Chemistry Institute, Münster), are acknowledged. This research was supported financially by Deutsche Forschungsgemeinschaft and grants from the Heinrich-Hertz-Stiftung to RAH and SKA.

LITERATURE CITED

1. T.G. Hartley, *Garden Bull. Singapore*, **34**, 91 (1981).
2. M. Gellért, K. Csedö, J. Reisch, I. Novák, K. Szendrei, E. Minker, and M. Koltai, *Acta Pharm. Hung.*, **44**, 26 (1974).
3. J. Reisch, R.A. Hussain, K. Szendrei, and S.K. Adesina, *Pharmazie*, **40**, 812 (1985).
4. J. Grimshaw and E. Lamer-Zarawsha, *Phytochemistry*, **14**, 838, (1975).
5. P. Baruah, N. Baruah, R.P. Sharma, J.N. Baruah, P. Kulanthaivel, and W. Hertz, *Phytochemistry*, **23**, 443 (1984).

Received 1 May 1985

AURANTIAMIDE ACETATE, QUASSINOIDS, AND A CANTHINONE FROM THE STEM BARK OF *PIERREODENDRON KERSTINGII*

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Pierreodendron kerstingii (Engl.) Little (Simaroubaceae) is a large tree from the rain forest of west tropical Africa (1). In a previous investigation of the stem bark, Kupchan and Lacadie (2) reported four typical simaroubaceous quassinoids; ailanthinone, 2′-acetylglaucarubinone, glaucarubinone, and dehydroailanthinone.

We have recently reinvestigated the stem bark and, in addition to ailanthinone, glaucarubinone, and 2′-acetylglaucarubinone, have isolated three further quassinoids, excelsin, 2′-acetylglaucarubin and, as the major compound, glaucarubin. Of the quassinoids new from this species, the first two were confirmed by direct comparison with material recently isolated from *Odyendyea gabonensis* Engl. (3) while glaucarubin was identified by comparison of ^{1}H- and ^{13}C-nmr spectra with other closely allied quassinoids (3) and with literature data (4, 5). Nonquassinoid compounds isolated were 8-hydroxycanthinone, also previously reported from *O. gabonensis* (3), and aurantiamide acetate (asperglaucide). The latter, which is an unusual amide based on phenylalanine and phenylalaninol units with benzoyl and acetyl substituents, was identified by comparison of spectral data with those published (6-8). Aurantiamide acetate has previously been isolated from several sources, including the fungus *Aspergillus glaucus* (6), the alga *Cytoseira corciculata* (7), and *Piper aurantiacum* (8). A microscopic examination of the bark sample failed to reveal any sign of mycelia, thereby ruling out the possibility that aurantiamide acetate was present due to fungal contamination of the bark during drying.

EXPERIMENTAL

PLANT MATERIAL.—*P. kerstingii* stem bark was collected from riverine forest in Ghana in 1982. A voucher, FE-2147, has been deposited at the Herbarium of the Royal Botanic Garden, Edinburgh.

EXTRACTION AND ISOLATION.—Powdered stem bark (600 g) was extracted successively with petroleum ether (60-80°), $CHCl_3$, and MeOH. Column chromatography of the petroleum ether extract over silica gel gave, on elution with petroleum ether containing 10% EtOAc, β-sitosterol (20 mg). Further elution with 35% EtOAc gave aurantiamide acetate (110 mg). Similar treatment of the concentrated $CHCl_3$ extract, eluting with $CHCl_3$ containing increasing amounts of MeOH gave: (a) with 1% MeOH, a mixture of ailanthinone and 2′-acetylglaucarubinone followed by 8-hydroxycanthin-6-one (55 mg), (b) with 3% MeOH, glaucarubinone (70 mg), (c) with 5% MeOH, a mixture of excelsin and 2′-acetylglaucarubin, and (d) with 10% MeOH, glaucarubin (250 mg). The two mixtures were separated by circular preparative tlc on silica gel. Using CH_2Cl_2-iPrOH (49:1) as solvent gave ailanthinone (25 mg) and 2′-acetylglaucarubinone (12 mg); CH_2Cl_2-iPrOH-HOAc (95:5:0.5) gave excelsin (22 mg) and 2′-acetylglaucarubin (9 mg).

IDENTIFICATION OF COMPOUNDS.—Ailanthinone, 2′-acetylglaucarubinone, glaucarubinone, excelsin, 2′-acetylglaucarubin, and 8-hydroxycanthin-6-one were identified by direct comparison with the same compounds isolated from *O. gabonensis* (3). Glaucarubin (4, 5) and aurantiamide acetate (6-8) gave physical and chemical data (mp, ir, ^{1}H and ^{13}C nmr) in close accord with that previously published. Full spectroscopic data on these compounds are available from the senior author on request.

ACKNOWLEDGMENTS

We thank the Association of Commonwealth Universities for the award of a scholarship (to S.A.A.) and Dr. I. Sadler, Department of Chemistry, University of Edinburgh, for high-field nmr spectra. Plant material was supplied by Mr. A.A. Enti, Forestry Enterprises, Ghana.

LITERATURE CITED

1. J. Hutchinson and J.M. Dalziel, *Flora of West Tropical Africa*, vol. 1, London: Crown Agents, 1958, p. 690.
2. S.M. Kupchan and J.A. Lacadie, *J. Org. Chem.*, **40**, 654 (1975).
3. P.G. Waterman and S.A. Ampofo, *Planta Med.*, **50**, 261 (1984).
4. J. Polonsky, Z. Baskévitch, H.E. Gottlieb, E.W. Hagaman, and E. Wenkert, *J. Org. Chem.*, **40**, 2499 (1975)
5. S.A. Khan and K.M. Shamsudin, *Indian J. Chem.*, **16B**, 1045 (1978).
6. R.E. Cox, K.K. Chexal, and J.S.E. Holkar, *J. Chem. Soc., Perkin Trans.*, **1**, 578 (1976).
7. B.C. Maiti and R.H. Thomson, *Experentia*, **32**, 1166 (1976).
8. A. Banerji and R. Ray, *Phytochemistry*, **20**, 2217 (1981).

Received 13 June 1985