

Suspensions were rubbed by quartz sand. This procedure was followed by a three-fold extraction with equal amounts of ether. The ether was evaporated and absolute ether than added. The dried material (1–2 mg per 50–100 cm³ human blood sample) was investigated after a distillation process.

Histamine aerosol¹ and Magnus experiment were our choice for testing the purified material on guinea-pigs. This material is protein-free and does not contain histamine. It, however, possesses the greater part of the antihistaminic activity.

Before the injections the material (1–2 mg dry weight) was dissolved in 2–3 cm³ ether, and 0.2 cm³ of Ol. Helianthi with 1 cm³ of distilled water were added. The ether was evaporated before using.

Tests were performed in 0.4 per cent histamine aerosol 5–6 hours after the intraperitoneal injections. The table represents our results. As is shown, the purified material preserved its activity, which ran parallel with the per cent distribution of the eosinophils.

The experiments on isolated guinea-pig ileum gave similar results. The histamine-induced spastic contraction can be prevented with this purified material. The optimum time for adding histamine, however, is 30–40 minutes after the inhibiting material was administered.

The role of eosinophils in the effect of purified leukocyte suspensions on guinea-pigs closed in histamine-aerosol.

Number of experiments	Total		Exposure time in 0.4 per cent histamine spray		
	leukocyte count	eosinophil count	above		below
	of suspension in million		10 minutes	6 minutes	6 minutes
10	250–850	30–150	7	3	–
7	250–450	15–30	1	1	5
10	250–600	5–15	–	1	9

Finally, using large amounts of cattle-blood as initial material¹, we succeeded in obtaining crystallization, and we have found that 10–15 micrograms of the repeatedly recrystallized material (also containing the lipids) inhibit the histamine-induced contraction of the guinea-pig ileum even after 5 minutes.

Further experiments are in progress.

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Zusammenfassung

In einer früheren Untersuchung konnte wahrscheinlich gemacht werden, daß die eosinophilen Leukozyten einen Stoff enthalten, der als Antihistaminikum wirkt.

Es gelang jetzt, diese Substanz weitgehend zu reinigen. Der eiweiß- und histaminfreie Stoff verhindert den Histamineffekt am isolierten Meerschweinchendarm und ebenso die durch Histamin-Aerosol ausgelösten Krämpfe der Bronchialmuskulatur.

¹ The quartz-rubbed suspensions are filtered off on commercial filter paper. Extractions, etc. (see above) with ether are rapidly followed by filtrations. The evaporation is carried out at room temperature, and the procedure is repeated 2- to 3-fold. Thereafter we dissolve material in absolute ether and dry it at room temperature. At this stage we have homogeneous crystals, which, however, contain some oil-like material, too. Further purification is in progress.

Electrophoretic Measurements of Human Spermia

The present paper is a preliminary report on the comparison of the electrophoretic mobilities of normal and pathological human spermia. It was thought that pathological conditions may influence the surface potential of the cells so that some correlation might be found between clinical and electrophoretic mobility.

In the following experiments each ejaculate was examined by the method described by one of us¹. The material described as "normal" originated from men of proven fertility, the abnormal samples from men whose semen was found to be pathological in tests at different periods.

The results of some measurements at pH=7.8 are summarized in the following table.

No. of sample	No. of sperms per cm ³	Clinical description	Mobility $\frac{\text{cm}^2}{\text{sec/Volt}}$
32	90,625,000	Normospermia	6.1 10^{-5}
48	1,562,500	Hypoospermia	7.8 10^{-5}
50a	60,000,000	Normospermia	8.6 10^{-5}
53	6,250,000	Hypoospermia	8.7 10^{-5}
58	60,000,000	Normospermia	8.0 10^{-5}

No significant difference in mobility of sperms between normal and pathological semen could be detected. This result parallels the work² done on seminal plasma in which no difference was observed between electrophoretic patterns of normal and pathological samples.

Some discussion is in order on the influence of the velocity of sedimentation, of diffusion and of orientation on the significance of the results.

