

tion of androgenes, the resulting higher (or relatively higher) glucocorticoid production may give rise to Cushingoid signs.
Observations in human beings are in concordance with the above data.

A 30 years old woman was treated abroad against her febrile illness with streptomycin. The treatment lasted several weeks and the patient got approximately 30 g of the antibiotic. Following the cure hypertrichosis developed. No endocrinological abnormality could be detected for this phenomenon, save the elevated 17-ketosteroid excretion (13 mg). The 11-oxysteroid excretion amounted to 0.76 mg. The mean, normal value in 17-ketosteroid excretion of our female patients is 10.85 mg. According to this the value lies in the upper range. In contrast to which, the 11-oxysteroid excretion was unusually low.

Finally the impairment of the enzymatic processes of the adrenal cortex may result, as DEBRÉ¹⁰ states, in the hyperactivity of the anterior pituitary. This may manifest itself in deterioration of the alloxan-induced diabetes in rats, as experienced by KÁROLYHÁZI.
The clinical and the experimental evidence leads to the conception that interference with the adrenocortical enzyme function is responsible for the endocrine signs in streptomycin therapy.

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II. Medical Clinic of the University of Budapest,
Hungary, April 16, 1956.

Zusammenfassung

Auf Grund klinischer Erfahrungen, nach welchen anläßlich einer Streptomycintherapie verschiedene endokrine Störungen beobachtet werden konnten, wurden zur Klärung derselben Tierexperimente durchgeführt. Die Versuchsergebnisse deuten auf eine funktionelle Störung der Nebennierenrindenzymen hin, hervorgerufen durch die Einwirkung des Antibiotikums, wobei die verschiedenen klinischen Symptome als Manifestationen der Verschiebung der normalen Hormonverhältnisse aufgefasst werden.

¹⁰ R. DEBRÉ *et al.*, Pr. méd. 85, 583 (1954).

Diagnostic Test for Cancer

During an investigation of possible chemical changes in the spleen of rats following weekly injections of chemical carcinogens over a seven weeks period, it was noted that the lipid fraction of the spleen of injected rats had a distinctly darker yellow color than did similar

fractions of normal rat spleen. The lipid fraction from a transplanted rat sarcoma had the same color as that of the spleen following treatment of rats with 1, 2, 5, 2-dibenzanthracene (DBA).

This observation leaving to attempts of characterization of the phospholipids from different tumors and from spleen after treatment of rats with various carcinogens and non-carcinogens, was described by HAKIM¹.

In addition to immunological studies by chromatographic and paper ionophoretic techniques, a modification of the Feulgen reaction was found to be useful in the identification and characterization of the new phospholipids induced by chemical carcinogens in the spleen. These new phospholipids could also be revealed at the same time in serum.

This new abnormal acetat-lipid, could be tested for in the serum of tumor carrying animals, and recently it was revealed in all human cancer cases tested by 2 techniques, in the following way:

Modified Feulgen Reaction.—To 500 µl of the serum the following reagents are added in the order given:

- 10 µl of 0.5 % Ascorbic acid,
- 20 µl of 0.5 % Thiamine HCl,
- 100 µl of 95 % alcohol,
- 150 µl of 10 % KOH
- 100 µl of 0.5 % CuSO₄
- 120 µl of 0.02% fuchsin (basic fuchsin).

The mixture is shaken after each addition. The color is noted between 15–30 min in the sun light.

Normal sera gave a red color, while sera from tumor bearing animals, and from human cancer cases when tested in a similar manner gave a purple color.

Paper Electrophoresis.—Electrophoresis was accomplished in the LKB electrophoretic equipment, using 40×410 mm Schleicher and Schuell No. 2043B (120 g/m²) filter paper, or Whatman No. 1 filter paper. Veronal buffer, pH 8.6 with ionic strength 0.125, or Veronal-borate buffer (equal volumes of veronal buffer pH 8.6, ionic strength 0.060 ionic strength, and Borate buffer pH 8.6, 0.1 M). The test is carried at room temperature (about 18°C), with a potential of 200 V across the filter paper, and a current of 8 mA, for 24 h. After electrophoresis, the electrogram was dried and stained for proteins with bromphenol.

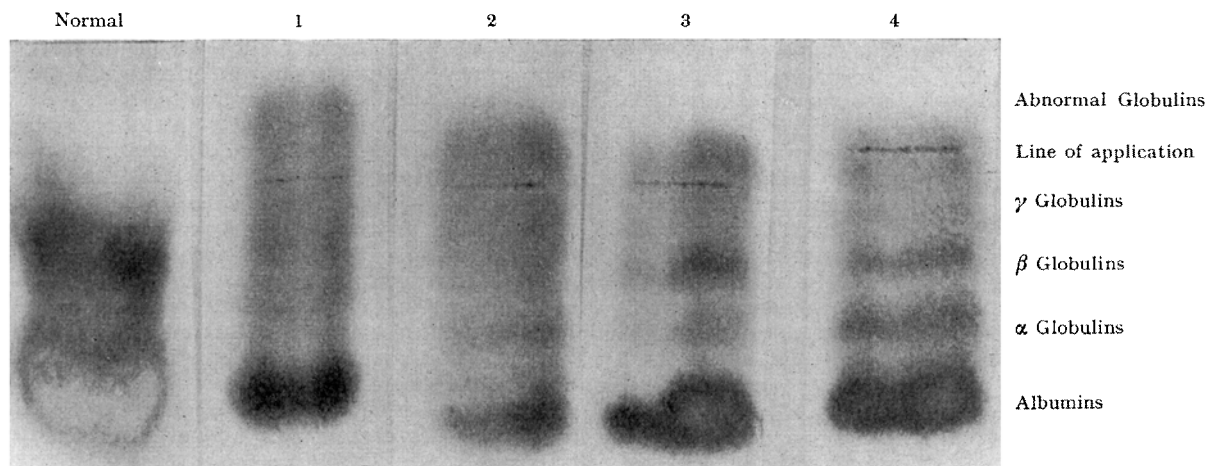
A more general survey is in progress, to determine the possible physiological conditions, on either secondary infections, or complications with cancer which might alter the above described reactions. Similar studies are in progress to determine whether fibrinogenic, or infectious disease might give a similar reaction, in non-cancer, non-normal persons.

