

like bacterium isolated from milk. We found this organism without difficulty in several fresh milk samples and were able to confirm with it most of the observations of Oerskov. We failed, however, with the milk organisms to demonstrate the most important point, that a growth of the non-stainable granules can be obtained which is certainly independent of the growth of the bacteria, though the evidence for this is strongly suggestive.

It has long been known that upon saccharose media the colonies of many bacteria develop a peculiar slimy consistency. We have examined the slime produced by 6 different types of organisms grown on saccharose media and have found it in all cases to consist of particulate matter in the form of non-stainable granules, similar in all respects to the findings described above. It is of special interest that streptococci from human throats often were found to form large semi-transparent colonies on saccharose plates. The granules in these colonies are very small and could be seen only with dark field illumination, being apparently too small to show up with the staining methods described above.

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Colon Activation by Intravenous Hypertonic NaCl Injection in Unanesthetized, Trained Dogs.

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Since Hughson and Scarff¹ first reported peristaltic augmentation of the ileum after NaCl intravenously in anesthetized cats, several investigators have confirmed the observation.^{2, 3, 4, 5} Regarding the response of the colon no action has been experimentally demonstrated. Thus our results seem interesting since they show that the large intestine can be activated by salt solutions of adequate hypertonicity when intravenously administered.

This work was carried out in unanesthetized, trained collies,

¹ Hughson, W., and Scarff, J. E., *Johns Hopkins Hosp. Bull.*, 1924, **35**, 197.

² Ross, J. W., *Canad. Med. Assn. J.*, 1926, **16**, 241.

³ Dreyer, N. B., and Tsung, Thelma, *J. Pharmacol. and Exp. Therap.*, 1929, **36**, 629.

⁴ Orr, T. G., Johnstone, P. N., and Haden, R. L., *Surg. Gynec. and Obstet.*, 1931, **52**, 941.

⁵ Reid, P. E., *PROC. SOC. EXP. BIOL. AND MED.*, 1931, **29**, 220.

which had undergone cecostomy after the method described by Plant and Miller.⁶ Rubber balloons of convenient size, under uniform water pressure were inserted into the anterior colon and registrations were recorded through a closed system⁶ by means of Mendenhall's⁷ modified Brodie⁸ bellows. Varying amounts, 2 to 15 cc., of NaCl 5% and 20% concentration were injected intravenously and intracardially.

Results. 5% NaCl only slightly (a) augments colonic tonus, (b) increases peristaltic amplitude.

5% NaCl does not alter peristaltic frequency.

5% NaCl shows little or no disturbance of frequency and amplitude of rhythmic waves.

20% NaCl definitely (a) augments colonic tonus, (b) increases peristaltic amplitude, (c) induces peristalsis, in the quiescent, atropinized colon.

20% NaCl shows little or no augmentation of frequency and amplitude of rhythmic waves.

Similar amounts of normal saline fail to affect the colon.

20% NaCl, 1.0 cc. per kg., as here administered did not produce vomiting or retching movements.

5% and 20% NaCl failed to produce defecation in these particular experiments.

No evident distress was ever observed in over 20 experiments.

Conclusions. Reasonably small amounts of hypertonic NaCl solutions intravenously injected promote or augment activity of the colon. Since this increased activity can be induced after atropinization, NaCl, in this instance, probably affects either Auerbach's plexus or the intestinal muscularis directly. We are not overlooking the possibility that sufficient disturbance of oxygen transport may occur to produce partial asphyxiation which may stimulate the intestinal musculature. This possibility is being investigated. The beneficial application of intravenous hypertonic NaCl in colonic stasis—myogenic or neurogenic in origin—seems worthy of consideration by the clinician.

⁶ Plant, O. H., and Miller, G. H., *J. Pharmacol. and Exp. Therap.*, 1926, **27**, 149.

⁷ Mendenhall, W. L., Demonstration, Fed. Am. Soc. for Exp. Biol., Rochester, 1927.

⁸ Brodie, T. G., *J. Physiol.*, 1901, **27**, 473.