Determine prop. by conc.

at ~~0.5 gm/lit~~ 500 mgm/l

$1.25 \times 3.8 = 4.85\ 10^{-8}$ /hr

or about 4 times natural rate

$\tau = 5.3$ hr

1 methyl xanthine (guanine) 2.

5 Bromo Uracil [Thymine ant]

5 Nitro Uracil [Folic acid ant.]

5 Hydroxy [uracil ant]

5 Amino [folic acid or thymine]

2-6 Diamino purine [adenine]

(others found it thymine ant]

Weygand

l. lactic acid

(embers malic acid Brown)

paraxanthine [1:7] / 7 methyl xanthine 4

8 aza guanine (very little soluble)

hypoxanthine

mg in 10 ml

100 ~~mgm~~ /liter

Dr. G. H. Hitchings
~~xxxxx~~
Wellcome Research Labs.
Tuckahoe, 7, N.Y.

Aerobac aerogena

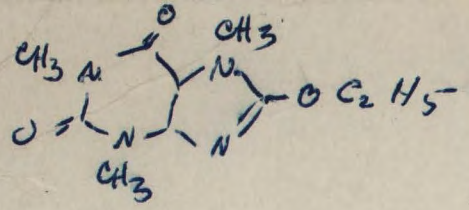
Uracil

Dougherty

Thymine

Adenineletide acid
Eastman Kodak
Schwarz, Dalinity Edison

8 ethoxy caffeine
root-chromosome breaks -
Fred Phillips
Sloan Kettering knows about it.



$[C^{+}]$ Cit^{-}

Hydrolysate of ~~nu~~ nucleic acid in 20 parts of H_2O; add $NaOH$ to neutral to Phenolphthalein [should be clear] add $Na(OH)$ to 0.1 Normal. — 24 hours at 25°C neutralize to PH 7. —

New Experiments

Air

B/l, t/fact 500 r/l Vol = 40 cc.

	Gen	Assay	T4	T5	T6	
2 hr	0	1.42×10^8	708	202	49	
	10	2.19×10^8	709	215	64	
	22	2.5×10^8	676	308	112	
	35.5	2.62×10^8	758	459	150	
	48	2.16×10^8	696	460	156	
	61	2.13×10^8	526	250	92	← Changed feed bottle during this collection
	71	1.99×10^8	418	147	81	
	83	2.5×10^8	500	204	134	
6 hr #1	0	2.31×10^8	382	123	79	
	4	2.12×10^8	469	196	79	
	~~10~~ ~~35~~	2.03×10^8	455	293	90	
	12	2.4×10^8	434	–	94	
	16	2.13×10^8	480	393	120	
6 hr #2	0	1.94×10^8	454	40	36	
	4	1.73×10^8	630	121	64	
	12	1.99×10^8	720	232	94	
	16	2.56×10^8	620	352	126	

Old experiments

O_2 + 0.25% CO_2

	Generation	Assay	T4	T5	T6	
500 ml 4 hr Chemostat	119	8.7×10^7	3.6×10^4	314	265	
	125	1.88×10^8	4.6×10^4	414	570	
	131	2×10^8	4.2×10^4	527	327	
	137	2.6×10^8	3×10^4	330	~1000–2000	— Microcolonies on T6 plates. Most plates counted after 48 hrs incubation
	143	1.93×10^8	2.7×10^4	443	~3000–6000	
	150	2.37×10^8	2.8×10^4	540	3760	
	155	1.4×10^8	2.3×10^4	540	2982	
	161	2×10^8	2.3×10^4	788	1200	
	167	2.56×10^8	2.3×10^4	806	490	

500 ml 12 hr Chemostat	6gen	1.38×10^8	577	327	231
	8	2.5×10^8	447	377	221
	10	2.7×10^8	497	346	198
	12	1.75×10^8	428	300	217
	15	7.2×10^7	484	140	232
	16.4	5.4×10^7	556	129	268
	18	2.6×10^7	612	82	224

Stopped at this point – saved contents

4000 ml 6 hr Chemostat	48	1.71×10^9	3530	1500
	52	1.5×10^9	3510	1435
	56	1.55×10^9	4240	2040
	Growth on lower part of syphon noticed			
	68	1.84×10^8	6540	2850
	72	1.49×10^9	7920	2760
	76	1.71×10^9	8040	1125

Purine
Uric acid
Xanthine
Caffeine
Theobromine
Theophylline
Barbiturate
Urethane

Ed Wallicek
Dr. Kelsey

Pharmacology

Biology

Vicia Faba

150 cm

Oehlkers

(~~Kiepenheuer~~ Verlag) Planta

Braner 1950

Naturwissenschaften 1949 Kiepenheuer. –

Brit. Med Bulletin

1946/47

Chemical Carcinogenesis. –

Cook & Kennaway

Journ. of Cancer

34 301 1940

Biology

Guanine

Adenine

~~Urosol~~

Thiouracil

Trypsin

Pyr

Cyanamide
(Rubbing)

(Kim) Thymonucleinic acid (Kim)
Iodoacetate to Warburg
phenylcysteine

Brit. Med Bulletin
1946/47
Chemical Carcino-
genesis. —
Cook & Kennaway
Journ. of Cancer
38 381 1940