The presence of an abnormal gamma globulin in the sera of human cancer sera is evident. Typical electrophoretic tests, presented in the joined Figure include

¹ A. A. HAKIM, Exp. Med. Surg. (in press); Proc. Amer. Ass. Cancer Res. 1956, April 15.

Serological Reactions for Cancer

	Modified Feulgen reaction			Paper ionophoretic reaction		
	Total Number Tested	Positives	Negatives	Total Number Tested	Positives	Negatives
normal persons	100	2	98	100	100	100
known Cancer persons	75	75	0	75	75	0



Diagnostic Test for Cancer: Paper electrophoresis of sera obtained from the following patients, as a typical example:

1. G. B. Pleomorphic CA lung; 2. S. H. S. Squamous cell CA lung; 3. W. R. C. Epidermoid CA lung;
4. I. V. Squamous cell CA bronchus, as compared with the electrophoresis of a serum obtained from a normal person

sera from the following patients: (1) G.B. Pleomorphic CA lung, (2) S.H.S. Squamous cell CA lung, (3) W.R.C. Epidermoid CA lung, (4) I.V. Squamous cell CA bronchus. Compared with the electrophoresis of a serum obtained from a normal person.

The 2 tests are performed successively; it was noted, that normal persons, who are heavy smokers, gave a serum which reacted abnormally, and gave a purple color when tested by the modified Feulgen reaction, but on electrophoresis showed no abnormal gamma globulins.

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Medical Research Department National Children's Cardiac Hospital, Miami 34, Florida, March 24, 1956.

Résumé

1° Une modification de la réaction de Feulgen est décrite. En l'utilisant, on constate que les sérums des personnes normales prennent une couleur différente de celle des sérums des personnes cancéreuses.

2° En appliquant l'électrophorèse sur papier, avec Veronalborate tamponné, on a décelé la présence d'un gamma-globuline atypique dans les sérums des personnes cancéreuses.

Action du rayonnement X sur la croissance de la plantule d'orge

En 1954, SCHWARTZ¹ a attiré l'attention sur un phénomène intéressant observé après l'irradiation de graines sèches de *Zea mays* dans deux conditions expérimentales différentes. Il s'agit de modifications de croissance de plantules provoquées par diverses doses de neutrons et de rayons gamma du Co⁶⁰. Cet auteur a observé que, lorsqu'on augmente progressivement les doses de radiation, les hauteurs des plantules diminuent d'abord (de 75 000 à 125 000 r de rayonnement gamma) puis augmentent lorsque la dose atteint 125 000 à 500 000 r.

¹ D. SCHWARTZ, Science 119, 45 (1954).

I. - Techniques. Nous utilisons des graines d'orge (*Hordeum sativum* JESS) de la lignée 456 de Gembloux. Ces graines sèches sont irradiées par les rayons X mous: tube à fenêtre de beryllium fonctionnant sans filtre, 40 kV, 25 mA, distance focale 12 cm, champ de 5 cm de diamètre, débit environ 9000 r/min, de 50 000 à 800 000 r.

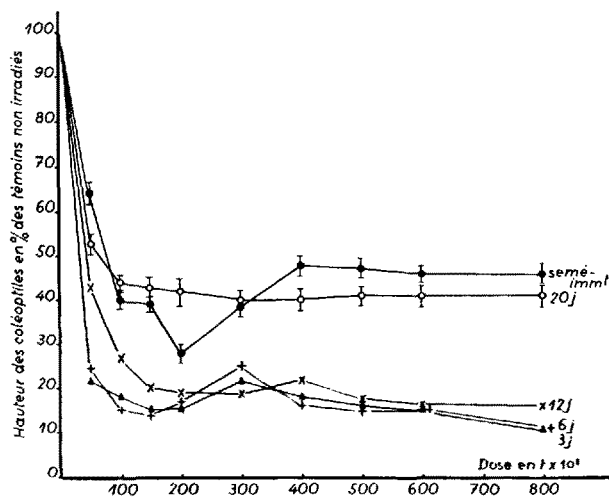


Fig. 1. Graines d'orge irradiées, mises en germination à des moments différents après l'irradiation (voir texte).

Après irradiation, les graines sont semées immédiatement et après des temps de latence de 3, 6, 12 et 20 jours, dans des plateaux de 38 sur 50 cm sur une couche de 1 cm d'épaisseur d'ouate recouverte de papier filtre. Les graines sont arrosées chaque jour par 300 cm³ d'eau distillée. Pendant la germination, la température oscille entre 20 et 21°C; l'humidité relative est de 60%; l'intensité lumineuse est de 3000 Lux; l'éclairement est de 16 h sur 24. Les hauteurs des coléoptiles sont mesurées dès leur germination.

II. - Résultats. 1° Etude du phénomène de SCHWARTZ.

a) Au fur et à mesure que l'on augmente la dose de rayonnement X, les hauteurs des coléoptiles diminuent depuis la dose de 50 000 r jusqu'à 200 000 r.

b) Au delà de 200 000 r, les hauteurs des coléoptiles augmentent jusqu'à la dose de 400 000 r inclusivement