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Short Communication

Antimicrobial activity of *Cassia alata*

A. A. Makinde[1], J. O. Igoli[2]*, L. TA'Ama[1], S. J. Shaibu[1], A. Garba[1]

[1]Dermatophilosis Research Centre, National Veterinary Research Institute, Vom, Plateau State, Nigeria.
[2]Department of Chemistry, University of Agriculture, P.M.B 2373, Makurdi, Benue State, Nigeria.

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The antibacterial and antifungal activity of the aqueous and methanol extracts of *Cassia alata* leaves has been evaluated. The extracts exhibited more antifungal than antibacterial properties.

Key words: *Cassia alata*, antifungal activity, antibacterial activity.

INTRODUCTION

Plant-produced compounds are of interest as sources of safer or more effective substitutes for synthetically produced antimicrobial agents (Baladrin et al., 1985). This paper seeks to ascertain the usefulness of *Cassia alata*, a plant traditionally acclaimed to be effective in treating skin infections in man (Igoli et al., 2005) and animals and investigate whether the extracts inhibit microorganisms that are incriminated in the pathogenesis of skin infections. C. alata leaf is also credited for the treatment of haemorrhoids, constipation, inguinal hernia, intestinal parasitosis, blennorrhagia, syphilis and diabetes (Abo et al., 1998; Adjanahoun et al., 1991; Kochar, 1981). Previously isolated classes of compounds from the plant material are hydroxyanthraquinones, glycos-ides, chrysophanic acid, kampferin and sannoxide A and B (Abo et al., 1998; Kochar, 1981).

MATERIALS AND METHODS

C. alata Lank. (Caesalpiniaceae) leaves were collected from a herbalist in Ogoja, Cross River State of Nigeria in March, 1996 and authenticated at the Herbarium, Forestry Research Institute of Nigeria, Ibadan, Nigeria where a voucher specimen has been deposited. Soxhlet extraction with methanol-water (4:1) yielded a filtrate and a residue. Phytochemical screening of the leaf extracts (Harborne, 1984) gave positive tests for alkaloids, phenolics, terpenoids, fats, oils and waxes.

Antimicrobial activity was determined as diameter of inhibition zone using a disk diffusion method (Bauer et al., 1996). Whatman No.1 (6 mm) discs were soaked in each sample tested at concentration of 20 mg/ml of phosphate buffered saline (PBS) (w/v) for the aqueous extract and 5 mg/ml of PBS for the methanolic extract. The microorganisms used are listed in Table 1. They were obtained from stock cultures maintained in the Dermatophilosis Research Centre and Epidemiological Division of the National Veterinary Research Institute, Vom.

RESULTS AND DISCUSSION

Antimicrobial activity recorded in terms of average zones of inhibition in millimeter (mm) is reported in Table 1. The leaf extractives showed a range of activity against all the tested bacteria and fungi. The methanolic extracts of C. alata exhibited very strong activity against two bacteria and five fungi with maximum activity in the fractions containing alkaloid salts and base. The extracts failed to exhibit any significant anti-bacterial activity against six organisms. The results lend support to the traditional use of the plant (flower and leaf) for the treatment of fungal skin diseases.

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*Corresponding authors E-mail: igolij@yahoo.com.

Table 1. Antimicrobial activity of *Cassia alata* leaf extracts.

Microorganism	Diameter of zone of inhibition (mm)			
	A	B	C	D
Bacteria				
Dermatophilus congolensis	++	+++	++++	++
Proteus vulgaris	-	-	-	-
Staphylococcus aureus	+	+	+	-
Corynebacterium parvum	+	+	+	-
Actinomyces bovis	++	+++	+++	++
Nocardia asteroides	+	+	+	-
Clostridium septicum	+	+	+	-
Bacillus pumilus	-	-	-	-
Fungi				
Microsporum canis	+++	++++	++++	+++
Blastomyces dermatitidis	+++	+++	++++	+++
Trichophyton mentagrophytes	+++	++++	++++	+++
Candida albicans	+++	+++	++++	+++
Aspergillus flavus	+++	+++	++++	+++

A = Phenolics and terpenoids, B = alkaloid salt, C = alkaloid base, and D = aqueous extract.
- = No inhibition.
+ = ≤ 5 mm diameter of zone of inhibition.
++ = 5 - 10 mm diameter of zone of inhibition.
+++ = 10 - 20 mm diameter of zone of inhibition.
++++ = 20 - 30 mm diameter of zone of inhibition.

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