

THE ISOLATION OF SHIKIMIC ACID FROM *EUCALYPTUS CITRIODORA* HOOK.*

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Young leaves of *Eucalyptus citriodora* Hook. (10 kg) were frozen in liquid air immediately on picking, were pulped, and immediately extracted with ethanol (95 per cent.) to give an approx. 50 per cent. ethanolic solution, which was passed through a cation-exchange resin "Zeocarb 225" to remove bases and amino acids. The method then employed was essentially that of Anet and Reynolds (1955). The acids were collected on an anion-exchange resin "Amberlite IR-4B" and displaced with 0.1N hydrochloric acid onto a series of four columns of "Amberlite IRA-400". The acids on the columns were displaced with 0.1N hydrochloric acid and 20 ml fractions collected. Paper chromatography using methyl ethyl ketone : cineole : formic acid (85 per cent.) : water (50 : 50 : 20 : 16 v/v) together with the sequence of emergence from the columns indicated the presence of the following acids in order of elution : R_1 , quinic acid, glutaric acid, succinic acid, malic acid, citric acid, phosphoric acid, hydrochloric acid. Small amounts of unknown acids were also present.

The fractions containing the acid R_1 were evaporated and the product (3 g) crystallized from water, m.p. 183 °C, $[\alpha]_D^{25} -178^\circ$ (*c*, 0.04 in water) (Found : C, 48.1 ; H, 5.8%. Calc. for $C_7H_{10}O_5$: C, 48.3 ; H, 5.8%) equiv. wt., 175. Shikimic acid from *E. citriodora*, m.p. 183–186 °C was undepressed by authentic material, m.p. 183–187 °C. In addition the infra-red spectra of the two specimens ("Nujol" mull) were identical. Authentic shikimic acid has m.p. 184 °C, $[\alpha]_D^{20} -176^\circ$ (*c*, 0.02 in ethanol), equiv. wt., 174 (Grewe and Lorenzen 1953).

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The presence of comparatively large quantities of shikimic acid and quinic acid in rapidly developing leaves is of interest in connection with the probable incorporation of these substances into phenylalanine, tryptophan, and lignin (e.g. Davis 1953).

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