

## On the Enzymatic Formation of Ester Sulphates of Aliphatic Polyols

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Sulphate conjugation of phenols<sup>1</sup>, steroids<sup>2,3</sup>, some amines<sup>4</sup>, certain carbohydrate acceptors<sup>5</sup> and primary aliphatic alcohols<sup>6</sup> is known to take place in cell-free media containing sulphate-activating and sulphate-transferring enzymes<sup>7</sup>.

Our studies on alcohols have now been extended to aliphatic polyols, and indications have been obtained of an enzymatic sulphurylation of several compounds of this type. As in earlier studies<sup>8,9</sup>, <sup>35</sup>S-labelled sulphate was used as tracer substance; formation of sulphate esters in the incubating medium<sup>3</sup> (phosphate buffer, ATP, Mg ions, particle-free rat liver supernatant, <sup>35</sup>S-labelled sulphate and sample of substance to be tested) was demonstrated by means of two-dimensional paper chromato-

graphy and electrophoresis, both methods combined with autoradiography.

The results of this investigation are briefly summarized in Table 1. In most experiments, a new spot appeared in addition to the basic pattern, indicating the formation of a sulphate ester. Higher concentrations of the substance added gave stronger spots, until in some cases inhibition occurred.

As seen in the table, the different glycols studied (Group I) had about the same tendency to form sulphate esters in the system used. Increased number of HCOH groups (II) decreased the tendency to sulphate conjugation. Of the diols tested (Group III), those with a larger distance between the OH groups were more easily combined with sulphate.

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Group	Compound	Concentration in the medium (%) *				
		0.01	0.1	0.5	5	10
I	Glycol	—	—	+	+++	+++
	Diethylene glycol	—	+	+	+++	+++
	Triethylene glycol	—	+	++	+++	+++
	Polyethylene glycol (Approx. 200 repeating units)	—	—	+	+++	+++
II	Methanol	—	+	+	+++	+++
	Glycol	—	—	+	+++	+++
	Glycerol	—	—	—	+	+
	Erythritol	—	—	—	—	—
	Pentitols	—	—	(0.3 %)	—	—
	Hexitols	—	—	(0.3 %)	—	—
III	Glycol	—	—	+	+++	+++
	1,4-Butanediol	—	+	+++	+++	+++
	1,5-Pentanediol	+	++	+++	++	+
	1,6-Hexanediol	+	+++	+++	—	—

\* The sign — denotes absence of new spots, and +, ++, +++ appearance of a weak, medium or strong new spot.