

PHYTOCHEMICAL CONSTITUENTS AND ANTIMICROBIAL ACTIVITY OF GAMBIA BUSH TEA (*Lippia multiflora*) AND *Combretum glutinosum* PLANTS USED AS MEDICINAL PLANTS IN THE GAMBIA

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Introduction

Background

- L.multiflora* and *C.glutinosum* are medicinal plants known to play a vital role in human sustenance.
- These plants contain phytochemicals used in the treatment of various ailment such as stomach, skin, lung (Kanco, C.K. 2004 & Sudipta 2014)
- In The Gambia, people use these plants for treatment without knowledge of the chemical constituents, safety and/or dosage.

Aim

Investigate the phytochemical constituents and antimicrobial activity of *L.multiflora* and *C.glutinosum*

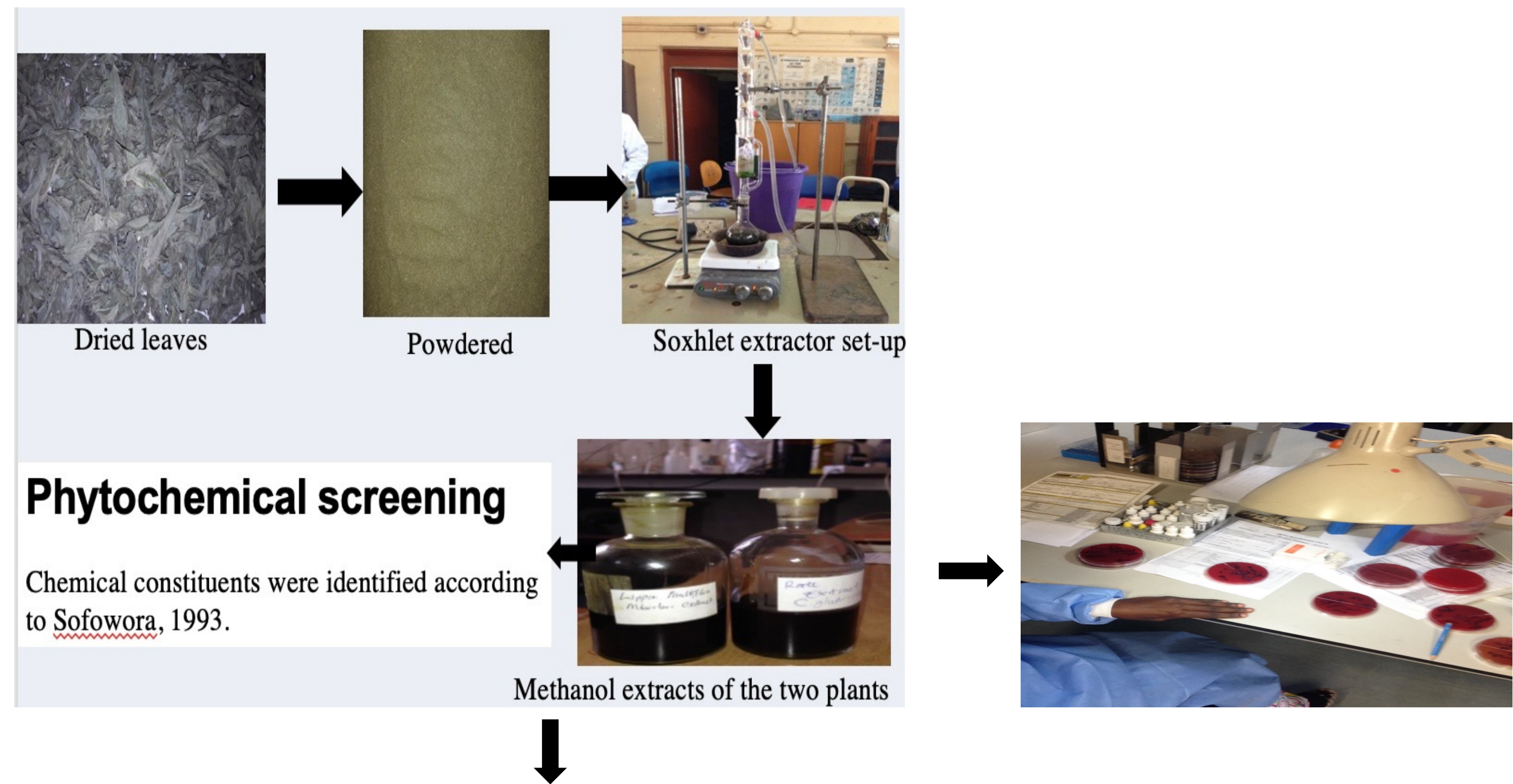
Objectives

- Screen the plant extracts for phytochemical constituents using standard methods
- Determine the antimicrobial activity of the plant extract.

