

Handbuch der
experimentellen Pharmakologie
Handbook of
Experimental Pharmacology

Heffter-Heubner

New Series

Herausgegeben von/Editorial Board

O. Eichler
Heidelberg

A. Farah
Syracuse, N. Y.

H. Herken
Berlin

A. D. Welch
New Haven, Conn.

Beirat/Advisory Board

G. Acheson · E. J. Ariëns · Z. M. Bacq · F. von Brücke · V. Erspamer
U. S. von Euler · W. Feldberg · R. Furchgott · A. Goldstein · G. B. Koelle
O. Kraye · K. Repke · M. Rocha e Silva · P. Waser · W. Wilbrandt

Vol. XVI/13

Springer-Verlag · Berlin · Heidelberg · New York 1966

Erzeugung
von Krankheitszuständen
durch das Experiment

Teil 13

Tumoren II

Bearbeitet von
W. Dontenwill · F. Squartini

Herausgeber
Oskar Eichler

Mit 72 Abbildungen



Springer-Verlag · Berlin · Heidelberg · New York 1966

Inhaltsverzeichnis

Tumours arising from vertical transmission

By FRANCESCO SQUARTINI

I. Introduction	1
II. The problem	1
1. Definition	1
2. What can be acquired by vertical transmission	1
3. Multiplicity of the chromosomal and extrachromosomal factors	2
4. The types of tumours arising from vertical transmission	2
5. Choice of suitable models for the presentation of this matter	3
III. The mouse mammary tumours and the mouse mammary tumour virus	5
1. Mammary tumour virus (MTV): the Bittner virus	5
A. Historical	5
B. Morphology of particles associated with mammary tumours in mice.	5
a) Type A and B particles	6
b) Developmental cycle	6
c) Presence of the same particles in normal tissues and other tumours of the mouse	7
C. Size of the particles showing mammary tumour-inducing activity.	7
a) Ultracentrifugation data	7
b) Ultrafiltration data	8
c) Assumption of the existence of three particles of different size	8
D. Data which postulate the existence of an inhibitor of MTV	9
E. Identification, purification and characterization of MTV	9
F. Some biological properties of MTV	11
a) Production of MTV <i>in vivo</i> and <i>in vitro</i>	11
b) Failure to increase MTV concentration or activity by serial passages of tumour extracts	12
c) Lack of immunologic response to MTV in mice	13
d) MTV in low-mammary-cancer strains and the problem of its latent state	13
e) Possible integration of MTV with the infected cells as an explanation for its disappearance and appearance <i>de novo</i>	14
f) Effects of MTV on the infected cells	15
g) Possible effects of the MTV on the host metabolism	16
h) Mutant forms of MTV	16
i) Strain differences in the behaviour of MTV	17
G. Vertical transmission of MTV	18
a) Transmission by the female parent.	19
b) Transmission by the male parent	20
H. Distribution in the host.	20
I. Summary of present knowledge and opinions	21
a) The five statements of MOORE.	21
b) The criticism of MÜHLBOCK	22
2. Hormonal factors	23
A. Endogenous and exogenous hormones	23
B. Strain differences in the production and excretion of hormones	23
C. Endocrine glands involved in mammary carcinogenesis	24
D. Hormones involved in mammary carcinogenesis	24
E. Relations between MTV and hormones	25
3. Inherited factors	26
A. The role of heredity in mammary carcinogenesis	26

B. Mammary susceptibility to MTV	26
C. Mammary susceptibility to hormones	26
D. Vaginal susceptibility to hormones	27
E. Endocrine-gland susceptibility to hormones	28
F. Inherited control on endocrine glands and on hormonal production	28
4. Environmental factors	28
5. Mammogenesis and carcinogenesis	29
A. Mammogenesis as a detector of hormonal production in mice	29
B. Carcinogenesis, with an analysis of the sources of endogenous progesterone and prolactin	32
a) Virgin females	32
b) Breeding females	33
c) Estrogenized females and males	33
6. Changes preceding the development of mouse mammary tumours	34
A. Alveolar premalignant changes (hyperplastic alveolar nodules)	34
a) Definition	34
b) Small and large nodules	34
c) Hormone dependence of nodules	36
d) Influences of MTV in the genesis of nodules	37
e) The fate of nodules	37
f) Recent advances in nodule research by means of a new transplantation technique: A summary of papers by DEOME et al.	37
B. Ductular premalignant changes	39
a) Plaques	39
b) Hyperplastic nodules of small ducts	39
C. Ductal premalignant changes	41
7. Mammary tumours	41
A. Age distribution of tumours in relation to the problem of "menopause" in mice	41
B. Histological origins of tumours	42
C. Responsiveness and progression of tumours	42
a) Responsiveness	42
b) Progression: the six rules of FOULDS	43
c) Histology of responsiveness and progression	44
d) Mechanisms of tumour progression	45
D. Growth rate of tumours	47
E. Types of tumour growth	47
F. Morphology of tumours	47
G. Metastatic spread of tumours	49
8. Comment	49
IV. The mouse leukaemia and the mouse leukaemia viruses	51
1. High- and low-leukaemic strains	51
2. Detection of a leukaemogenic virus in mice: the Gross virus	51
A. Structure and properties of the leukaemia virus	51
B. Variant strains of leukaemia viruses	52
C. Natural transmission of leukaemia virus and distribution in the host	52
3. Other factors involved in the etiology of mouse leukaemia	53
A. Genetic factors	53
B. Hormonal factors	53
C. The thymic factor	54
D. Environmental factors	55
V. Hepatomas in mice	55
VI. Tumours of the lung	56
VII. Other tumours	56
VIII. Conclusive comment	58
References	59

Erzeugung von Tumoren durch endogenhormonelle Faktoren

Von WALTER DONTENWILL

Einleitung	74
I. Geschwulstartige Hyperplasien im Tierexperiment	76
A. In endokrinen Drüsen oder in endokrin gesteuerten Geweben nach Hormon- behandlung, bzw. nach Störung der hormonellen Korrelation, usw.	76
a) Hypophyse	76
b) Schilddrüse	87
c) Epithelkörperchen und Pankreas	95
d) Nebenniere	96
e) Mamma	103
f) Ovar	105
g) Uterus	116
h) Hoden, Nebenhoden	127
i) Prostata	134
k) Verschiedenes	136
l) Tumoren beim Goldhamster nach Hormonbehandlung	136
II. Erzeugung bösartiger Geschwülste (Carcinome und Sarkome)	148
Einleitung	148
A. Durch Hormone allein	148
a) Uterus	149
b) Verschiedenes	151
B. Durch Hormone bei endogener Disposition	153
a) Mammacarcinom	153
b) Hormone und Leukämie, bzw. Geschwülste der lymphatischen Organe	168
c, d) Nebennieren- und Hodentumoren	172
C. Förderung des Geschwulstwachstums durch Hormone im Sinne eines Cocancero- gens und Hemmung des Geschwulstwachstums durch Hormone sowie Beeinflus- sung der Transplantabilität.	172
a) Hypophysenhormone	172
b) Epiphysenhormon	182
c) Schilddrüsenhormon	183
d) Nebennierenhormone	185
e) Geschlechtshormone	192
f) Thymus, Placenta, u. a.	197
Zusammenfassung	199
Namenverzeichnis	205
Sachverzeichnis	223