Summary

The ATPase activity is inhibited by Colchicin in concentrations of 10^{-3} m and 10^{-4} m at a rate of 40 to 20%, but in no way in the range of 10^{-7} m and 10^{-8} m, where Colchicin exerts its typical spindle-blocking action on the mitotic cell division. It is therefore no evidence, that Colchicin acts by influence on the energy yielding ATP-ATPase system, which was proposed to be responsible for the spindle contraction.

Heparinocytes and Hibernation

The most characteristic feature of the physiology of hibernation is the change of a mammal within certain limits from homoiothermy to poikilothermy (cf. for instance SUOMALAINEN[1]). Thus for instance the body temperature of the hedgehog in hibernation may fall to about 2° C. When the animal wakes out of hibernation, its body temperature rises in some hours from 2–5° C again to 30–35° C and the animal returns to homoiothermy.

Because of the low body temperature the metabolism of the animal is greatly reduced during hibernation. This appears in such phenomena as retardation of the heart rate (SUOMALAINEN and SARAJAS[2]). In the summer the heart of the hedgehog beats about 190 times per minute, during hibernation only about 20 times per minute. Since no thrombi occur in the circulatory system in spite of the reduced heart function, and blood circulation occurs without disturbance, there seemed to be reason to investigate to what extent changes appear during hibernation in the number and histologically observable heparin content of the heparin-secreting heparinocytes or Ehrlich's mast cells.

The fixation of the tissues was made with a modification of Holmgren and Wilander's method[3]. With the use of Holmgren and Wilander's basic lead acetate, harmful crystals may appear in the preparations. They are not formed if formalin and alcohol are added to the fixative. At the same time the general fixability and stainability are improved.

Relative heparinocyte content of the small intestine and bronchial branches in the hedgehog. Each figure represents the mean of a hundred unit areas used in the investigation.

	Normal hedgehog	Hibernating hedgehog	Woken from hibernation
Small intestine	4·3	24·3	14·1
	5·9	18·2	7·9
	4·2	11·9	—
	4·8	18·1	11·0
Bronchial branches . .	27·0	75·5	69·7
	39·2	70·2	74·5
	25·4	92·3	—
	30·5	79·3	72·1

The quantitative determination of heparinocytes was made by counting their number in the visual field of a microscope at ×450 magnification. From each preparation, 100 visual fields were chosen entirely at random. In these the number of heparinocytes was counted within the frame of the limits of depth of the fine adjustment. To facilitate counting, the visual field was divided into squares with the aid of a grid.

Heparinocytes are numerous in the small intestine and lungs round the bronchial branches in the hedgehog.

Their number is increased during hibernation, but is also large in animals just woken from hibernation (table).

Judging from the increase in the number of heparinocytes and their histological appearance, heparin secretion is greater than normal in hibernation, when the heart rate in the hedgehog is greatly reduced. Actual physiological determinations of the coagulation time of the blood of the hedgehog in hibernation are still incomplete.

A full report of this work will appear elsewhere.

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Zusammenfassung

Trotz der stark herabgesetzten Schlagfrequenz des Herzens stellen sich beim winterschlafenden Igel keine Thromben ein. Die Menge der Heparinozyten oder Ehrlichschen Mastzellen ist denn auch beim Igel während des Winterschlafs erhöht. Daraus, und aus dem histologischen Bild dieser Zellen, kann geschlossen werden, daß die Heparinsekretion im Winterschlaf zugenommen hat.

Study on the Growth of the Erythroblast in Normal and Bone-Marrow Erythroblastosis Conditions

During the last few years our knowledge of the biology of the bone-marrow cells has been considerably widened with particular regard to their differentiation and proliferation. However there is still a complete lack of information about the growth of the bone-marrow cells during the interkinetic period. The lack of information on this subject is due to the impossibility of studying directly the development of the living cell, by measuring at suitable intervals of time the increase in size which is of biometric interest.

We thought it might be interesting to collect some indirect data on the cytoplasmic growth through the observation of fixed and stained films. As it was not possible to relate the cytoplasmic growth to time, we studied the growth of the cytoplasm with respect to the nucleus, the latter being considered as a function of time. In other words, the aim was to investigate the extent to which the cytoplasmic diameter increased when the nuclear diameter increased a specified amount.

The evaluation of the growth of the cytoplasm with respect to the nucleus was made by the slope (a) of the interpolating line of the cytoplasmic diameter with respect to the nuclear one.

In this study another value was also considered, i. e. the correlation coefficient of nucleo-cytoplasmic diameters (r).

By "cytoplasmic diameter" we mean the cubic root of the difference between cellular diameter and nuclear diameter, both cubed.

We made our researches on the basophil erythroblast including also proerythroblast – because the basophil

[1] P. SUOMALAINEN, Sitz.-Ber. Finn. Akad. Wiss. 1943, 163 (1944).
[2] P. SUOMALAINEN and S. SARAJAS, Ann. Zool. Soc. "Vanamo" *14*, 2 (1951).
[3] HJ. HOLMGREN and O. WILANDER, Z. mikr.-anat. Forsch. *42*, 242 (1937).