* L. ON THE
ABSORPTION SPECTRUM OF DEOXYRIBONUCLEIC ACID (DNA)**

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SUNDAY 5TH – THURSDAY 9TH AUGUST 2018

Intro. Cont'

- Success in molecular biology to a large extent relies on the visualization of nucleic acids in gels. This employs the use of stains and dyes. Most of the dyes currently in use are chemically synthesized. Despite the use of synthetic dyes in molecular biology laboratories, diagnosis of diseases and in industries, there is a global concern over the use of eco-friendly and biodegradable materials. Applications of synthetic dyes are becoming limited because of their hazardous effects on human and animal health (Bhuyan and Saikia 2004).

Intro. Cont'

- Research has shown that synthetic dyes are suspected to release harmful chemicals that are allergic, carcinogenic and detrimental to human health (Kamelet *al.*,2005).
- Most developing countries can no longer afford the ever increasing cost of synthetic dyes (Avwioroet *al.*, 2005).
- Synthetic dyes are not always readily available in terms of need. These identified problems associated with the use of synthetic dyes have encouraged the search for low-cost dyes, especially of biological origin, that will be effective, easy to use and safe to both the human and environmental health.

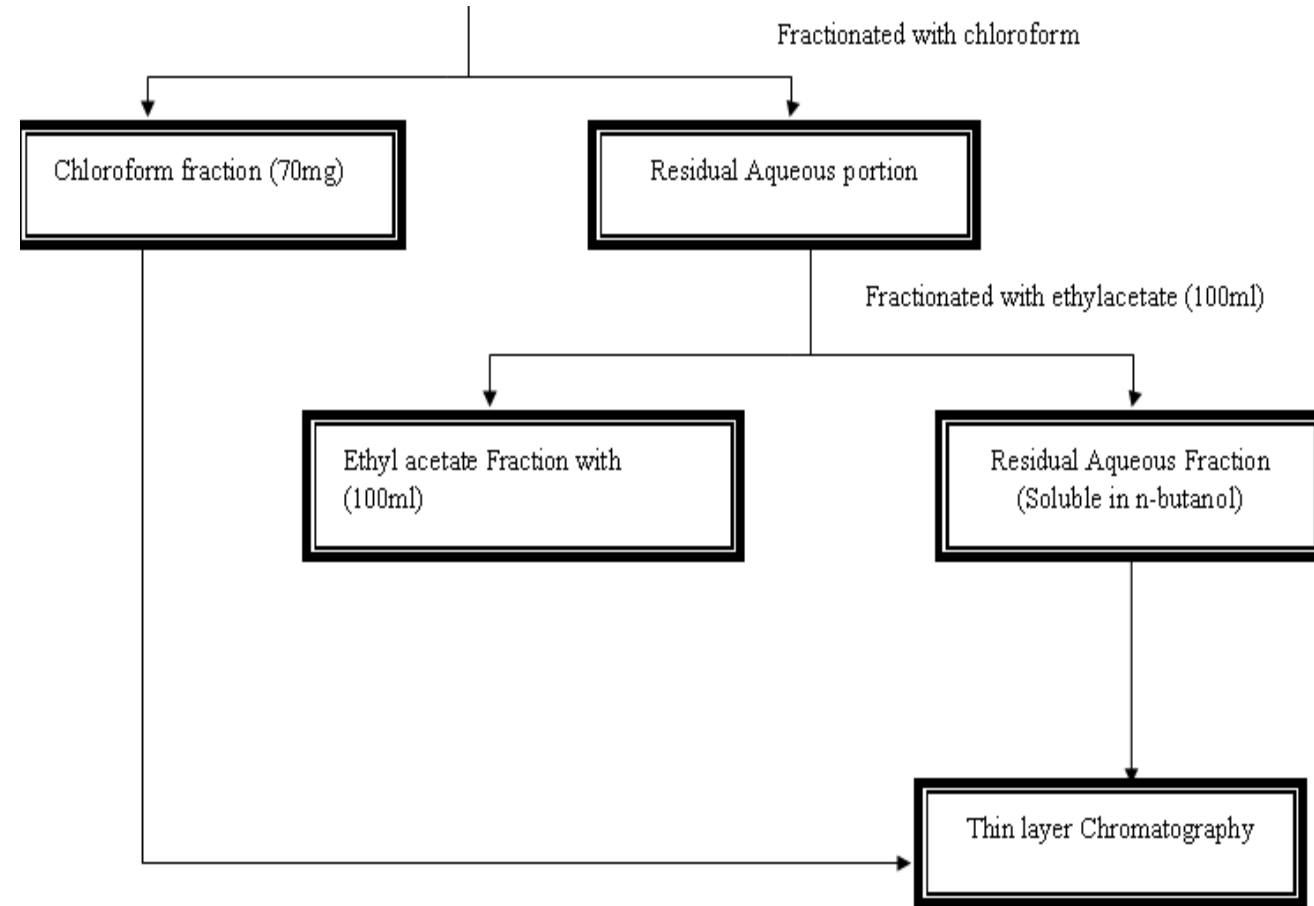
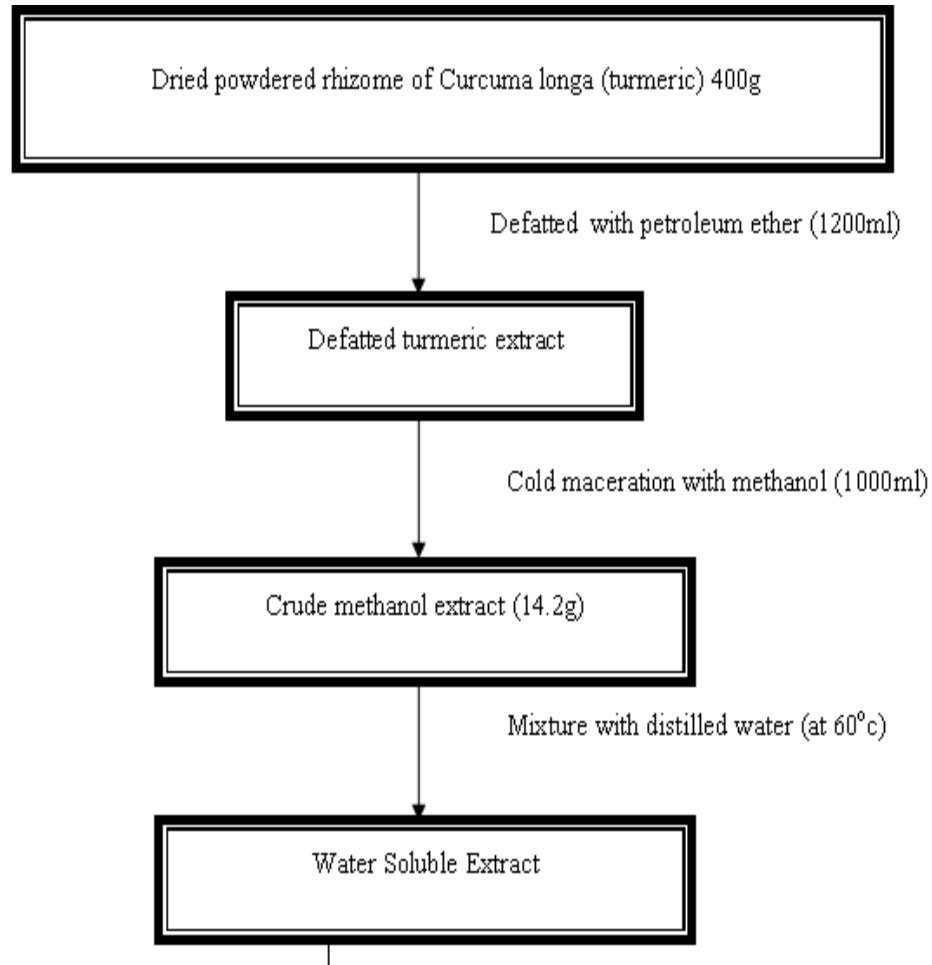
Objectives

