

from the cell suspension and the number of the rosetta-forming P3HR-1 cells were counted in Bürker chamber (only cells surrounded by complete lymphocyte rings were considered rosette-forming cells).

Results and discussion. It was found (Table) that the percentage of the EBV-VCA antigen positive and rosette-forming P3HR-1 cells was the same. Subsequent investigations by immunofluorescence showed that only VCA antigen positive P3HR-1 cells were surrounded by CLL lymphocytes, while VCA antigen negative cells did not form rosettes. This receptor was present on the surface of the CLL lymphocytes after one week of cultivation in vitro, and the presence of 10 µg/ml puromycin HCl for 2 days had no detectable effect on it. Our findings clearly show the existence of a rather stable EBV receptor on the surface of CLL lymphocytes.

The results of some authors and our own unpublished observations indicate that the CLL lymphocytes behave in the same way as the B cells³. Thus our findings seem to support the results of JONDAL and KLEIN, showing the B cell tropic characteristic of EBV. Our earlier studies demonstrated that the EBV induced cellular DNA synthesis and transformed the CLL lymphocytes, showing their increased susceptibility to EBV infection as compared with that of healthy lymphocytes. This in

vitro observed, and quite remarkable, susceptibility of the CLL lymphocytes to EBV-infection (the presence of EBV receptors and increased stimulation of cellular DNA synthesis) seems to be a characteristic marker for these cells.

Zusammenfassung. Nachweis, dass Lymphocyten von chronisch lymphatischen Leukämien an der Zelloberfläche einen relativ stabilen Rezeptor für EPSTEIN-BARR-Virus enthalten und daher als B-Lymphocyten zu charakterisieren sind.

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Demonstration of Mast Cells in the Albino Rat Brain

It has been postulated that histamine is one of the physiologically acting neurotransmitter substances in the brain, and the regional distribution of histamine in the brain of different mammalian species has been studied and discussed by several authors¹⁻³. In most parts of the organism, however, the histamine is produced and stored in mast cells which contain large amounts of this amine in cytoplasmic granules^{4,5}, and in some species mast

cells has been observed in the thalamus region: hamster and hedgehog⁶⁻⁹, and in the area postrema of several mammalian species^{8,10}. Therefore, it seems reasonable to assume that at least some of the histamine in the brain could be located in mast cells, and that this cell might be a normal element in the brain of many mammalian species.

In the present study, laboratory rats of the Møll Wistar strain were used. The brains were removed from the decapitated animals and fixated in 4% neutral formaldehyde (buffered with Ca-acetate) for paraffin-embedding, or in 4% glutaraldehyde (in Sørensen phosphate buffer, pH 7.0) and postfixed in 1% osmiumtetroxyde for epon embedding. Two parallel frontal section series were made of each paraffin embedded brain. The sections of 10 µm were stained in 0.2% toluidine blue at pH 3.7 (buffered with McIlvaine-Lillie's citrate/phosphate buffer) or in astra blue according to the method of BLOOM and KELLY¹¹. Every 10th section was studied, and the number of mast cells in an actual section was obtained by dividing the cell countings with 1.9 to compensate for the possibility of observing mast cells from neighbouring sections. (The mast cells in tissues are mostly elongate, and the diameter

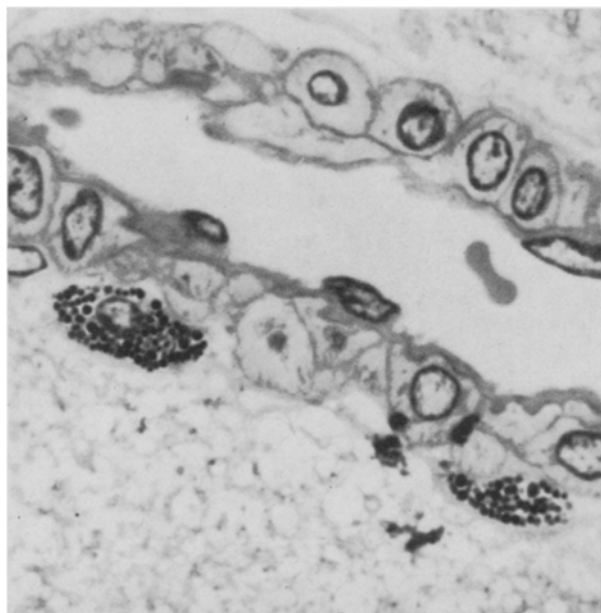


Fig. 1. Light micrograph of semi-thin epon section showing peri-vascular mast cells in the thalamus of the adult rat brain. Section stained with toluidine blue. $\times 1600$.

