

A Chemical Method of Assay of Insulin

IN a recent communication¹, Vogelenzang suggests the possibility of an iodometric method for estimating the physiological potency of insulin preparations. A similar suggestion was previously made by Brand and Sandberg². Jensen, Schock and Sollers³, however, pointed out that the success of an iodometric titration of insulin is dependent upon the amount of impurities which will react with iodine. Since iodine reacts upon certain chemical groupings which are by no means confined solely to the insulin molecule, it is doubtful whether the physiological potency of insulin preparations can be reliably determined by iodometric titration. Blatherwick and associates⁴ have arrived at the same conclusion.

The protein nature of insulin⁵ makes it improbable that a simple chemical method of assay will ever become practicable.

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¹ Vogelenzang, E. H., *NATURE*, **143**, 161 (1939).

² Brand, E., and Sandberg, M., *Proc. Soc. Exp. Biol. and Med.*, **23**, 318 (1926).

³ Jensen, H., Schock, E., and Sollers, E., *J. Biol. Chem.*, **98**, 93 (1932).

⁴ Blatherwick, N. R., Bischoff, F., Maxwell, L. C., Berger, J., and Sahyun, M., *J. Biol. Chem.*, **72**, 57 (1927).

⁵ Jensen, H., "Insulin, Its Chemistry and Physiology". The Commonwealth Fund, New York, 1938.

Points from Foregoing Letters

W. L. BRAGG describes a direct method of converting the measurements of X-ray beams diffracted by a crystal into an optical image of the atomic arrangement as projected upon a given plane. Holes are drilled in a thin plate, arranged in the pattern of 'cross-spectra', and proportional in area to the amplitudes of the diffracted beams. If this plate is placed in front of the objective of a telescope focused on a point source of monochromatic light, the beam passing through the holes forms by interference an image of the crystal structure which can be seen through the eyepiece.

Photographs of spectra of light scattered by a crystal of sodium nitrate set successively in three mutually perpendicular directions to the incident monochromatic polarized light are submitted by Sir C. V. Raman and T. M. K. Nedungadi. They show that when the optic axis of the crystal is parallel to the direction of observation, the 'lattice lines' have disappeared; other lines which may be ascribed to the internal oscillations of the NO₃ ion appear strongly in this position and also in one of the positions perpendicular to it, but are very weak in the third position when the incident light-vector is along the optic axis.

It is stated by A. H. W. Aten, jun., C. J. Bakker and F. A. Heyn that radioactive noble gases arise from the bombardment of thorium with neutrons. At least one radioactive krypton and two radioactive xenons are formed, which are identical with those obtained from uranium irradiated with neutrons.

Discussing experimental results on the liberation of neutrons in the nuclear fission of uranium, H. von Halban, jun., F. Joliot and L. Kowarski estimate that an average of about 3.5 neutrons is liberated in every fission. They discuss the conditions of establishing a self-perpetuating reaction chain which seems to be theoretically possible.

R. E. Siday has observed in a Wilson chamber the K conversion electrons of γ -rays emitted when 4.5-hr. radiobromine transforms into the 18-min. isotope. The γ -rays appear to have 43,000 electron volts energy with a coefficient of internal conversion of roughly 0.3. The Auger electrons produced by the K X-rays accompanying the K conversion of these γ -rays were observed as short tracks starting at the origin of some of the γ -ray conversion tracks.

Cloud-chamber experiments are described by T. W. Bonner which show that there are two groups of neutrons from the nuclear reaction: ${}^2\text{H} + {}^2\text{H} \rightarrow$

${}^3\text{He} + {}^1_0\text{n}$. The low-energy group is produced in about 15 per cent of the disintegrations. The interpretation of these experiments is that a low-energy neutron is emitted whenever an excited helium nucleus of mass 3 is formed.

Stereoscopic photomicrographs showing a cosmic ray burst of about a hundred particles on a photographic plate with thick emulsion exposed to the action of cosmic rays are submitted by A. Jdanoff. Assuming that the particles are protons, the energy of the burst would exceed 200 Mev.

The optical extinction phenomena, exhibited by the arrangement of hydroxyapatite crystallites in dental enamel suggested by X-ray examination, have been calculated by J. Thewlis; they correspond closely, for both longitudinal and transverse sections of prisma, with those actually observed.

J. Mariani presents an application of non-Euclidean geometry to microscopic space-time occupied by elementary particles as an explanation of their radius and spin.

J. S. Huxley, C. S. Webb and A. T. Best record the existence of a state of 'torpidity' or reversible poikilothermy in birds. Fully torpid humming-birds become completely rigid and apparently poikilothermous, with no perceptible respiratory movements. Recovery takes 10-35 minutes. Torpidity has been noted both in fresh-caught and captive humming-birds, and a similar but less specialized condition in colies (*Colius*). It appears to be an adaptation promoting survival in unfavourable conditions.

M. B. Crane and P. T. Thomas report that diploid species of *Rubus* reproduce sexually; but in polyploid forms and species reproduction may be sexual, non-sexual (apomictic) or partly sexual and partly non-sexual, according to the species used as male in the pollination. They also report the occurrence of segregation within the apomictic progeny, and discuss these results in relation to the taxonomy of *Rubus*.

Mary J. Carroll finds that the respiratory stimulating factors obtained from Fleischmann's bakers' yeast, which stimulate the respiration of normal tissues, have no effect upon cancer tissue (spindle-cell carcinoma of the mammary gland). This difference in response may be due to a qualitative difference between normal and tumour tissue metabolism.

A method of demonstrating the presence of glycogen in *Amoeba proteus* Y and of making useful permanent slides of this organism is described by Monica Taylor.