

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/7836627>

Amalgestic activity of the roots and leaves extracts of *Calliandra portoricensis*

Article in *Fitoterapia* · August 2005

DOI: 10.1016/j.fitote.2005.03.008 · Source: PubMed

CITATIONS

8

READS

273

4 authors, including:



Ezzeldin Abdurahman
Ahmadu Bello University

36 PUBLICATIONS 597 CITATIONS

[SEE PROFILE](#)



Mufeed Shok
University of Technology, Iraq

13 PUBLICATIONS 149 CITATIONS

[SEE PROFILE](#)



Sadiq Yusuf
St. Augustine International University

21 PUBLICATIONS 372 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Pharmacognostic and Determination of Anti-Diabetics Properties of the Leaves of *Tapinanthus globiferus* (Loranthaceae) [View project](#)



Holding Capacity of urban land uses between Theory and practice Analytical study of the center city of Erbil [View project](#)

Short report

Analgesic activity of the roots and leaves extracts of *Calliandra portoricensis*

Abdulkarim Agunu^{a,*}, E.M. Abdurahman^a,
M. Shok^a, Sadiq A. Yusuf^b

^aDepartment of Pharmacognosy and Drug Development, Ahmadu Bello University, Zaria, Nigeria

^bDepartment of Human Physiology, Ahmadu Bello University, Zaria, Nigeria

Received 6 October 2003; received in revised form 3 January 2005; accepted in revised form 2 March 2005
Available online 17 May 2005

Abstract

The analgesic activity of the methanolic extracts of the roots and leaves of *Calliandra portoricensis* was investigated in mice and rats using acetic acid-induced writhing and formalin tests. The extracts given orally at the doses of 200, 400, 600 mg/kg showed a dose-dependent activity in the tests used.

© 2005 Elsevier B.V. All rights reserved.

Keywords: *Calliandra portoricensis*; Analgesia; Acetic acid-induced writhing; Formalin test

1. Plant material

Calliandra portoricensis roots and leaves, collected in closed forest, Ogba quarters, Ihievbe town, along Auchi-Afuzo road in Edo State, Nigeria, in August 2002, were identified in the Herbarium section, Department of Biological Sciences, Ahmadu Bello University, Zaria, Nigeria. A voucher specimen (No. 2257) has been deposited in the same Herbarium.

* Corresponding author. Tel.: +234 69 332267.

E-mail address: agunua@yahoo.com (A. Agunu).

Table 1
Effects of the *C. portoricensis* root and leaf methanolic extracts on acetic acid-induced writhing in mice

Treatment	Dose p.o. (mg/kg)	Writhing count (% inhibition)	
		Root	Leaf
Control		19.25 ± 2.1	19.25 ± 2.1
<i>C. portoricensis</i>	200	7.0 ± 0.6* (63.6)	10.0 ± 1.0 (48.1)
	400	6.0 ± 0.4* (68.8)	9.0 ± 0.8* (53.2)
	600	4.3 ± 0.2* (77.3)	4.8 ± 0.5* (75.1)
Indomethacin	25	4.0 ± 0.2* (79.2)	4.0 ± 0.3* (79.2)

N = 10.

* *P* < 0.01 vs. Student's *t*-test.

2. Uses in traditional medicine

The pungent roots have purgative action and when mixed with fresh ginger in water, are used as an enema for lumbago, pain relief and constipation. In Ghana, the root is mixed with pepper in the treatment of gonorrhoea, in snuff to promote sneezing and for the relief of headaches. The sap is used in ophthalmic preparation [1,2]. The plant is also reported by traditional healers to have anticonvulsant, antimicrobial, analgesic, antihelminthic and antidepressant properties [3].

3. Previously isolated constituents

No reports.

4. Tested materials

Root and leaves macerated in MeOH (yields: 11.2% and 13.1%, respectively) [4]. Indomethacin was employed as the positive control.

Table 2
Effects of the *C. portoricensis* root and leaf methanolic extracts on formalin induced pain in rats

Treatment	Dose mg/kg p.o.	Score of pain severity, early phase (0–10 min)	
		Leaf	Root
Control	–	3 ± 0	3 ± 0
<i>C. portoricensis</i>	200	0.6 ± 0.1	2.6 ± 0.2
	400	0.6 ± 0.1	1.8 ± 0.1
	600	0.25 ± 0.1	1.6 ± 0.3

N = 10.

Score: 0, rat walking or standing on injected paw; 1, paw partially elevated; 2, total elevation of injected paw; 3, paw licking or biting.

Table 3
Effects of the *C. portoricensis* root and leaf methanolic extracts on formalin induced pain in rats

Treatment	Dose mg/kg p.o.	Score of pain severity, late phase (15–50 min)	
		Leaf	Root
Control	–	3 ± 0	3 ± 0
<i>C. portoricensis</i>	200	1.6 ± 0.3	2.8 ± 0.2
	400	1.2 ± 0.1	2.2 ± 0.3
	600	1.0 ± 0.1	1.8 ± 0.2

N = 10.

Score 0: rat walking or standing on injected paw; 1, paw partially elevated; 2, total elevation of injected paw; 3, paw licking or biting.

5. Studied activity

Analgesic activity using the acetic acid-induced writhing and the formalin pain induction tests [5–8].

6. Animals

Male Swiss mice weighing 22 ± 5.0 g and albino rats weighing 180 ± 2.0 g, obtained from the Animal House, Department of Pharmacology and Clinical Pharmacy, Ahmadu Bello University, Zaria, Nigeria, were used. They were housed in a standard environmental conditions, fed with standard rodent diet and water ad libitum.

7. Results

Reported in Tables 1–3.

8. Conclusion

The study suggests that the root and leaves extracts have analgesic property. The extracts are capable of suppressing abdominal constriction induced by acetic acid and all the pain (neurogenic, inflammatory) phases triggered by the formalin test [9–13]. The findings seems to support the folkloric use.

Acknowledgements

The authors are grateful to Mr. Ibrahim Adamu of the Department of Pharmacology and Clinical Pharmacy, Ahmadu Bello University, Zaria-Nigeria, for the technical assistance during the investigations.

References

- [1] Irvine FR. Woody plants of Ghana. London: Oxford University Press; 1961.
- [2] Dalziel JM. Useful plants of West Tropical Africa. London: Crown agents; 1937.
- [3] Nia R, Adesanya SA, Okeke IN, Iuoh HC, Adesina SK. Nigerian J Nat Prod Med 1999;3:58.
- [4] Brain KR, Turner TD. The practical evaluation of phytopharmaceuticals. Bristol: Wright Scintephica; 1975.
- [5] Koster R, Anderson M, De Beer EJ. Fed Proc 1959;412(18).
- [6] Adzu B, Amos S, Wambebe C, Gamaniel K. Fitoterapia 2001;72:344.
- [7] Dubuisson D, Dennis SG. Pain 1977;4:161.
- [8] Tjolsen A, Berge OG, Hunskaar S, Rosland JH, Hole K. Pain 1992;51:5.
- [9] Duham NW, Miya TS. J Am Pharm Assoc 1957;46:208.
- [10] Hunskaar S, Berg OG, Hole K. Pain 1986;25:125.
- [11] Hunskaar S, Hole K. Pain 1987;30:103.
- [12] Chapman V, Dickenson AH. Eur J Pharmacol 1992;219:427.
- [13] Correa CR, Calixto JB. Br J Pharmacol 1993;110:93.