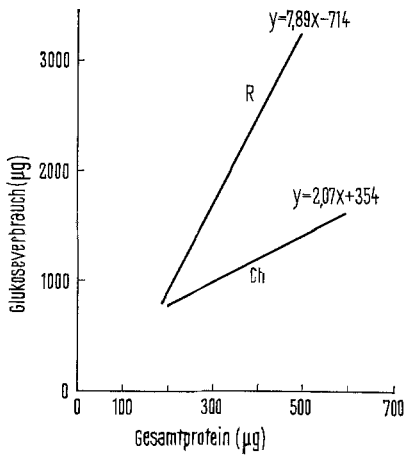
tionales Verhalten: für Ch ist er um so grösser, je niedriger das Startprotein, und um so kleiner, je älter die Kultur wird; er beträgt für die erste 24-Stunden-Periode bei einem Ausgangswert von etwa 200 µg Startprotein (SP) im Mittel $48{,}2 \pm 5{,}8$ µg/100 µg SP·24 h ($N = 18$); für R ist er demgegenüber ausserordentlich gering (3,0 µg/100 µg SP·24 h, $N = 18$). Die Ch-Kultur zeigt also rasches Wachstum, wobei nicht ausgeschlossen werden kann, dass der Proteinzuwachs neben Myoblasten auch Fibroblasten betrifft, während die R-Kultur, die einen hohen Anteil an Endothelzellen enthalten soll[7], in vergleichbaren Zeiten (48-Stunden-Periode) kaum Wachstum aufweist. Der Glukoseverbrauch der Kulturen verhält sich dagegen umgekehrt: Bezogen auf das Gesamtzellprotein, verbraucht die R-Kultur wesentlich mehr Glukose als die Ch-Kultur (Figur); darüberhinaus wird die Glukoseabhubrate in der Ch-Kultur mit zunehmendem Gesamtprotein geringer, was offenbar in unmittelbarem Zusammenhang mit dem Anteil der pulsierenden Zellen in beiden Kulturen steht.



Glukoseverbrauch isolierter Myokardzellen in der Primärkultur [Mischkultur aus dem Gesamtherzen der neugeborenen Ratte (R) und dem Ventrikelanteil des 10 Tage alten Hühnchenembryos (Ch)] als Funktion des Zellproteins.

Die beschriebene Charakteristik weist die isolierte Myokardzelle als geeignet für die Untersuchung von Proteinsynthese (Ch-Kultur) und Glukoseutilisation (R-Kultur) aus: Insulin (0,04–4,0 µg/ml Medium) bewirkt in der R-Kultur ohne messbare Beeinflussung der Proteinzuwachsrate eine Erhöhung der Glukoseaufnahme um etwa 20%; in der Ch-Kultur führt es zu einer signifikanten Erhöhung der Proteinzuwachsrate um etwa 53%, während der Glukoseumsatz nur wenig verändert wird. Über diese Effekte des Insulins werden wir in Kürze ausführlich berichten[4].

Summary. Primary cultures of isolated myocardial cells of the chicken embryo (Ch) and of the new-born rat (R) present a characteristic behaviour of an increase of protein synthesis and glucose uptake: while in the Ch the increase of protein synthesis exceeds, in the R a high glucose uptake is shown. Both processes could be influenced by insulin.

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[8] Die Untersuchungen wurden mit Mitteln eines Forschungsauftrages des Ministeriums für Gesundheitswesen der DDR durchgeführt.

A Cheap and Quick Method of Screening Potential Antimycobacterial Agents in the Syrian or Golden Hamster (*Cricetus auratus*)[1]

Dennis and his co-workers[2] standardized the assay of antituberculous drugs in hamsters. Hamsters, weighing 50–60 g, were injected s.c. with 0.01 mg (moist weight) of *Mycobacterium tuberculosis* strain H37Rv. They showed median survival times of between 120 and 144 days. The earliest death occurred on the 76th day and the latest on the 264th day. Streptomycin (SM) and paraaminosalicylic acid (PAS) were found effective by their method. About 6 months were required to test potential antituberculous drugs.

In our experiment a virulent infection was produced in hamsters by intracardiac route of infection and drugs were given for a period of 14 days only. Efficacy of a drug was estimated on the basis of extension of survival times of the treated groups over the control group. A histopathological check was also made on the 14th day of infection to see the evolution of disease.

Materials and methods. 32 golden hamsters, weighing approximately 120 g each, were infected intracardially with 0.5 mg (moist weight) of a 3-week-old culture of *Mycobacterium tuberculosis* strain H37Rv by the method of Gupta and Mathur[3]. The hamsters were then divided into 4 groups of 8 animals each as shown in the Table. Isoniazid (INH) was given orally, SM was given i.m. The survival time of each animal was noted and all dead animals were necropsied. One animal of each group was sacrificed on the 14th day of infection and their lung, liver and spleen were subjected to routine histology.

Results. INH at a dosage of 5 and 50 mg/kg showed an increase in the survival times of 12.7 and 34.6 days respectively whereas SM showed an increase of 32.0 days when compared with the control group (Table).

