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ALKALOIDS, TRITERPENES AND LIGNANS FROM THE BARK OF *ZANTHOXYLUM DINKLAGEI*

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Plant. Zanthoxylum dinklagei Waterm. [1] (syn. *Fagara dinklagei* Engl. [2])—Enti 488 and Enti 790. Voucher specimens have been deposited at the herbarium of the Royal Botanic Garden, Edinburgh. *Source.* Both samples were collected at the Neung Forest Reserve, Western Region, Ghana. *Previous work.* None. *Plant parts examined.* Root and stem barks.

Present work. Root (1 kg) and stem (1 kg) barks of Enti 790 were extracted in a Soxhlet separately and successively with petrol (bp 40–60°), $CHCl_3$ and MeOH. The petrol extract of the root bark was analysed by column chromatography over Si gel. Elution with hexane gave sitosterol (14 mg) mp 139° followed by lupeol (89 mg) mp 214°, $[\alpha]_D^{21}$ + 27° ($CHCl_3$, *c* 1·00) (both identical with authentic samples by IR, MS, TLC and mmp). Further elution with hexane–EtOAc (4:1) gave sesamin (40 mg) mp 129°, $[\alpha]_D^{21}$ +45° ($CHCl_3$, *c* 1·00), identical with an authentic sample by UV, IR, NMR, MS, TLC.

The $CHCl_3$ extract of the root bark, on shaking with 1N HCl, gave a yellow ppt which was recrystallized from EtOH–HNO_3 to yield nitidine nitrate (230 mg) mp 239°, identical with an authentic sample by UV, IR, MS, TLC, mmp and conversion to dihydronitidine [3]. The HCl extract was basified with NH_4OH and extracted into CH_2Cl_2 to give skimmianine (6 mg) mp 176°, identical with an authentic sample by UV, IR, MS, TLC, mmp.

The MeOH extract of the root bark, after partial purification by ion exchange chromatography [4], gave a yellow material (33 mg) mp > 280°, UV λ_{max}^{EtOH} nm: 216, 248, 325, 380, undergoing a bathochromic shift on addition of NaOH; IR ν_{max} cm^{-1} (KCl): 3400–3100 (OH, NH?), 1685 (CO), 1605. Accurate mass measurement gave a series of fragments at *m/e* 331, 317 and 303 corresponding to $C_{20}H_{17}N_3O_2$, $C_{19}H_{15}N_3O_2$ and $C_{18}H_{13}N_3O_2$. These data suggest that this material is a mixture of β-indoloquinazoline alkaloids, possibly methoxy and hydroxy derivatives of rutaecarpine [5]. The supernatant MeOH extract contained small quantities of the typical quaternary alkaloids of *Zanthoxylum* [4].

Similar treatment of stem bark samples of Enti 790 and Enti 488 (200 g) gave qualitatively the same constituents except that the OR of sesamin was found to be +65°. The alkaloids were all present in lower concentrations.

Biological significance. The secondary metabolites found in *Z. dinklagei* are typical of other African species of the genus investigated [4,6]. The variable OR of sesamin has also been noted previously in *Zanthoxylum* [7].

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