

SUBJECT INDEX

A

- Acetylcholinesterase,
activity studies on, 204-206
amino acid sequence of, 246
binding strength studies on, 206, 207
carboxyl group receptors of, 244-245
competitive dualism on, 233-234
competitive inhibition of, 230-232
competitive interaction in, 228
inhibition by paraoxon, 237-238
initial reaction velocity of, 211-212, 215
irreversible inhibition of, 237
noncompetitive interaction studies on,
221-222
pH dependence of, substrates for, 209-
210
pseudo-, amino acid sequence of, 246
reactivation of, 252
3-Acetylpyridine, antitumor activity of,
116-117
N-Acylmonoethylenimine compounds, an-
titumor activity of, 104-105
Adenocarcinoma-755
6-aminonicotinamide effect on, 117-118
6-azauracil effect on, 88
Alcohol dehydrogenase, receptors in, 242-
243
Alcohols, use in olfaction studies, 14-15, 29
Ali-esterase, amino acid sequence of, 246
Alkylating agents,
biological, 143-170
chemical reactivity of, 145-146
design for selective tumor action, 153-
169
effect on glycolysis, 119-124
Amethopterin,
as antileukemic agent, 78
coadministration of with other drugs, 176
ethionine effect on antitumor activity
of, 178
resistance to, 172-173
in tumor inhibition, 78
Amino acid,
side chains of in proteins, 204
vitamin B₆ in transamination of, 241

- Amino acid analogs, antitumor activity of,
111
6-Aminonicotinamide, antitumor activity
of, 117-118
Aminopterin, antitumor effect on, 139
4-Aminostilbenes,
as antitumor agents, 59-60
effect on hemopoietic system, 128
Antibiotics, antitumor action of, 111-112
Antimetabolites, as antitumor agents,
114-119, 135
Arylsulfatase, uncompetitive inhibition of,
227, 228
Ascites tumors,
6-azauracil therapy of, 90
chemical therapy of, 126
drug therapy of, 123
effects of alkylating agents on, 119
o-phenylenediamine effect on, 138-139
8-Azaguanine,
in anticancer drug combinations, 178
as antitumor agent, 84-86, 114
effect on uric acid transport, 136
resistance to, 170-172
Azaserine,
as antitumor agent, 57, 118
as glutamine antagonist, 73-74
6-Azathymine, coadministration of with
FUDR, 77
6-Azauracil, as antitumor agent, 88-91

B

- Bitter almond odor, chemical structure
and, 32
Bombykol, structure of, 47
Bowman gland, 8-9
5-Bromouracil, as antitumor agent, 26

C

- Canavanine, resistance to, 170
Cancer, *see* Tumors
DL-N-Carbomethoxytyrosinamide, hydrolysis
of, 211
Carbenzoxoy-L-histidinamide, hydrolysis
studies on, 208

Carcinostasis, causes of, 152-153
 Carzinophilin, antitumor activity of, 124
 Chlorambucil, antitumor activity of, 152
 Chloramphenicol, as RNA antagonist, 111
N-Chloroacetyl-DL-serine, antitumor activity of, 111
 β -Chloroethylmethanesulfonate, antitumor activity of, 123
 Chloroquinine, antitumor activity of, 153
 Choline, as enzyme reactivator, 250
 Choline esters, reaction velocity constants of, 210
 Cholinesterase,
 competitive interaction in, 228-229
 pseudo-reactivation of, 252
 reactivation of, 251, 252
 Chondrosarcomas, therapy of, 138
 Chonocarcinoma, postpartum, 63
 Chromosomes, DNA and information in, 67-68
 Chymotrypsin,
 amino acid sequence of, 246
 reactivators of, 249, 251
 receptors in, 244
 Coenzymes, definition of, 239
 Corticosteroids, antitumor activity of, 128-130
 Cortisol, antitumor activity of, 63, 129
 Cortisone, effect on leukemia, 128
 Cytotoxicity, origin of, 59-64

D

DAQ, *see* 4-(4'-Dimethylaminophenyl)azoquinoline
 Degranol, biological activity changes in, 160
 Deoxyypyridine, antitumor effect on, 139, 178
 Deoxyribonucleotide synthesis, inhibitors of, 93-98
 Diacetylmonoxime, as enzyme reactivator, 250
 2,6-Diaminopurine, as antitumor agent, 83
 5-Diazouracil, antitumor activity of, 122
 4-(Di- β -chloroethylamino) azobenzene derivatives, antitumor activity of, 165-166
 1,6-Di(β -chloroethylamino)-1,6-dideoxy-D-mannitol, 157, 159

