

FIG. 1.

substances from the standpoint of viral contamination.

These findings suggest that the tissue culture system when properly controlled is capable of the demonstration of active virucidal chemical groupings. Virucidal substances dis-

covered in this way may be thought of as comparable to bactericidal substances discovered in the usual *in vitro* bacterial growth systems. The relationship between such substances and useful chemotherapeutic agents may be as uncertain in the one biological system as it is in the other.

Summary. Several chloro- and bromoacylamides were demonstrated to inhibit multiplication of the vaccinia virus in chick embryonic tissue. 5-Dichloroamidouracil was found to be inhibitory whereas 5-fluoroacetamidouracil was inactive.

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Seasonal Variation in Human Fasting Blood Sugar Levels.* (17366)

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During the course of a study on human subjects involving the effect of the breakfast meal on carbohydrate metabolism,¹ seasonal variation in fasting blood sugar levels was noted.

Work done in this laboratory over a 2 year period on 9 women gave a total of 170 fasting blood sugar determinations. When these values were averaged by months, the results shown in Fig. 1 were obtained. The fasting values during the 2 year period were within the range given by Peters and Van Slyke.² However, they showed marked seasonal differences. Blood sugar concentration rose progressively with the colder months of the year and were definitely higher in the winter than during the summer months.

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¹ Orent-Keiles, Elsa, and Hallman, Lois F., U.S.D.A. Circular, 1949, No. 827.

² Peters, J. P., and Van Slyke, D. D., Quantitative clinical chemistry, Vol. 2, Chap. III, Williams and Wilkins, 1946.

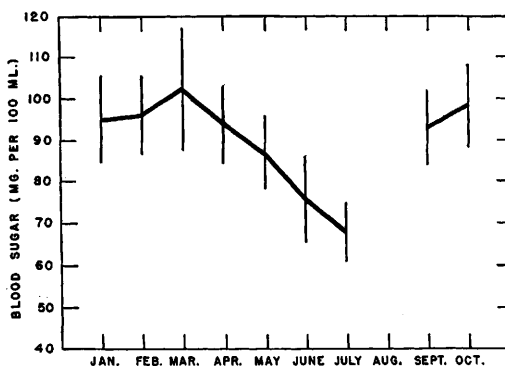


FIG. 1.

Average blood sugar values by month. Standard deviations indicated by vertical lines.

The subjects used in this study were 9 women laboratory workers ranging in age from 28 to 48 years. They were of average weight and height and moderately active. They were considered to be in good health although no physical or medical examinations were made.

Periodic blood counts and urine analyses were normal. At no time did any of the subjects participate in an experiment when suf-

fering from a cold or similar indisposition. Neither were tests made during menstruation. By coincidence none of the subjects were smokers.

Samples of blood were taken after 15 hours' fasting and collected from a fingerprick into a paraffin well. Folin's micro method³ was used for the glucose determinations, using 1.6% sodium carbonate in place of the sodium cyanide-sodium carbonate solution as recommended by Klendshoj and Hubbard.⁴ Readings were made on a Beckman spectrophotometer at 5200 Å. All measurements and read-

ings throughout the study were done by the same analyst. Periodic standard sugar curves were made to check the solutions and the instrument. A search of the literature revealed only 2 observations^{5,6} which suggest a relationship of season to concentration of blood sugar in human subjects.

The results obtained in the study reported here present the question whether these seasonal differences are due to variation in the quality or quantity of the food ingested or difference in the individual metabolism, or both, at different seasons of the year.

³ Folin, O., and Svedberg, D., *J. Biol. Chem.*, 1930, **88**, 85.

⁴ Klendshoj, Niels C., and Hubbard, Roger S., *J. Lab. Clin. Med.*, 1939-40, **25**, 1102.

⁵ Johnson, Buford, J., *J. Comp. Psychol.*, 1922, **2**, 155.

⁶ Strouse, S., *Arch. Int. Med.*, 1920, **26**, 758.

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Hearing in Guinea Pigs Deficient in the Anti-Stiffness Factor.* (17367)

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This research was outlined to establish whether a diet deficient in the anti-stiffness factor¹⁻⁵ produced diminution in the hearing ability of guinea pigs. Responses of guinea pigs to sound are various. The most frequently observed reflex is the well-known ear-flick which, when well developed, is a folding back of the ear against the side of the head, but in diminished form is a mere quiver of the edge of the ear. This type of response was chosen as the most clear-cut obtainable to establish the hearing range of guinea pigs, although certain animals gave evidence by

jerking or movement of whiskers that they heard a little beyond the limits set by the ear-flick.

Stimuli were furnished by a General Electric audio-signal generator combined with a loud speaker and key (borrowed through the kindness of Prof. E. A. Yunker, Department of Physics, Oregon State College). Free response was obtained by placing the unconfined animal upon the table, closely facing the loud speaker. Each guinea pig was exposed to a series of signals from a frequency of zero to a frequency of 17,000 cycles per second. The range in pitch to which ear-flick response was given was found to be 150-16500 cycles per second. Fluctuations in electric current from time to time produced slight variations in response.

The 68 experimental animals used in this research had been fed a diet deficient in the anti-stiffness factor for at least 11 months before the testing started. This diet consisted of 18-20% skim milk powder in water, to which was added copper and iron salts and the following assortment of vitamins: The

* Supported in part by a grant from General Research, Oregon State College.

¹ Wulzen, R., and Bahrs, A. M., *Physiol. Zoology*, 1936, **9**, 508.

² Wulzen, R., and Bahrs, A. M., *Am. J. Physiol.*, 1941, **133**, 500.

³ van Wagtenonk, W. J., *J. Biol. Chem.*, 1944, **155**, 337.

⁴ Simonsen, D. H., and van Wagtenonk, W. J., 1947, **170**, 239.

⁵ Folkers, K., *Chem. and Physiol. of Growth*, 1949, 82-86.