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The factors of dehydration in rabbits following pyloric obstruction.

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Data obtained from rabbits consist of measurements of water, chlorides, and fixed base in the gastric contents of controls and after obstruction of the pylorus. They show (Tables 1 and 2), following obstruction, a loss of water, chlorides and fixed base into the stomach of from 2 to 3 times an estimated initial total plasma content.

A chief point of these findings is the large loss of fixed base. From the point of view of repair of dehydration following pyloric obstruction, the loss of base is more significant than the loss of chloride ion, for the reason that it represents an absolute depletion of the body's content of dissolved electrolytes, whereas loss of chloride ion is replaced by bicarbonate ion. Replacement of base is thus indicated as the essential factor in the beneficial action of injections of NaCl solution in the presence of pyloric obstruction.

Haden and Orr,¹ however, regard the action of NaCl solution as protective against a toxic substance rather than simply reparative of dehydration. They state that the chloride lowering in the plasma following pyloric obstruction can only in part be explained by a loss in gastric secretion, since they find that it occurs when there is little vomiting and in rabbits which cannot vomit. They suggest that chloride leaves the plasma in offensive quest of a toxic substance. The data here given demonstrate that although these rabbits did not vomit, they nevertheless lost into their stomachs several times the total plasma capacity for chloride. That any chloride at all is found in the plasma proves a movement in the direction opposite from that surmised by Haden and Orr. The chloride lowering in the plasma is thus, as might be expected, shown to be referable to circumstances affecting body fluid adjustments.

¹ Haden, R. L., and Orr, T. G., *J. Am. Med. Assn.*, 1924, lxxxii, 1515.

TABLE I.

	Animal No.	Body Wt.	Stomach Contents				Blood Serum.	
			Solids.	Water.	Fixed Base.	Chlorides.	Fixed Base.	Chlorides.
		Kilos	gm.	cc.	cc. 0.1N	cc. 0.1N	cc. 0.1N per 100	cc. 0.1N per 100
Controls	1	2.4	21	89	68	155	169	100
	2	4.0	34	98	116	196	172	105
	3	2.8	20	67	64	100	167	107
Average		3.1	27	85	83	150	169	104
Pylorus obstructed*	4	3.0	17	313	376	462	62
	5	2.7	33	285	388	410	156	78
	6	3.8	21	320	327	540
Average		3.3	24	306	364	471	156	70

*Survived operation 20-28 hours.

TABLE II.

Estimation of *plasma volume* and of total plasma content of Cl and B compared with loss of H₂O and of Cl and B in gastric secretion following pyloric obstruction.

Animal	No. 4	No. 5	No. 6
Plasma volume ¹	93 cc.	84 cc.	118 cc.
Water lost ²	228 cc.	200 cc.	235 cc.
Water lost ÷ Plas. vol.	2.5	2.4	2.0
Total plasma chloride ³	96 cc. 0.1N	87 cc. 0.1N	123 cc. 0.1N
Chloride lost ²	312 cc. 0.1N	260 cc. 0.1N	390 cc. 0.1N
Cl lost ÷ Total plas. Cl	3.4	3.1	3.2
Total plasma base ⁴	157 cc. 0.1N	142 cc. 0.1N	200 cc. 0.1N
Base lost ²	293 cc. 0.1N	305 cc. 0.1N	244 cc. 0.1N
B lost ÷ Total plas. B	1.9	2.3	1.2

¹ Body wt. \times 0.031 (according to Utheim, K., *Am. J. Dis. Child.*, 1920, **xx**, 366).

² By subtracting average for controls from total measurement (see Table I).

³ Plasma volume \times 1.04 (see Table I).

⁴ Plasma volume \times 1.69 (see Table I).