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Short Report

The anthelmintic activity of
D-3-*O*-methylchiroinositol isolated from *Piliostigma*
thonningii stem bark

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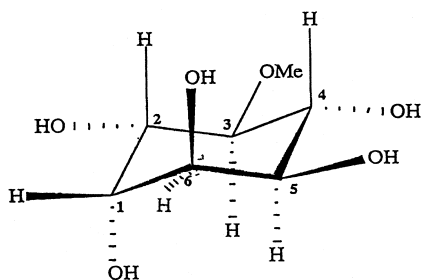
Plant. *Piliostigma thonningii* (Schum.) Milne-Redhead (Caesalpiniaceae), dried stem bark collected from Nsukka in September 1990 and identified by Mr A. Ozioko of the Department of Botany, University of Nigeria, Nsukka, where voucher specimen is deposited in the herbarium.

Uses in traditional medicine. To treat dysentery, snake-bite, tooth ache [1]. Also as anthelmintic [2,3].

Previously isolated classes of constituents. Tannins and traces of alkaloids from roots and bark, hydropectin and sugars from fruits [4].

New-isolated constituent. D-3-*O*-Methylchiroinositol (**1**) [5] (0.3%). $[\alpha]_D = +10^\circ$ (c 0.5, acetone), mp 260°C; ¹H-NMR (450 MHz, acetone-*d*₆): δ 3.25 (1H, *t*, *J* 9.7 Hz,

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1.

H-3), 3.49 (3H, *s*, O-Me), 3.56 (1H, *t*, *J* 9.8 Hz, H-4), 3.66 (1H, *dd*, *J* 2.7, 9.8 Hz, H-5), 3.71 (1H, *dd*, *J* 2.7, 9.7 Hz, H-2), 3.90 (2H, *m*, H-1, H-6); ^{13}C -NMR (100 MHz): 60.2 (O-Me), 70.4 (C-2), 71.1 (C-5), 72.0/72.2 (C-1, C-6), 72.7 (C-4), 83.3 (C-3).

Tested material. D-3-*O*-Methylchiroinositol, the active constituent isolated by bioassay-guided chromatographic separation technique from stem bark MeOH extract.

Studied activity. Anthelmintic activity by larval paralysis [6,7] using levamisole (ICI, Cheshire) as a reference drug [8].

Used organisms. Third stage larvae (L_3) of *Haemonchus contortus* from faecal samples of infected lambs in the Department of Veterinary Parasitology, University of Glasgow.

Results. Reported in Table 1.

Conclusions. D-3-*O*-Methylchiroinositol, the anthelmintic component of *P. thonningii* stem bark extract, induced approximately 60% larval paralysis within 24 h of

Table 1
Effect of D-3-*O*-methylchiroinositol on *Haemonchus contortus* larvae

Drug	Concentration (mg/ml)	Larval paralysis (%) ^a	
		24 h	48 h
D-3- <i>O</i> -Methylchiroinositol	0.55	11.18 ± 1.32	23.68 ± 3.95
	1.10	13.82 ± 5.26	34.21 ± 9.21
	2.20	36.18 ± 10.52	18.42 ± 9.86
	4.40	64.47 ± 6.58	35.53 ± 4.61
Levamisole	0.55	95.41 ± 4.61	94.75 ± 3.95

^a Values are mean ± S.E.; *n* = 4.

contact with *H. contortus* larvae at 4.4 mg/ml. This level of activity may be useful in animal husbandry practice to encourage animals to develop immunity against subsequent worm infections. Its paralytic action was reversible at 48 h, suggestive of ganglion stimulation [8–10]. Its action also confirms the use of *P. thonningii* stem bark extract to treat helminthiasis in African traditional medicine.

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