

A full description of the present experiments and of the chemical and enzymatic behaviour of poly-arginine will be published elsewhere.

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¹ Hamer and Woodhouse, *Nature*, **163**, 689 (1949).

² Cf. Hanby, Waley and Watson, *Nature*, **161**, 132 (1948). Frankel and Berger, *Nature*, **163**, 213 (1949); Woodward and Schramm, *J. Amer. Chem. Soc.*, **69**, 1551 (1947).

³ Katchalski, Grossfeld and Frankel, *J. Amer. Chem. Soc.*, **70**, 2094 (1948).

⁴ Bergmann, Zervas and Ross, *J. Biol. Chem.*, **111**, 245 (1935).

⁵ Christensen, *J. Biol. Chem.*, **160**, 75 (1945).

⁶ MacPherson, *Biochem. J.*, **40**, 470 (1946).

Separation of Vanillin and Syringaldehyde by Paper Partition Chromatography

THE separation of vanillin and syringaldehyde produced by the oxidation of lignins with nitrobenzene in alkaline medium is of importance in lignin chemistry. Spruce lignin gives only vanillin¹, whereas hardwood lignins give both aldehydes in relative quantities depending on the species². Only limited success has attended efforts to separate them by chemical means^{3,4}. Separation by vacuum sublimation² employs 0.4 gm. of the mixed aldehydes and requires specialized equipment. The present communication shows that separation can be effected by paper partition chromatography using petroleum ether saturated with water as the mobile phase.

The capillary ascent method of Williams and Kirby⁵ has been adapted to effect the separation, as follows. The apparatus consists of a 17-cm. diameter Petri dish lid and a cylindrical tank, 25 cm. diameter by 50 cm. deep, fitted with a water-sealed lid. The Petri dish, containing 100 ml. of petroleum ether (b.p. 100–110° C.) saturated with water, is placed on the bottom of the tank, which has previously been just covered with water saturated with petroleum ether. Drops of about 10 mgm. of a 2 per cent solution of the aldehydes in alcohol are placed about 2.5 cm. from the edge of a sheet (c. 28 cm. by 46 cm.) of Whatman No. 1 filter paper and allowed to dry out at room temperature. Eight drops can conveniently be placed along the 28-cm. edge. The paper is fastened into the form of a cylinder and placed on end in the Petri dish, the aldehyde spots being just above the level of the petroleum ether. The lid is then placed on

the tank. After the fractionation has proceeded for 16 hr. at about 20° C., the paper is removed from the tank and the limit of excursion of the solvent marked; this must be done quickly as the solvent is soon lost from the paper by evaporation. It is dried in air for one hour and developed by spraying with 0.4 per cent solution of 2,4 dinitrophenylhydrazine in 2*N* hydrochloric acid.

The accompanying reproduction shows the excursion of samples of vanillin and syringaldehyde in comparison with the excursions of the constituents of the aldehyde mixtures derived from the woods of *Eucalyptus resinifera* Sm. and *Eucalyptus diversicolor* F. v. M. *R_F* values obtained were: for vanillin, 0.32; for syringaldehyde, 0.12. The method has proved most useful for qualitative testing of the aldehyde mixtures obtained from the oxidation of woods and lignins, and the possibility of making it quantitative is being investigated.

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¹ Freudenberg, K., Lautsch, W., and Engler, K., *Ber. deutsch. chem. Ges.*, **73**, 167 (1940).

² Creighton, R. H. J., McCarthy, J. L., and Hibbert, H., *J. Amer. Chem. Soc.*, **63**, 3049 (1941).

³ Hunter, M. J., and Hibbert, H., *J. Amer. Chem. Soc.*, **61**, 2190 (1939).

⁴ Williams, R. J., and Kirby, H., *Science*, **107**, 481 (1948).

Occurrence of Dulcitol as Exudate from *Euonymus japonicus* and *E. europæus*

DURING the long period of drought and abnormally high temperatures of June and early July 1949, many bushes of *Euonymus japonicus* in the Bristol area were observed to possess a white incrustation on the upper surface of the leaves. In cases of weakly growing bushes, almost all leaves were affected; but generally the heaviest incrustation occurred on relatively few leaves and appeared to be a dried exudate, probably due to damage by aphides, which were very prevalent. The incrustation was found mainly near the base of the leaves, and typical examples (see photograph) show the nodular nature of the material, which was easily dislodged from the smooth surface.

Examination of the exudate, of which as much as 0.2 gm. was obtained from a single leaf, showed that it consisted of crystalline dulcitol (galactitol),

Vanillin Syringaldehyde *E. resinifera* *E. diversicolor*