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- ⁴ J. F. RILEY, *The Mast Cell*, Livingstone, Edinburgh 1959().
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- ⁹ P. R. FLOOD and P. G. KRÜGER, *Acta Anat.* 75, 443 (1970).
- ¹⁰ J. CAMMERMEYER, *Z. Anat. EntwGesch.* 139, 71 (1972).
- ¹¹ G. D. BLOOM and J. W. KELLY, *Histochemie* 2, 48 (1960).

is calculated to approx. 11 μm . Cell fragments less than 4–5 μm diameter were not counted). Total mean number was calculated by multiplying numbers of cells in sample sections by factor 10. The semithin sections were stained in toluidine blue at pH 8.5. In the adult rats (3 females of 240–280 g, and 4 males of 345–380 g) mast cells were observed in the mid-brain and in the olfactory lobes. In the olfactory lobes, the mean total number was 168 ± 92 (S.D.) and the mast cells were located in the region of the nucleus olfactorius anterior. In the diencephalon, mast cells were observed in most parts of the thalamus and in the habenular region of the epithalamus. They were located perivascularly as shown in Figure 1. The mean total number was 1700 ± 681 when observed in the toluidine blue stained section series. The number of mast cells observed in the section series stained in astra blue did not differ significantly from the figures present. No mast cells were observed in other brain regions, except that a few cells were found in the pia covering different brain regions. They were not included in the figures presented for the adult rats.

In the brains of baby rats (6-day-old: 2 females and 2 males) a few mast cells only were observed in the thalamic neuropil. However, they were plentiful in the part of the pia covering the diencephalon (Figure 2). The caudal limit of the distribution of mast cells here was at the level of the commissura posterior. The mean total number of mast cells in this diencephalic pia of the baby rats was 6136 ± 1031 . In addition mast cells were plentiful in the pia-arachnoidea of fissura sagittalis, just behind corpus callosum, and of the lobus olfactorius. They are not included in the figures presented.

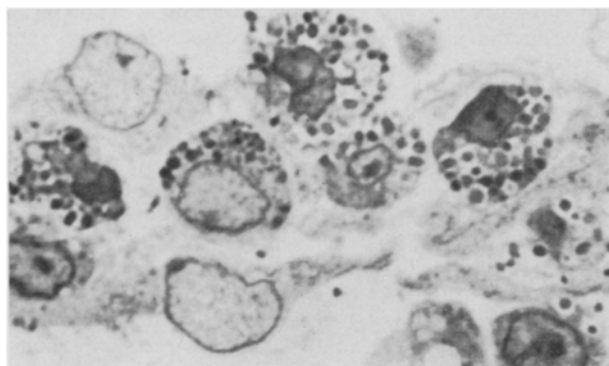


Fig. 2. Light micrograph of semi-thin epon section of mast cells in the dorsal diencephalic pia of baby rat brain. Section stained with toluidine blue. $\times 1600$.

The content of histamine in a rat peritoneal mast cell has been calculated to be approx. 12 pg/cell^{12,13}, with variations up to a mean of 31.5 pg/cell¹⁴. Supposing that the amount of histamine in the mast cells of the brain is not far from that in the peritoneal mast cells, 12 pg/cell, the content of histamine in mast cells of the adult rat thalamus is 20.4 ± 8.1 ng. The weight of the thalamic and epithalamic region is approx. 0.14 g (142 ± 3 mg), which means that mast cells in the thalamus of the rat are responsible for 144 ng histamine/g fresh tissue. This is only slightly below the total amount of approx. 160 ng/g tissue that has been observed for this region of the adult rat brain². In the 6-day-old rats, the mean histamine values based on mast cells in the diencephalic pia only should be 73.5 ± 12.3 ng. The brain weight of 6-day-old rats is approx. 0.5 g (506 ± 45 mg). From this figures the total histamine content in the brain of the baby rat, based on mast cells in the thalamic pia only, is 147 ng histamine/g fresh tissue. A maximum of 220–320 ng histamine/g tissue has been observed in the brains of 2–6-day-old rats, with a rapid decline at 10 days^{3,15}.

Thus, the present observations show that at least one-half of the histamine in the brain of the baby rat might be located in mast cells of the diencephalic pia, and that most of the histamine observed in the thalamus region of the adult rat brain might be based on mast cells in the neuropil of the thalamus and the habenular region of the epithalamus.

Résumé. Des cellules «mast» ont été observées dans les lobes olfactifs, dans le thalamus et dans la région de l'habénula de l'épithalamus chez le rat adulte, et dans la pie-mère dorsale du diencephale chez le rat nouveau-né de 6 jours. La teneur en histamine de ces cellules pourrait expliquer la présence de la plus grande partie de l'histamine observée par d'autres auteurs dans la région du thalamus chez le rat adulte et au moins la moitié de la teneur totale en histamine dans la cervelle des rats nouveau-nés.

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Gold Thioglucose Induced Terminal Degeneration in Mouse Hypothalamus

It has been reported that the administration of gold thioglucose (GTG) causes necrosis in a discrete part of the hypothalamus^{1–3}. Thus 24 adult mice of CPY strain were injected with GTG (Solganol, Bol., Schering A.G., Berlin) i.p. in a dose of 0.5 or 1.0 mg/g body weight. In the first part of the experiment, animals were decapitated 40, 44, 48, 56, 72 and 87 h after injection for histological localization of the necrosis caused by GTG. The tissues were fixed in 4% formaline and embedded in paraffin. Frontal plane serial sections of the diencephalon 7 μm in thick-

ness were made and stained with luxol fast blue and cresylviolet. In the second part of the experiment mice were perfused with Karnovsky solution 40, 48, and 72 h

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