Methods

Sample collection and treatment

- Plants were collected from Northwest District of The Gambia, identified and authenticated
- Washed with distilled water, air-dried under shade in the laboratory for four weeks and pulverized to a powdered form.
- Extraction was conducted using Soxhlet extractor with methanol as a solvent



Determination of minimum inhibitory concentration (MIC)

- Media: Muller Hinton agar, nutrient broth, and blood agar
- Bacteria strains used: *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Staphylococcus epidermidis* and *Streptococcus pneumonia*
- Incubated at 37°C for 24 hours

Results

Qualitative result of the phytochemical screening

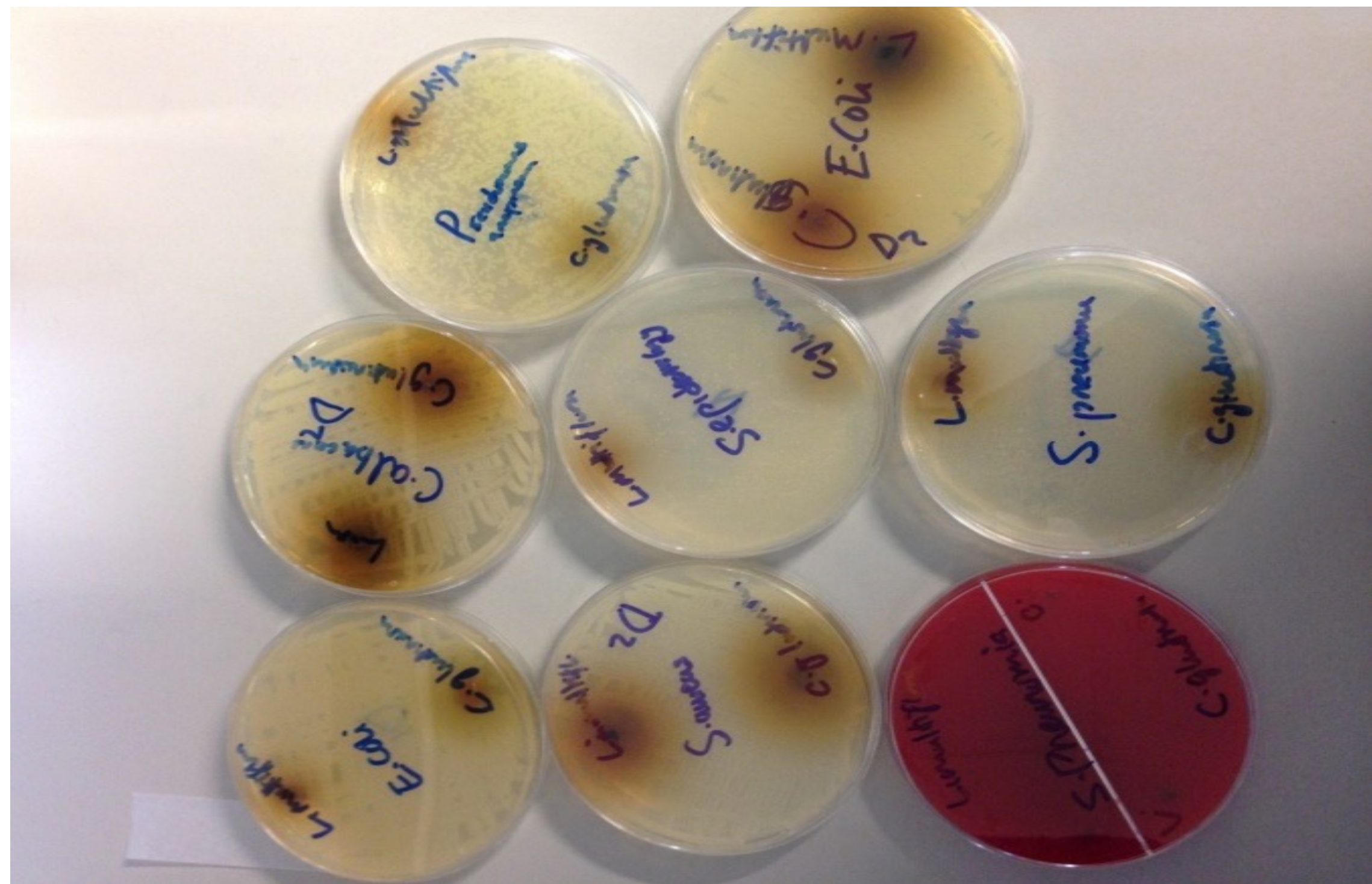
Table 1: Phytochemical result of *L. multiflora* and *C. glutinosum*