2-(Di- β -chloroethylaminomethyl) benzimidazole, antitumor activity of, 154
 5-Di (β -chloroethyl) amino-6-methyluracil, antitumor activity of, 123
p-(Di- β -chloroethylamino) phenyl butyric acid, *see* Chlorambucil
 5(Di- β -chloroethylamino) uracil, antitumor activity in, 159-160
N, *N*-Di- β -chloroethyl- β -naphthylamine, antitumor activity of, 148
N, *N*-(Di- β -chloroethyl)-*N'*, *O*-propylene-phosphordiamide, antitumor activity of, 163
 Diepoxides, chemical reactivity-carcinostatic relationship of, 148
 4-(4'-Diethylaminostyryl)quinoline, effect on hemopoietic system, 128
N-[Di(ethylenimido)-phosphoro] carbamates, antitumor activity of, 156
 Diisopropylfluorophosphate, competitive inhibition of plasmin by, 237
 Dimesylmannitol, 157
 α , ω -(Dimethanesulfonyloxy)alkane series, chemical reactivity-carcinostatic relationship of, 149-151
 1,9-Di (methanesulfonyloxy)nonane, antitumor activity of, 123, 151
 4-(4'-Dimethylaminophenyl) azoquinoline, antitumor activity of, 125
 2-(4'-Dimethylaminostyryl)quinoline, antitumor activity of, 125
 4-(4'-Dimethylaminostyryl)quinolene, antitumor activity of, 124
 DON,
 as antitumor agent, 76, 118
 as glutamine antagonist, 75-76
 Dopan, antitumor activity of, 123
 Drug resistance,
 biochemical mechanisms for, 171-173
 control of, 173-179
 drug combination use in, 175-179
 4-DSQ, *see* 4-(4'-Diethylaminostyryl)quinoline

E

Electrophorus electricus, acetylcholinesterase studies on, 207-208, 231
 Endoxan,
 antitumor activity of, 163
 effect on protein synthesis, 110

- Enzymes,
 competitive interaction of, 228-238
 initial reaction velocity of, 211-213
 mechanism of action of, 201
 noncompetitive interaction of, 220-228
 plotting procedures for, 214-216
 prosthetic groups, definition of, 239-240
 reaction velocity constant of, 208-211
 reactivators of, 249-252
 receptors of, 238-252
 substrate inhibition and, 216-220
 Enzymology, receptor theory in, 199-254
 Esterase, reactivation of, 252
 Ethionine,
 antitumor activity of, 139
 effect on Amethopterin tumor activity,
 178
 2-Ethylamino-1,3,4-thiadiazole, antitumor
 activity of, 117
 Ethylenimines,
 antitumor activity of, 119-120
 chemical reactivity-carcinostative rela-
 tionship of, 149
 Ethyleniminoquinones, antitumor activity
 of, 119

F

- FAD, *see* Flavine adenine dinucleotide
 Fatty acids, effect on tumor cells, 136-137
 Flavine adenine dinucleotide, as prosthetic
 group, 240
 N-Fluoroacetyl amino acids, biological ac-
 tivity of, 161
 5-Fluoroorotic acid, as antitumor agent,
 91-92
 5-Fluorouracil, as antitumor agent, 94-96,
 140
 9- α -Fluorylhydrocortisone, effect on leuke-
 mia, 128
 Folic acid, antagonists of, 76-78
 Formamide, effect on leukemia, 139
 Fowler's solution, *see* Potassium arsenite
 Fructokinase, competition studies on,
 235-236
- G
- Galactoglavin, antitumor activity of, 139
 Glucagon, antitumor effect of, 129
 β -Glucosidase, noncompetitive inhibition
 studies on, 225

- β -Glucuronidase, noncompetitive "acti-
 vation" of, 224
 Glutaminase, competitive inhibition of,
 229, 230
 Glutamine antagonists, 73-76
 as antitumor agents, 118-119
 Glycolhydroxamic acid, as enzyme reacti-
 vator, 250
 Glycolysis inhibitors, as antitumor agents,
 114-132
 Guanase, in drug resistance, 170
 Guanosine, as antimutagen, 173