It might be argued that the sedimentation of the cells is sufficiently rapid to cause an apparent increase in the velocity of the descending boundary and a corresponding decrease in the ascending boundary velocity. Observations on the velocity of sedimentation in dilute suspension show this factor to be insignificant. In fact, the velocities of both ascending and descending boundaries were equal within the limits of the experimental error.

A similar objection might be raised concerning the observed orientation of the cells in the electric field. It is known from previous experiments³ that the spermia tend to orient tail forward in the direction of the field. It could, therefore, be argued that the observed velocity is actually the difference between the electric drag of the cells and their natural movement in the opposite direction. Our microscopic observations proved that an appreciable orientation of the motile cells occurs only at higher field intensities. At 2.5 V/cm, no orientation of the motile cells could be observed; on the other hand, immobile cells orient easily and rapidly. We may, therefore, safely assume that no directed movement opposite to the direction of the electrophoretic flow was operative under the conditions of the experiments.

¹ C. A. JOËL, *Studien am menschlichen Sperma* (B. Schwabe & Co., Basel 1942).

² S. GRAY and C. HUGGINS, *Proc. Soc. Exp. Biol. Med.* 50, 2 (1942). – V. ROSE, H. MOORE, and H. SIKOVSKI, *Proc. Sec. Exp. Biol. Med.* 54, 179 (1943).

³ R. A. ABRAMSON, *Elektrokinetic Phenomena and their Application to Biology and Medicine*, p. 274 (New York, 1934).

The random movements of cells constitute a diffusion which might be thought to interfere with the measurements by blurring the boundaries. The microscopic velocity of the cells, is, however, insufficient to produce a more rapid diffusion than that of any molecular solution. This is in accord with the fact that, under suitable conditions, a fairly sharp boundary was maintained during the experiments.

In conclusion, it is emphasized that the advantage of electrophoretic measurements over the usual microscopic technique lies in the fact that a statistically correct picture of the sample is obtained.

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Zusammenfassung

1. Die elektrophoretische Motilität des menschlichen Spermas wurde nach der Methode der beweglichen Grenzschrift im Tiselius-Longworth-Apparat bestimmt. Es konnte festgestellt werden, daß bei einem Spannungsabfall von 2,5 V/cm diese Methode zuverlässige Ergebnisse liefert.

2. Die Motilität des menschlichen Spermas bei pH 7,8 und 20°C beträgt etwa $8,10^{-5}$ cm²/s/V. Es ist bemerkenswert, daß zwischen der Motilität von normalem und pathologischem Samen kein bedeutender Unterschied gefunden werden konnte.

3. Zwischen beweglichen und nichtbeweglichen Spermien konnte kein Unterschied von Bedeutung festgestellt werden, der während der Versuche eine Trennung der beweglichen Grenzschrift erlaubt hätte.

An Exception to Cannon's Law

It does not seem to be well known that the sweat glands of man are an exception to the general rule of supersensitivity of denervated structures, usually called CANNON'S LAW. Paradoxically such denervated sweat glands actually are desensitized: they fail to respond to the local injection of parasympathomimetic drugs. COON and ROTHMAN¹ observed failures of response to intradermally injected acetylcholine in male patients following sympathectomy. By adjusting the dosage of acetylcholine to take into account the sex difference in threshold of the response to locally injected drug, we have extended their finding to include female subjects. We have observed the disappearance of the local sweat response to locally applied parasympathomimetic drugs as early as 30 hours in some instances, and usually by the seventh day following post ganglionic denervation of the trunk and lower extremities, and have suggested this as a possible method for testing the extent of sympathectomy. It is of interest that these denervated areas also failed to respond to the local injection of epinephrine. That such failure to respond to locally injected drug is not due to atrophy of the glandular apparatus was shown by the observation that exposure of denervated skin to radiant heat induced definite local sweating.