S/N	Phytochemicals	<i>L. multiflora</i>	<i>C. glutinosum</i>
1	Glycosides	+	+
2	Steroids	-	-
3	Terpenoids	+	+
4	Alkaloids	-	-
5	Saponins	+	+
6	Flavonoids	+	+
7	Tannins	+	-
8	Phenolics	+	-
9	Eugenols	-	-

Key: Present = +

Absent = -

Antimicrobial activity of *L.multiflora* and *C.glutinosum*



Discussion

- Glycosides, saponins, alkaloids, terpenoids and flavonoids were indicated among others in methanol extract of both *L. multiflora* and *C. glutinosum*
- Both plant extracts indicated activity when compared with the standard control (Ciprofloxacin).
- According to Bassole *et al.* 2010, *L. multiflora* essential oil had the highest inhibitory activity against *E. coli* while this study indicated low inhibitory
- Ousmane *et al.* 2016, showed that methanol extract gave the highest zones of inhibition against *S. aureus* and similar is activity for *S. aureus*.

Antimicrobial activity results *L.multiflora*

Table 2: Zones of inhibition of *L. multiflora* against some selected pathogens

Microorganisms	Minimum inhibitory concentration (MIC) (mg/mL)				
	1000mg/mL	500 mg/mL	250mg/ mL	125 mg/ mL	Ciprofloxacin 0.01mg/mL
Zone of inhibition (mm)					
<i>E. coli</i> ATCC 25922	5.40	5.00	0.00	0.00	36.00
<i>S. aureus</i> ATCC 25923	27.50	25.00	16.00	27.00	36.00
<i>P. aeruginosa</i> ATCC 27853	15.40	10.50	10.00	10.00	36.00
<i>S. pneumonia</i> ATCC 49619	5.00	4.00	4.00	0.00	36.00
<i>S. epidermidis</i> ATCC 12228	21.5	20.00	20.00	16.00	36.00

Key: ATCC = American Type Culture Collection. (-) – no activity < 10 mm – non-significant activity; 10-19 mm – significant activity > 20 mm – high activity (National committee for clinical laboratory standard)

Antimicrobial activity results *C.glutinosum*

Table 3: Zones of inhibition of *C. glutinosum* against some selected pathogens

Microorganisms	Minimum inhibitory concentration (MIC) (mg/mL)				
	1000mg/mL	500 mg/mL	250mg/ mL	125 mg/ mL	Ciprofloxacin 0.01mg/mL
Zone of inhibition (mm)					
<i>E. coli</i> ATCC 25922	0.50	0.00	0.00	0.00	36.00
<i>S. aureus</i> ATCC 25923	32.5	32.0	30.0	27.0	36.00
<i>P. aeruginosa</i> ATCC 27853	5.50	0.50	0.00	0.00	36.00
<i>S. pneumonia</i> ATCC 49619	25.0	24.0	16.0	10.5	36.00
<i>S. epidermidis</i> ATCC 12228	26.5	20.0	12.5	11.7	36.00

Key: ATCC = American Type Culture Collection. (-) – no activity < 10 mm – non-significant activity; 10-19 mm – significant activity > 20 mm – high activity (National committee for clinical laboratory standard)

Conclusion

The findings of this research indicated that extracts of both plants when isolated and characterized will be a promising antimicrobial agent.

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