H

- Hexose monophosphate shunt, in tumor
 therapy, 132
 Honvan, *see* Stilbestrol phosphate
 Hormones,
 activity of, olfactory sensitivity and, 44
 antitumor activity of, 128-130
 Hydrocarbons, olfactory-stimulating
 power of, 13
 Hydrogenases, receptors of, 242-243
 Hydrolytic enzymes,
 amino acid sequence of, 246
 carboxyl group in, 244-245
 imidazole ring of, 249
 reactivators of, 250
 receptors in, 243-249
 serine OH-group of, 245-248
 sulfhydryl group in, 248
 Hydroxy ions, as enzyme reactivator, 250
 10-Hydroxy-2-decanoic acid, tumor in-
 hibition by, 37
 Hydroxylamine, as enzyme reactivator,
 250

I

- Imidazole ring, in hydrolytic enzymes, 249
 Insects, olfactory effects in, 46-47
 Insulin, antitumor effect on, 129
 N-Iodoacetyl amino acids, biological ac-
 tivity of, 161
 Iodouracil, as antitumor agent, 96-97
 Isopropylphenyl carbamate, antitumor
 activity of, 167-168
 Isoriboflavin, antitumor activity of, 139
 Isothiocyanates, odor-structure relation-
 ships of, 32

J

Jacobsen organ, 7

L

Lactones, odor-structure relationships of, 32

Leucotoxin, 145

Leukemia,

antifolics effect on, 139

chemotherapy of, 58-59

corticosteroid effect on, 128-129

6-mercaptopurine effect on, 78

Leukeran, *see* Chlorambucil

Linoleic acid, effect on tumor cells, 136

Lipase (wheat-germ), effect on tumor cells, 136

Lipids, effect on tumors, 136-137

Liver alcohol dehydrogenase, receptors in, 213

Lymphosarcomas, therapy of, 139

M

Malic acid dehydrogenase, competitive dualism on, 234

D-Mannitol derivatives, antitumor activity of, 122

Melanomas, therapy of, 138

Membrane tumor, *see under* Tumor

Menstruation, olfactory sensitivity and, 44

MEPA, antitumor activity of, 164

6-Mercaptopurine,

antitumor activity of, 78-81, 114

coadministration of with other drugs, 175, 176

effect on uric acid transport, 136

5-Mercaptouracil,

as antitumor agent, 97-98

coadministration of with 5-FU, 177

Mitomycin C, antitumor action of, 111-113

Monoisonitrosoacetone, as enzyme re-activator, 250

Musks,

odor-structure relationships of, 33-41

sensitivity to, 44

Myleran,

antitumor activity of, 151

effect on hemopoietic system, 128

metabolism of, 100

tumor membrane and, 134

N

Neoarsphenamine, biological activity of, 161

Nerve gases, action of, 249

Nicotinamide

antagonists of, antitumor activity of, 115-116

in anticancer drug combinations, 178

Nicotine-hydroxamic acid methiodide, as enzyme reactivator, 250

Nitro-aromatic compounds, musk odors of, 36

Nitrogen mustard

antitumor activity of, 105-107, 122

chemical reactivity-carcinostatic relationship of, 145-148

Nitromin, antitumor activity of, 163-164

N-Oxide mustard, biological activity changes in, 160-161

Nucleic acid,

alkylating agents as inhibitors of, 99-111 in cancer chemotherapy, 65-114

constituents of, 65

metabolism, feedback controls in, 98-99 pairing, 68

O

Odor perception, *see* Olfaction

Oleic acid, effect on tumor cells, 136

Olfaction,

Bowman gland in, 8-9

carrier in, 4-5

electrophysical methods in, 16-31

Jacobsen organ role in, 7

material contact in, 6

molecular approach to, 1-51

OSP of various hydrocarbons in, 13

process of, 3

radiation role in, 5-6

receptor organ in, 6-10

stimulant concentration in, 10-15

stimulant molecular structure in, 31-43

(*See also* Olfactory cells)