Histopathology. The lung and tracheobronchial glands of the control hamster showed pyknotic degeneration, caseation necrosis and epitheloid cell infiltration but the lungs of the treated groups showed normal histology. Only the tracheobronchial glands of the SM-treated group showed small epitheloid cell foci. The control liver showed innumerable foci of epitheloid cell infiltration whereas fatty degeneration was seen in the livers of the INH-treated groups and a few epitheloid foci were found in the

[1] Communication No. 1363 from the Central Drug Research Institute, Lucknow (India).

[2] E. W. Dennis, F. C. Goble, D. A. Berberian and E. J. Frehlih, Ann. N.Y. Acad. Sci. *52*, 646 (1949).

[3] S. K. Gupta and I. S. Mathur, Indian J. med. Res. *52*, 973 (1964).

liver of the SM group. The spleen of the untreated control group showed complete disorganization of normal follicular pattern with a few areas of epitheloid cell infiltration but only the spleen of the SM- and not the INH-treated group, showed a few areas of mononuclear cell proliferation.

This method, therefore, detects the activity of SM and INH when the drugs are administered for 14 days only. Such simplification of screening methods in the mouse[4] and in the guinea-pig[3,5] has already been reported. This test is less costly and less time-consuming than the standard test[2]. Drugs of low activity like *p,p'*-diaminodiphenyl sulphone (DDS), PAS, thioacetazone (TbI/698) or their derivatives may not be detected by this rapid method[6].

The need today is of 2 new drugs, completely different from INH, showing an activity equal or superior to INH as suggested by FUST[7]. This new screening method in hamsters is expected to show this type of activity if and when it occurs.

Effect of Isoniazid and Streptomycin Sulphate in intracardially infected tuberculous hamsters

Group	Treatment	No. of hamsters	Dose (mg/kg)	No. of doses	Mean survival time ± S.E. (days)
1	Control	7	–	–	17.3 ± 2.4
2	INH	7	5	14	30.0 ± 2.9[a]
3	INH	7	50	14	51.9 ± 2.0[a]
4	SM	7	100	14	49.3 ± 3.9[a]

[a] Significantly different from control at $P < 0.05$.

Zusammenfassung. Eine vereinfachte «screening»-Methode zur Wirkung von Isoniazid und Streptomyzin wird beschrieben.

S. K. GUPTA and I. S. MATHUR

Central Drug Research Institute, Lucknow (India), 24 March 1969.

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[5] S. K. GUPTA and N. SEN, Indian J. med. Res. *47*, 380 (1959).
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[7] B. FUST, Ann. N.Y. Acad. Sci. *106*, 78 (1963).

In situ Feulgen Reaction with Schiff Reagent at Different Temperatures

In a previous study the author[1] has shown a progressive increase of the Feulgen staining, in the kidney nuclei of the Indian water buffalo, employing different temperatures, by a Schiff reagent whose initial pH is raised from 2.3–4.0 by a weak solution of borax. The optimum staining was found to be at 25 °C. The objective of the present study is to find out the effect of different temperatures on the stainability of mammalian tissue by a Schiff reagent, prepared with basic fuchsin, at the initial pH of 2.5. This study will help to show whether or not there is any difference in staining at different temperatures between Schiff reagent used at a pH when made and that whose pH is raised to make it less acidic by a weak solution of borax. The study involves a quantitative estimation of DNA by a microspectrophotometric method. ATKINSON[2] has studied the in vitro reaction employing Schiff reagent and formalin at temperatures of 5–39 °C. He has noted a progressive increase of the amount of regenerated fuchsin concomitant with a rise of temperature.

Schiff reagent that had an initial pH of 2.5, when prepared according to DE TOMASI[3], was used in the present investigation. The reagent was prepared with basic fuchsin, made by British Drug Houses Ltd., London. The material consisted of liver of Holtzman rat. It was fixed in 40% neutral formalin for 12 h and subsequently washed in running tap water overnight. Paraffin sections, 12 μ in thickness, were used throughout the experiment. After deparaffinization, sections were hydrolysed together in 1 *N* HCl at 60 °C for 7 min and then stained by Schiff reagent at 5, 18, 25, 30, 40, 60 and 80 °C for 20 min at each temperature. Afterwards they were treated with the usual bleaching solution for 15 min, 5 min in each change. Subsequently they were dehydrated through graduated series of ethanol, cleared in dimethylaniline and then

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[3] J. A. DE TOMASI, Stain Techn. *11*, 137 (1936).

Amount of DNA at different temperatures from the liver of rat

Temperature °C	No. of nuclei	Mean nuclear diameter (μ)	Mean DNA content with S.E.	Difference between means	*t*-value	*P*
5	20	9.85 ± 0.37	18.35 ± 1.49 (A)	A vs. B = 0.65	0.27	N.S.
18	13	9.75 ± 0.34	19.00 ± 1.94 (B)	A vs. D = 7.57	1.98	N.S.
25	12	9.50 ± 0.57	18.00 ± 2.35 (C)	B vs. D = 6.92	1.84	N.S.
30	13	9.77 ± 0.47	25.92 ± 3.26 (D)	C vs. D = 7.92	1.45	N.S.
40	20	10.07 ± 0.33	39.35 ± 2.75 (E)	D vs. E = 13.43	3.10	< 0.005
60	20	10.10 ± 0.26	38.85 ± 3.51 (F)	D vs. F = 12.93	2.41	< 0.02
				E vs. F = 1.10	1.74	N.S.