- The objectives of this study include:
- To isolate Deoxyribonucleic acid (DNA) from Calf thymus gland and liver.
- To determine the effect of water soluble portion of *Curcumalonga* fraction on the absorption spectrum of DNA.

Methodology

- Sample collection
- Preparation of the crude methanolic extract of *curcuma longa*
- Partitioning of methanolic extract of *curcuma longa*
- Preparative thin layer chromatography of the partitioned fractions of *curcuma longa*
- Collection of samples for DNA extraction
- Agarose-gel electrophoresis of DNA sample
- Uv-spectroscopic analysis of dna and preparative thin layer fractions

Experimental Setting



Results and Discussion

Table 1: Fractionation of crude defatted methanolic extract of *Curcuma longa* rhizome

Weight of Methanolic extract (g)	Solubility in water	Solvents used in partitioning	Yield	
			(g)	(%)
14.2	Soluble	Chloroform	0.07	0.49
		Ethyl Acetate	0.15	1.06
		n-butanol	0.02	0.14

Results and Discussion

Table 2: Thin layer (preparative) chromatographic fractions obtained from defatted methanolic extracts of *Curcuma longa*. Note: H:E-Hexane/Ethyl acetate, C:E-Chloroform/Ethyl acetate, N:AC:W-n-butanol/acetic acid/water,+ve-fluorescences under UV,-ve-no fluorescence under UV

Solubility	Thin layer Chromatography Fraction	Solvent system	Ratio	no. of band(pate Id)	no. of UV fluorescenc e band	Weight(m g)	Yield(%)
Water soluble	Chloroform	H:E	5:1	1 (1A)	1A +ve	0.05	71.45
	Ethyl acetate	C:E	3:2	2(2A, 2B)	2A +ve	0.12	80.00
					2B +ve	0.04	26.70
	n-butanol	NB:AC:W	4:1:5		No separation		

Results and Discussion

Dna Extraction from Thymus Gland and Liver

Calf Tissue	Weight (mg)	A_{260}/A_{280}	DNA (mg/ml)
Thymus	100	1.89	4200
Thymus	100	1.85	5865
Liver	100	1.772	585
Liver	100	1.756	395
Thymus	200	1.97	1180
Thymus	200	1.821	2020
Liver	200	1.932	715
Liver	200	1.267	95

Table 3: Comparison of DNA yield and purity between thymus gland and liver using SODE method

Results and Discussion

Table 4.5: Effects of DNA binding on absorption spectrum of various fractions of preparative thin layer chromatography of methanolic extract of *Curcuma longa*

Thin Layer Fraction	Position of peaks (nm)			Effects of fraction on DNA
	Fraction		DNA	
	Minor peak	Major peak		
1A	240	320	260	Position of the minor peak has been shifted to 250
2A	-	280	260	Lost of peak
2B	240	320	260	Lost of minor peak

Conclusions & Recommendations

- Water soluble portion of methanolic extract of *Curcuma longa* has compound that binds to DNA
- Further studies on the binding interaction of natural dyes with DNA should be conducted.

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Acknowledgements

- We are grateful to Allah (SWA) in all conditions for Islam, for life and for good health.
- We acknowledge:
 - Malama Rabiatsu, department of Biochemistry
 - Mal Sani Muhammad of Microbiology Department
 - Mal Muazu department of chemistry
 - Kaduna State University
 - Malam Sani and malama Sakina of pharmaceutical and medicinal chemistry Department Ahmadu Bello University, Zaria for the technical assistance they offered.