Similar decreased sensitivity of denervated glands may exist also in the case of the gastric glands, where vagotomy has been reported as resulting in diminished responsiveness to histamine (I. J. STEIN and K. MEYER²).

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¹ J. COON and D. ROTHMAN, J. Pharm. Exp. Therap. 73, 1 (1941); J. Invest. Derm. 5, 431 (1942).

² I. J. STEIN and K. MEYER, Surg. Gyn. Obs. 87, 188 (1948).

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Zusammenfassung

Die Schweißdrüsen von sympathikotomierten Männern und Frauen reagieren nicht auf Injektionen von neuro-humoralen Agenzien. Dies ist als eine Ausnahme vom Cannonschen Gesetz anzusehen. Denervierte Strukturen sollen eine Hypersensitivität aufweisen. Eine Atrophie der Drüsen als Ursache für den gefundenen Effekt konnte ausgeschlossen werden. Bei intensiver lokaler Wärmebestrahlung der denervierten Haut gibt es eine Schweißproduktion. Es wird darauf hingewiesen, daß Vagotomie eine ähnliche verminderte Empfindlichkeit der Magenschleimhautdrüsen für parasympathomimetische Mittel und Histamin verursachen könnte.

Über Pseudo-Asbestosekörperchen (sogenannte Karborund- und Graphitkörperchen^{1,2})

Bei der Asbestose, einer schweren Staublungerkrankung, hervorgerufen durch die Einatmung von Asbestfasern, die mit einer Fibrose des Lungengewebes und damit mit schweren Einschränkungen der Atemtätigkeit einhergeht, können immer die sogenannten Asbestosekörperchen im histologischen Schnitt oder im Abstrichsaft der Lungen nachgewiesen werden. Es handelt sich um Asbestnadeln, die von einer eisenhaltigen

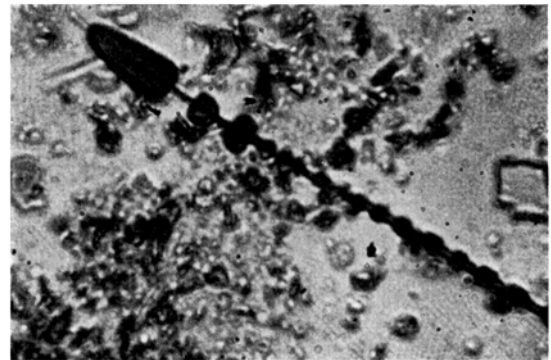


Abb. 1. Speerförmiges Karborundkörperchen. 2000 mal vergrößert.

organogenen Eiweißhülle hantelförmig umschlossen werden. Den Asbestosekörperchen mißt man eine bedeutende Rolle in der Pathogenese der Lungenfibrose zu. Man glaubt, daß sie als Lösungsvermittler der in den Asbestfasern silikatisch gebundenen Kieselsäure dienen, von der man annimmt, daß sie die Ursache der Fibrose sei. Der Nachweis von Pseudo-Asbestosekörperchen, das heißt von asbestosekörperchenähnlichen Gebilden in

¹ 12. Mitteilung des pathologisch-anatomischen Sektors der Zürcherischen Arbeitsgemeinschaft zur Erforschung und Bekämpfung der Silikose in der Schweiz.

² *Silicosis and Asbestosis* (Oxford University Press, 1938); *Über die Silikose I und II*, Beihefte 1947 und 1950 der Vjschr. Naturf. Ges. Zürich. Spezielle Arbeiten: P. J. BERGER, Verh. Dtsch. Ges. Path. 33. Tag (1949) (Piscator-Verlag) Stuttgart. – L. U. GARDNER, Amer. Rev. Tbc. 45, 762 (1942). – W. BEHRENS, Schweiz. Z. Path. und Bakt. 1951 (im Drucke). – S. R. GLOYNE, G. MARSHALL, and C. HOYLE, Thorax 4, 31 (1949). – N. SUNDIUS und A. BYGDEN, Arch. Gewerbepath. 8, 26 (1938).