HYDROXYPHENYLALKANONES FROM AMOMUM MELEGUETA*

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Plant—Amomum melegueta Roscoe (Zingiberaceae), also known as Grains of Paradise, Guinea pepper or Melegueta pepper. Voucher specimens are on deposit at the Faculty of Pharmacy, University of Science and Technology, Kumasi, Ghana.

Source—Ghana. Uses—Spice [1].

Previous work—On the hydroxyphenylalkanones of seeds from equatorial Africa [2]. On the terpenoid constituents of A. korarima [3], A. subulatum [3], A. cardamomum [4], A. globosum [4].

Present work. The powdered seeds (150 g) of A. melegueta were macerated with Me₂CO. TLC of the extract concentrate (7.5 g) over Si gel with C₆H₆ revealed the presence of five spots [Rₛ 0.94, 0.72, 0.47 (trace), 0.28 and 0.091 (KMnO₄ spray). Column chromatography of the concentrate over silicic acid (200 g) with light petroleum and light petroleum-C₆H₆ mixtures afforded the less polar terpenoid hydrocarbon constituents. Elution with C₆H₆ and C₆H₆-CHCl₃ mixtures afforded a yellow oil (1.49 g) (Rₛ 0.28) which stained deep blue with phosphomolybdic acid spray + NH₃. GLC of the oil on a 160 cm column of 3% OV-17 on Gas Chrom Q (80-100 mesh) showed the presence of 3 major compounds. GLC-MS of the oil revealed that the 3 compounds had M⁺ m/e 278, 276 and 292 respectively and accounted for 33, 38 and 29% of the mixture.

Careful rechromatography of the oil over silicic acid (50 g) and elution with C₆H₆ afforded (6)-paradol (1) (M⁺ m/e 278) (UV, IR, NMR, MS). Further elution with C₆H₆ and C₆H₆-CHCl₃ mixtures afforded mixtures of (6)-paradol (1) (M⁺ m/e 278) and (7)-paradol (2) [M⁺ m/e 292 (13%), 194 (2), 179 (4), 151 (4), 137 (100) and 119 (3)] while elution with C₆H₆-CHCl₃ mixtures and CHCl₃ afforded (6)-shogaol (3) (M⁺ m/e 276) (UV, IR, NMR, MS). Finally, trace amounts of zingerone (4) and (8)-paradol (5) were detected (GLC-MS) in various column fractions. In summary, the 3 major hydroxyphenylalkanones of the Me₂CO extract of...
Ghanian Grains of Paradise are (6)-paradol (1), (7)-paradol (2) and (6)-shogaol (3), the second of which, to our knowledge, has not previously been reported in nature. In an earlier study [1], the hydroxyphenylalkanones from equatorial African Grains of Paradise were examined; in this case (6)-gingerol (6) and (6)-paradol (1) were the major constituents with trace quantities of (6)-shogaol (3), (8)-gingerol (7) and (8)-paradol (5) [2]. However no gingerols were detected in our extract. Obviously, chemical variation in the seeds of *A. melegueta* from different sources needs further examination.

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