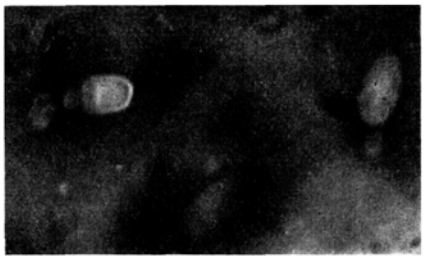
An Abnormality of Mammalian Spermatozoa

LAGERLOF, MCKENZIE and BERLINER, SWANSON and HERMAN, GUNN et al., WILLIAMS, HAQ, BLOM[1] and others have described various types of abnormal sperms in a number of species of animals. It appears that the following sperm abnormality, observed in the rabbit semen, has not been described so far.



Microscopic examination of the semen samples collected by means of an artificial vagina from the buck rabbits, showed that a small percentage of the sperm heads had protoplasmic masses instead of tails (fig. 1). On histological examination, a large number of the seminiferous tubules of the testes showed arrested spermatogenesis while others showed marked atrophic and degenerative changes. It appears that this abnormality was associated with defective spermatogenesis which ultimately resulted in the arrested development of the sperm tails. These inbred buck rabbits were classed as infertile in view of their poor breeding records. It was interesting to find that thyroid therapy stimulated spermatogenesis and greatly improved the semen quality of the treated buck rabbits. Detailed results will be described elsewhere. M. MAQSOOD

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Zusammenfassung

Es wird eine morphologische Abnormität der Kaninchenspermien beschrieben: Anstelle des Schwanzes befindet sich hinter dem Samenkopf eine protoplasmatische Masse. Diese Abnormität wurde am Samen von Kaninchen mit sehr schlechtem Fruchtbarkeitsgrad beobachtet. Mit Schilddrüsentherapie konnte die Samenqualität der betreffenden Kaninchen im Vergleich zu Kontrolltieren bedeutend verbessert werden.

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Use of Track Autoradiography in Studies on the Sulfur Metabolism of Connective Tissue

Preliminary Results obtained on Adult Cartilage

The problem of the fate of inorganic sulfate administered to animal tissues has been dealt with by some workers during the last decade. BORSOOK *et al.*[1] using labelled sulfate in the human body were the first to propose an exchange between inorganic sulfate administered and tissue sulfate. Further studies by SINGHER *et al.*[1] on rats showed that the radioactive sulfate given was held mainly by bone and bone marrow. These findings were confirmed by DZIEWIATKOWSKI[2], and the same author (DZIEWIATKOWSKI *et al.*[3]) reported that suckling rats given labelled sulfate sulfur retain S^{35} in articular cartilage, and it is suggested that the $S^{35}O_4$-ion is used in the synthesis of chondroitin sulfate. LAYTON *et al.*[4], injecting pregnant rats with labelled sodium sulfate, were able to show that the radioactive material had crossed the placental barrier and was fixed in mesenchymal tissues of the embryos. The same authors[5] cultured tissues from chicken embryos of varying age on a medium containing carrier-free S^{35} as SO_4-ions, and found a fixation of the isotope in various tissues.

To sum up: the investigations hitherto performed have shown that inorganic sulfate sulfur administered is partly utilized in the tissues. These results, however, are mainly based on studies on embryonic or growing tissues. But it may be supposed that even adult cartilage has a certain rate of sulfate ion fixation. Cartilagineous structures would therefore be suitable for autoradiographical studies. No investigations on S^{35} adopting the autoradiographic technique have been published so far as we know. The new method of track autoradiography, which has been developed recently, gives high sensitivity and efficiency due to use of highly sensitive nuclear track emulsions. As S^{35} has a very low β-ray energy, 0·169 MeV, this isotope is very suitable for this type of autoradiography[6]. Useful data regarding the more exact topographical determinations of the labelled sulfate ions might thus be obtained by using this technique.

The present paper deals with the uptake of labelled sulfate ions given as $Na_2S^{35}O_4$ in catilagineous tissues of adult rats by means of track autoradiography.

Experimental

Adult albino rats were given carrier-free $Na_2S^{35}O_4$[7] by intraperitoneal injections in the form of a single dose of $7{\cdot}0 \cdot 10^6$ counts/min/100 gm body weight. A total of 19 rats were used.

All the animals were placed in individual wire cages and given a standard diet and water *ad lib.*

The rats were killed 21, 49, 54, 73 and 77 hours after the administration of the labelled sulfate. Blood samples were taken by puncture of the heart under ether anesthesia immediately before death. The tissues to be examined were taken out quickly after death and washed in physiological saline. Some nasal septa were taken for activity determinations by the use of a 2·4 mg per cm^2 mica end-window Geiger-Müller tube. The blood was pipetted directly into the measuring cup, haemolysed, dried and measured. A correction curve was made to get the self-absorbtion of the sample. The nasal septa were cleaned from the mucous coat, re-washed in physiological saline, and dried flattened out on mica sheets. After drying, thin areas were trimmed off. The

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