Olfactometers, 11-13

Olfactory cells, 7

OPSPA, antitumor activity of, 164

P

Peltatins, antitumor activity of, 124

Pentadecanolide, sensitivity to, 44

- Phenylalanine mustard, *see* Sarcolysine
- Phenylenediamines, therapy using, 138
- p*-Phenylenediphosphoric acid tetraethyle-
neimide, antitumor activity of, 119
- Phenyltrimethylammonium salts, in en-
zyme activity studies, 205-206
- Phosphoglucomutase,
active sites of, 245
amino acid sequence of, 246
- Phospholipids, effect on tumors, 136-137
- Physostigmine, as competitive inhibitor
of acetylcholinesterase, 222, 223
- 2-Picoline hydroxamic acid, as enzyme
reactivator, 250
- Piperonal, odor-structure relationship of,
32
- Podophyllin, antitumor activity of, 120
- Polyfluorouridylic acid, effect on tumor
cells, 135
- Polyxenyolphosphate, accumulation of in
tumors, 134
- Porphyrin, accumulation of in tumors, 134
- Potassium arsenite, in cancer chemo-
therapy, 58
- Prostate carcinoma, stilbestrol therapy of,
128
- Proteins,
amino acid side chains in, 203-204
in cancer chemotherapy, 65-114
- Pyridine-2-aldoxime methiodide, as en-
zyme reactivator, 250
- 1,3-Bis-(pyridinium-4-aldoxime)-propane
dibromide, as enzyme reactivator,
250, 252
- Pyridoxal phosphate, prosthetic group,
204, 240
- Pyridoxine, deficiency of, 139
- Purine antagonists, 78-86
as antitumor agents, 114-115
- Puromycin, antitumor activity of, 111-112
- Q**
- Quinaerine, antitumor activity of, 153-154
- R**
- Rats, olfactory discrimination in, 46
- Reactivators, of enzymes, 249-252
- Receptor theory, in enzymology, 199-254
- Receptors, enzyme, 238-252
- Respiration inhibitors, as antitumor
agents, 114-132
- Ribonucleotides synthesis, 70-92
inhibition of, 73-92
purine-containing, 72-73
pyridine-containing, 86-87
- Royal jelly, tumor inhibition by, 137
- S**
- Sarcolysine,
antitumor activity, 157
peptides, antitumor activity, 158
- Sarcoma 180, 5-fluorouracil effect on, 140-
141
- 6-Selenopurine, as purine antagonist, 81
- Serine, active, in hydrolytic enzymes, 245-
248
- Serum albumin, accumulation of in
tumors, 134-135
- Sex attractants, in insects, 47
- Silkworm, sex attractants in, 47
- Stearic acid, effect on tumor cells, 136
- Steroids, musk odor of, 34-37
- Stilbestrol, antitumor activity of, 128
- Stilbestrol diphosphate, antitumor activ-
ity of, 162
- Succinic dehydrogenase, competitive in-
hibition of, 230
- Sulfanilimide mustard, antitumor activity
of, 139
- Sulfhydryl group, in hydrolytic enzymes,
248-249
- Styrylquinolines, as antitumor agents, 60,
124
- T**
- TEM, antitumor activity of, 119, 164
- Testosterone, in antitumor drug combina-
tions, 178
- Tetra(ethylenimino)-1,4-benzoquinone,
antitumor activity of, 155
- 6-Thioguanine, as antitumor agent, 81-83
- 2-Thiouracil, effect on TMV, 85
- Thrombin,
active sites of, 245-246
amino acid sequence of, 246
- Thyroid cancer, therapy of, 138
- Thyroxine, antitumor activity of, 128
- Transaminase, prosthetic group of, 204,
240

- Triethylcholine, antileukemic action of, 139
- N,N',N''*-Triethylenephosphoramidate, antitumor activity of, 119
- Triethylenephosphortriamide, antitumor activity of, 164
- 2, 3, 5-Triethylenimino-1, 4-benzoquinone, effect on glycolysis, 124
- Trypsin,
amino acid sequence of, 246
pH optimum of, 249
- Tumor(s),
accumulation of substances in, 134-135
cells, Warburg's theory of origin of, 130-132
chemotherapy, 55-197
selective toxicity in, 137-143
drug resistance to, 170-179
membrane function in, 132-137
- U
- Undecanones, odor-structure relationship of, 32
- 6-Uracil methylsulfone, as antitumor agent, 87-88, 93-94
- Urethane,
antitumor action of, 113
administration of with other drugs, 177-178
- V
- Vanillin, structure-odor relations of, 32
- Vitamine B₁₂, in mouse carcinoma, 56
- W
- Walker rat tumor,
cortisol effect on, 129
inhibition of, 100-101
- Warburg theory of tumor-cell origin, 130-132
- Wheat-germ lipase, effect on tumor cells, 136
- X
- Xanthine oxidase, inhibition of, 219