

References

1. LIEBIG, H. *Arch. exper. Path. Pharmacol.*, **195**, 465 (1940).
2. OLSEN, N. S. *Am. J. Physiol.*, **161**, 448 (1950).
3. GROLLMAN, A. *Proc. Soc. Exp. Biol. Med.*, **57**, 102 (1944).
4. LACKEY, R. W., et al. *Proc. Soc. Exp. Biol. Med.*, **57**, 191 (1944).
5. HEILESEN, B. *Acta Physiol. Scand.*, **13**, 181 (1947).
6. LACKEY, R. W., BUNDE, C. A., and HARRIS, L. C. *Am. J. Physiol.*, **145**, 470 (1946).
7. FISHER, N. F., and LACKEY, R. W. *Am. J. Physiol.*, **72**, 43 (1925).
8. EVANS, G., and BRODIE, M. A. *Proc. Soc. Exp. Biol. Med.*, **35**, 68 (1936).
9. EVANS, G. *J. Physiol.*, **82**, 468 (1934).
10. SHELLEY, W. B., CODE, C. F., and VISSCHER, M. *Am. J. Physiol.*, **138**, 652 (1943).
11. WU, J. J., and CHANG, I. *Quart. J. Exp. Physiol.*, **34**, 91 (1948).
12. LACKEY, R. W., BUNDE, C. A., and HARRIS, L. C. *Proc. Soc. Exp. Biol. Med.*, **66**, 433 (1947).
13. LACKEY, R. W., and BUNDE, C. A. Unpublished data.

The Direction of Flow in the Blood Vessels of the Infundibular Stalk

Russell J. Barnett and Roy O. Greep

Department of Anatomy, Harvard Medical School, and Harvard School of Dental Medicine, Boston, Massachusetts

Recent work, especially that of G. W. Harris (1), has drawn attention to a possible neurohumoral relay between the hypothalamus and the anterior lobe of the hypophysis. The neural link in the chain consists of nerve fibers from the hypothalamus to the median eminence and infundibular stem, where the humoral substance originates and is transmitted to the adeno-hypophysis via the hypophyseal-portal blood vessels.

The direction of blood flow in the vessels of the stalk forms an important part of the theory. Wislocki (2), as well as Green and Harris (3), suggested that the direction of flow was from the median eminence and infundibular stem to the adeno-hypophysis. This is in contradistinction to the report of Popa and Fielding (4), in the original description of the hypophyseal-portal vessels, stating the blood flow was from the anterior hypophysis up the stalk to the hypothalamus.

During recent investigations into the anatomy and physiology of the pituitary gland and stalk (5), a surgical procedure was developed to expose completely the stalk and rostral portion of the pituitary gland to direct vision. The operative approach was parapharyngeal, and the blood vessels supplying the hypophysis were not disturbed. It occurred to us that with this exposure the direction of flow in the blood vessels of the infundibular stalk could be visualized.

The procedures were carried out on adult albino rats. The region of the infundibular stalk was exposed surgically with the animals under ether anesthesia. By this means the blood vessels of the infundibular stalk were brought into view. The chest was then opened, and a fine glass cannula was introduced into the proximal aorta through the wall of the left ventricle. Less than 5 ml of a 50% aqueous suspension of Higgins

waterproof India ink was injected slowly while the infundibular stem blood vessels were viewed with a binocular dissecting microscope. India ink usually appeared in several vessels within a few seconds of the beginning of injection. This occurred before any other vessels or tissues in the operative field became injected. With a just appreciable lag, involving perhaps no more than a second, additional vessels, usually 3 in number, became filled. By varying the quantity of ink injected, as well as the injection pressure, it was possible to fill selectively the first-mentioned vascular channels, or to fill all of them (an average of 6). It was noted repeatedly that the flow of India ink in all these vessels was invariably from the stalk to the body of the hypophysis. The vessels extended from the anterior part of the stalk posteriorly to the pituitary gland, where they ramified. They had the approximate width of a very fine silk thread. One or two of these vessels entered the posterior lobe. The pars distalis did not become colored until the India ink passed down the vessels of the stalk to the gland, nor did the distalis become colored if the stalk was severed just prior to injection. We have therefore been able to substantiate the anatomical observations of Wislocki (2) and Green and Harris (3) by direct visualization of the flow of India ink in the infundibular stalk vessels.

References

1. HARRIS, G. W. *Physiol. Revs.*, **28**, 139 (1948).
2. WISLOCKI, G. B. *Research Pub., Assoc. Research Nervous Mental Disease*, **17**, 48 (1938).
3. GREEN, J. D., and HARRIS, G. W. *J. Endocrinol.*, **5**, 136 (1947).
4. POPA, G. T., and FIELDING, U. J. *Anat.*, **65**, 88 (1930).
5. GREEP, R. O., and BARNETT, R. J. To be published.

A Universal Line Graph for Estimating Percentage Potency in Multidose Assays

Marion B. Sherwood

The Wellcome Research Laboratories, Tuckahoe, New York

In 1947 the author (1) presented in these columns simple formulas for calculating percentage potency in 3- and 4-dose assay procedures, when the log dose-response curves of the unknown and standard materials are both linear and parallel. Later Harte (2) demonstrated that each formula was reducible to a single line which, under the conditions of that test, could be used for a rapid graphic determination of the percentage potency. This was a distinct improvement over the use of radial lines employed by Knudsen (3), but still left much to be desired, since the position of the line varied with the two parameters: C , the log ratio of the concentration of the unknown to that of the standard, and d , the log interval between the successive doses of both the unknown and standard. Harte, however, avoided the second parameter by the use of a fixed d and established a