

## Activity of *Kigelia pinnata* root bark against *Trypanosoma brucei brucei* trypomastigotes

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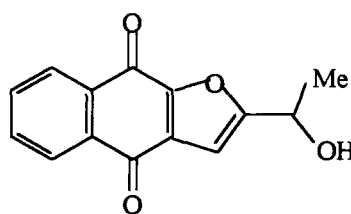
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*Kigelia pinnata* is an African plant which is widely grown in the tropics. All parts of the plant are used in traditional medicine for a variety of purposes (Irvine, 1961). Up to date the chemical investigations on the root have yielded naphthoquinones (Akunyili and Houghton, 1993). This type of compounds in the past have generated interest into research for its antiprotozoal activity (Croft *et al.*, 1992).

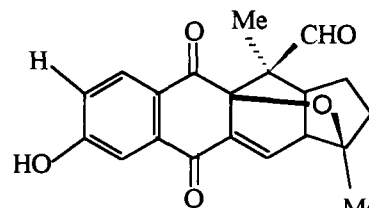
The present study is concerned with bioactivity directed phytochemical investigation of the root bark of the plant for antitrypanosomal activity against *T. brucei brucei* (S427) blood stream form trypomastigotes. The mixture of 100  $\mu$ l of parasite at  $2 \times 10^5$ /mL and 100  $\mu$ l of varying concentrations of the plant extracts (from 90  $\mu$ g mL<sup>-1</sup> to 13.7 ng mL<sup>-1</sup> in 3-fold dilutions) was incubated in a micro-titre plate at temperature of 37°C in an atmosphere containing 5% CO<sub>2</sub>/air mixture for 48 hours. Inhibition of growth of the parasite was inspected microscopically.

The initial experiment has shown that constituents that exhibited activity resides in the dichloromethane fraction. Subsequent experiments led to the identification of two subfractions (from the active fraction) which gave promising activity with minimum inhibitory concentration (MIC) values of 3.3 and 1.1  $\mu$ g mL<sup>-1</sup> respectively. Fractionation and purification process monitored by bioassay experimental results led to the isolation of a naphthoquinone {2-(1-hydroxyethyl) naphtho- [2,3-b]furan-4,9-quinone} **1** from the fraction that gave MIC value

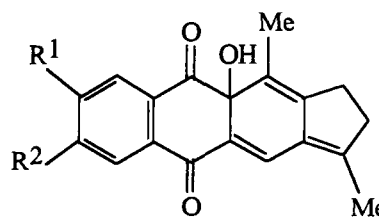
of 3.3  $\mu$ g mL<sup>-1</sup>. Meanwhile, from the fraction that gave MIC value of 1.1  $\mu$ g mL<sup>-1</sup>, three naphthoquinoids namely isopinnatal **2**, kigelinol **3** and isokigelinol **4** were isolated.



**1**



**2**



**3** R<sup>1</sup>=OH, R<sup>2</sup>=H

**4** R<sup>1</sup>=H, R<sup>2</sup>=OH

Akunyili, DN; Houghton, PJ. (1993). *Phytochemistry* 32(4):1015-18.

Croft, SL; Hogg, J; Gutteridge, WE; Hudson, AT; Randall, AW. (1992). *Journal of Antimicrobial Chemotherapy* 30:827-832.

Irvine, FR. (1961). *Woody plant of Ghana*. 2nd ed. London: Oxford University Press, p. 736.