

STUDIES ON MERCAPTALS OF SUGARS. III. ISO-BUTYL MERCAPTALS OF SUGARS.⁽²⁾

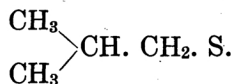
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Normal butyl⁽³⁾ and normal propyl mercaptals⁽⁴⁾ of sugars have been studied by the present author and were reported in this journal.

This paper is the outline of the results of the studies of iso-butyl mercaptals of various sugars.

Experimental.—Mercaptals are prepared by the same method as described in the previous paper.⁽³⁾ The condensation is carried out by using conc. HCl (sp. gr. 1.20), as proposed by Fischer.⁽⁵⁾ The crude products are purified by the crystallization from dilute alcohol. The new mercaptals of sugars obtained have the following chemical constitution, which are determined by the analysis; here R representing



(2) Read before the annual meeting of the Chemical Society of Japan, April 7, 1929.

(3) This Bulletin, **1** (1926), 179.

(4) This Bulletin, **1** (1926), 181.

(5) Fischer, *Ber.*, **27** (1894), 673.

Table 1.

		Sulphur ⁽¹⁾	
		Calc. %	Found %
Glucose-iso-butyl mercaptal	$C_6H_{12}O_5 (R)_2$	18.71	18.44
Galactose ,,	$C_6H_{12}O_5 (R)_2$	18.71	18.67
Mannose ,,	$C_6H_{12}O_5 (R)_2$	18.71	18.50
Rhamnose ,,	$CH_3. C_5H_9O_4 (R)_2$	19.63	19.08
Arabinose ,,	$C_5H_{10}O_4 (R)_2$	20.51	20.34
Maltose ,,	$C_{12}H_{22}O_{11} (R)_4$	19.21	19.20
Sucrose ,,	$C_{12}H_{22}O_{11} (R)_4$	19.21	19.13

The physical constants of these mercaptals are shown in the following table.

Table 2.

	M. p.	Sp. rotation
Glucose-iso-butyl mercaptal	130°	$[\alpha]_D^{14} = +40.0$
Galactose ,,	129°	$[\alpha]_D^{13} = +41.2$
Mannose ,,	111°	,, = +16.4
Rhamnose ,,	112°	,, = +14.0
Arabinose ,,	123°	$[\alpha]_D^{14} = +20.0$
Maltose ,,	140°	$[\alpha]_D^{12} = +13.2$
Sucrose ,,	138°	$[\alpha]_D^{14} = + 9.6$

Summary.—Iso-butyl mercaptals of three hexoses, one methyl pentose, one pentose and two dioses are crystallized out as new compounds.

Other sugars, e. g. lactose, fructose, xylose are tried but ended in negative results.

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(1) The sulphur is determined by using Parr bomb.