A new solvent system for paper chromatographic separation of glucuronic and galacturonic acids*

In connection with our studies on the chemical composition of basement membrane mucopolysaccharide[1], we developed a new solvent system for the separation of glucuronic and galacturonic acids. Other solvents reported in the literature[2,3] proved unsatisfactory.

The new solvent mixture was made up of analytically pure acetone, ethanol, isopropyl alcohol and 0.05 *M* borate buffer of pH 10.0[4] in the proportion of 3:1:1:2 by volume. Chromatographic data obtained with the above solvent are compared with those of three other solvents in Table I. In these experiments aqueous solutions of the hexuronic acids and their mixtures were applied on Whatman No. 1 paper and chromatographed for 24 h at room temperature in a descending manner. The spots were

Fig. 1. Paper chromatographic separation of glucuronic and galacturonic acids. Solvent: acetone–ethanol–isopropyl alcohol–borate buffer, pH 10.0 (3:1:1:2). 1 = galacturonic acid; 2 = glucuronic acid; 3 = mixture.

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TABLE I

COMPARATIVE STUDIES WITH VARIOUS SOLVENTS

Solvent system	Distance travelled from origin in 24 h (cm)	
	Glucuronic acid	Galacturonic acid
Acetone–ethanol–isopropyl alcohol–borate buffer, pH 10.0 (3:1:1:2)	23.7	19.7
tert.-Amyl alcohol–isopropyl alcohol–water (4:1:2)[2]	1.7	1.5
n-Butyl alcohol–acetic acid–water (4:1:2)[2]	13.6	13.2
n-Butyl acetate–acetic acid–butanol–methanol–water (3:2:2:1:1)[3]	11.3	10.5

located on air-dried paper strips with a silver nitrate reagent[5]. Fig. 1 illustrates the separation obtained with the new solvent.

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1 H. MUKERJEE, J. SRI RAM AND G. B. PIERCE, Jr., *Federation Proc.*, 23 (1964) 235.
2 B. RADHAKRISHNAMURTHY AND G. S. BERENSON, *Arch. Biochem. Biophys.*, 101 (1963) 360.
3 H. MASAMUNE AND M. MAKI, *Tohoku J. Exptl. Med.*, 55 (1951) 299, quoted in E. A. KABAT AND M. M. MAYER, *Experimental Immunochemistry*, 2nd Ed., C. C. Thomas, Springfield, Ill., 1961, p. 525.
4 C. LONG (Editor), *Biochemist's Handbook*, Van Nostrand Co., Inc., New York, 1961, p. 40.
5 W. E. TREVELYAN, D. P. PROCTOR AND J. S. HARRISON, *Nature*, 166 (1950) 444.

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The paper chromatography of aliphatic sulphonates

Information on the chromatographic behaviour of the aliphatic sulphonic acids and their salts is limited to data for the naturally occurring taurine[1–5] and isethionic acid (2-hydroxyethanesulphonic acid)[3,7], for cysteic acid[1–6], to which cysteine and cystine are often converted during protein degradation studies, and homocysteic acid[1,5,6]. Taurine, cysteic acid and homocysteic acid are readily detected with ninhydrin, and taurine also by reaction with *o*-phthalaldehyde[8], but no simple specific colour reactions for aliphatic sulphonates as a group are available. Aromatic sulphonates, on the other hand, may be detected on chromatograms viewed under U.V. light[9,10] or after being sprayed with Pinacryptol Yellow[11]. In the present communication some methods of possible value in the detection of aliphatic sulphonates have been examined, and chromatographic data for thirteen of these compounds in seven solvent systems are presented.