cerned in carbohydrate metabolism assists, rather than opposes, the action of insulin since it makes hepatic glycogen stores available as blood sugar for the insulin activity and further metabolism. The presence of this hypothetic additional hormone may account for some of the metabolic discrepancies heretofore encountered in clinical diabetes.

It should be stressed again that no conclusive proof exists that the alpha cell produces the H-G F nor that this is actually a hormone. It is possible, certainly, that this substance produces its effect in these cases because of some abnormality in the hepatic glycogen formation or storage permitting different glycogenolytic agents to act differently. Therefore, the possibility of treating these young labile diabetic patients with the H-G factor in an effort to make their diabetes easier to control, even though larger doses of insulin would then be required, is worth some speculation but such efforts should await further study of other metabolic implications which will be discussed elsewhere.

Conclusions. A small number of patients were treated with the H-G factor obtained as a contaminant of certain insulin preparations. Five of 6 patients with labile diabetes showed a rise in blood sugar greater than was seen in any of the normal subjects or stable diabetic patients.

I am indebted to Miss J. Hurwitz for technical assistance and to Mr. G. Blair and Dr. L. Hines of E. R. Squibb and Company for generous supplies of insulin.

Received April 28, 1950. P.S.E.B.M., 1950, v74.

13. Lukens, F. D., *Trans. Am. Diabetic Assn.*, 1949, v9, 44.

Ultraviolet Photography of Paper Chromatograms in the Study of Nucleic Acids.* (17915)

JOHN P. GOELLER AND SOL SHERRY

From the Department of Medicine, New York University College of Medicine, and of Bellevue Hospital.

In the course of studying, by paper chromatography, the enzymatic degradation of DNA and RNA by streptococcal enzymes, a simple method of photographing the paper strips in the ultraviolet was developed, and forms the basis of this report.

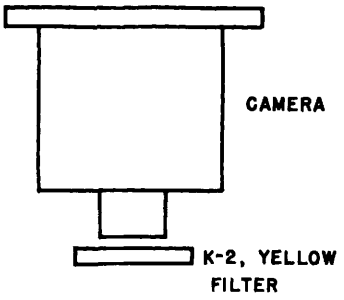
Method. Fig. 1 illustrates the mechanical system employed. The ultraviolet light source was a model SL Mineralight† containing a 2537 short wave filter. The paper chromatogram was fastened tautly across an open box or taped to the undersurface of a supported sheet of clear glass (*i.e.*, with the paper facing the light source). Any camera capable of focusing at close distances was found suitable when used with a light yellow filter (*e.g.*, K_2 filter). High contrast film (*e.g.*, Process Pan) was preferable, although overdevelopment of ordinary film produced satisfactory contrast. A distance of 14 inches from light source to paper, and an exposure time of one hour at F 4.5, using a film with a Weston rating of 48, gave consistently satisfactory results. Further distances from the light source gave more even illumination of the paper, but made longer exposure times necessary. With the lighting source described, the method of Markham and Smith(1), which employ contact printing, could be simplified, but was not found to be as convenient in our enzymatic studies.

Results. Fig. 2 illustrates an ultraviolet photograph, by the procedure outlined, of a paper chromatogram of 1% DNA and RNA

* This study was supported by a grant from the National Institute of Health, United States Public Health Service.

† Ultraviolet Products, Inc., South Pasadena, Calif.

1. Markham, R., and Smith, J. D., *Biochem. J.*, 1949, v45, 294.



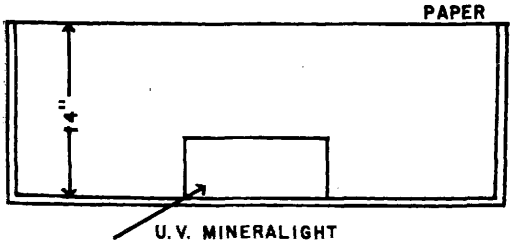


FIG. 1.
Schema of method for ultraviolet photography.

hydrolysates. Hydrolysis of the nucleic acids was carried out with perchloric acid as described by Marshak and Vogel(2). Ten μl of the hydrolysate was deposited at the starting point and a N-butanol: IN ammonia (7:1) solvent system employed. The 4 bases derived by hydrolysis from each type of nucleic acid and the solvent front are readily visualized. Adenine and guanine have very characteristic appearances in the presence of perchlorate. Note that the photography demonstrates that uracil is distinct from the adenine crescent in the RNA hydrolysate with this solvent system. This is not apparent when the paper is scanned with an ultraviolet lamp in the conventional manner.

The advantages of this photographic procedure in the study of nucleic acid by paper chromatography are apparent. Permanent objective records are obtained for careful study, filing, characterization of each of the spots, and extremely accurate measurement of RF values. After being photographed, the spots on the paper can be eluted in the conventional manner, and further identification made. The sensitivity of the photographic method is such that amounts of material too small to estimate accurately by the spectrophotometer can be readily visualized.

Summary. A simple method for the ultraviolet photography of paper chromatograms has been described, and its advantages in the study of nucleic acids noted.

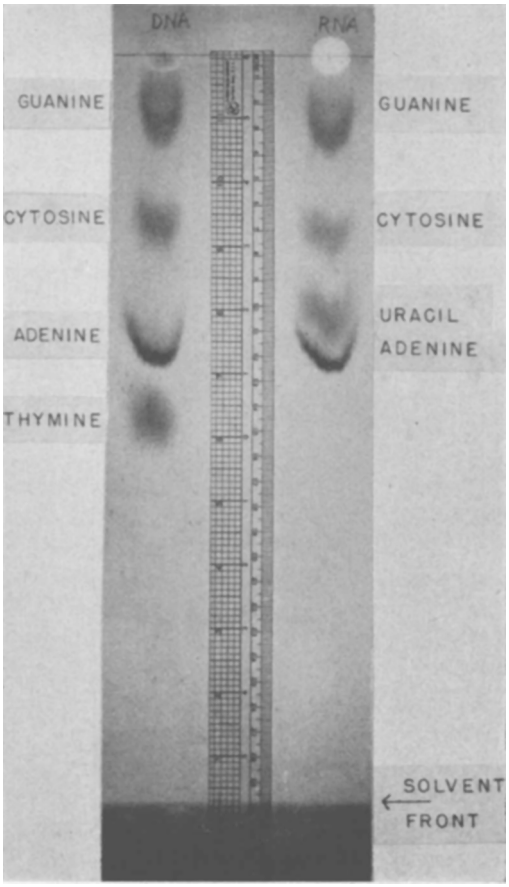


FIG. 2.
Ultraviolet photograph of paper chromatogram of a 1% DNA and RNA hydrolysate. Photo taken with a 4 x 5 Speed Graphic, 135 mm Optar lens, K_2 filter, exposure 1 hr at F 4.5 on Kodak Process Pan.

2. Marshak, A., and Vogel, H. J., *Fed Proc.*, 1950, v9, 85.

Received May 19, 1950. P.S.E.B.M., 1950, v74.