Ecdcan Co So Norwalk. Conn
(Prime Street)

THE QUADRANGLE CLUB
CHICAGO

~~Water~~

1-2=5-6-
1- Dibenzanthracene
endosuccinic acid

$\frac{1}{10}$ mgm/l

effect starts

full effect
25 mgm/liter

~~[illegible]~~

New York Acad of Sc.
1947 Fadum

sd-4 0.04 [illegible]

centrifuge + $MnCl_2$ = 3000/10^8
wash
+ water + " 200/10^8

Demerec

+ NaCl } isotonic 3200/10^8
KCl } hypot. → 200/
$CaCl_2$ } hyper 10, and/10^8
sugar }

+ $MnCl_2$ 0
water 0 + 0
- 0

β propio lactone

Goodrich Tyree
[illegible] Chicago

Note: Gots (Penn)
informs me that
commercial hypoxanth
is lousy c̄ adenine.
He has coli strains
for adenine; ad/h-x;
ad/hx/gu/x. Also
ad + arginine and
ad/hx + pantothenate.

Davis

DR. CAMILLE KERESZTURI CAYLEY
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Al Conrad
BIRKHAUG Shobe
Health Dept
allergy 2-7

Dr Roy ROSENTHAL
TIC Clinic Clinic

VOL: Cots (Penn.)

informs me that
commercial hypoxanth
is lousy - adenine.
He has coli-strains
for adenine; ad/h-x;
ad/hx/gu/x, & also
ad + arginine and
ad/hx + pantothenate.

Davis

45B-4 — adenine or guanine or hypoxanthine

55B-75 — adenine or guanine or ~~hypo~~xanthine or xanthine!

22-77 any purine + thiamine

122-65 any purine + (thiamine or histidine)

purines in ca 20 γ/ml.
thiamine ca 0.001 γ/ml.

SD-4 0.048 mL

centrifuge + $MnCl_2$ = 3000/10'

+ water + 4 200/10'

Remove

+ NaCl
+ KCl
$CaCl_2$
sugar

} resolve 3000/10'
support ⇒ 200/
liquid 1 mL and 10'

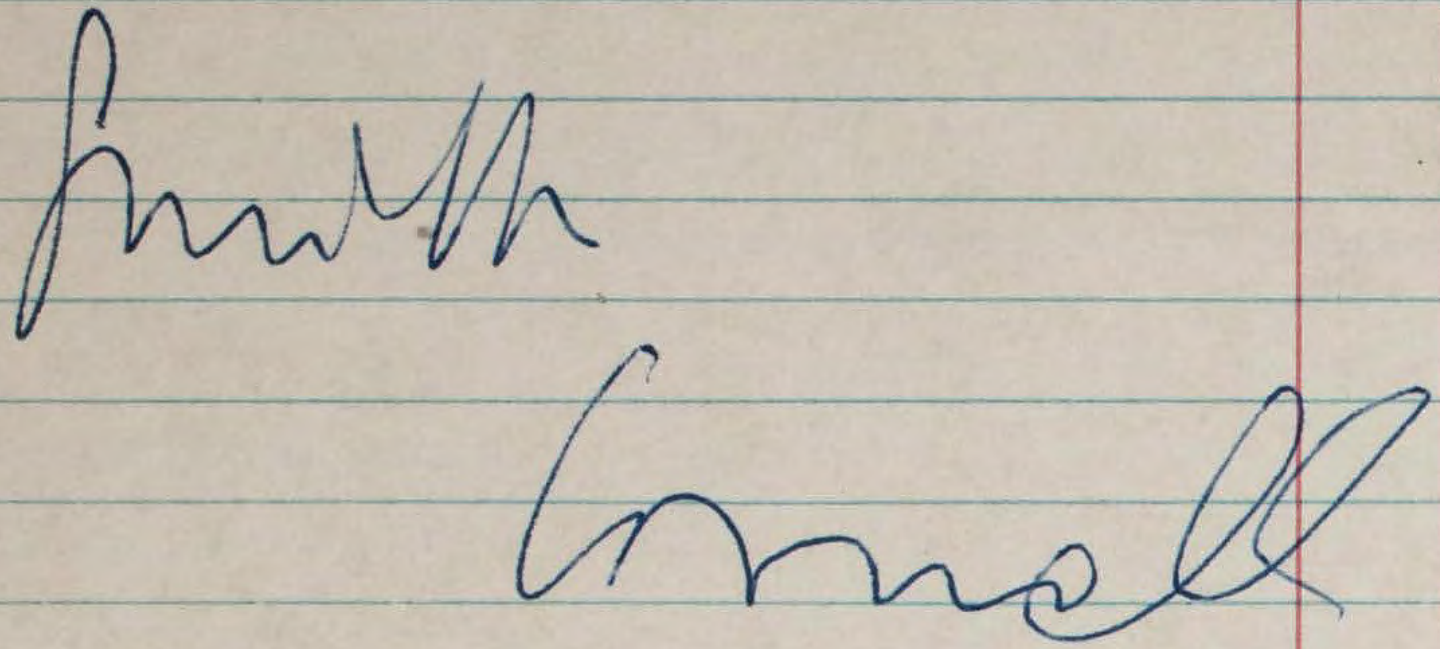
+ $MnCl_2$ 0

water 0 + 0

— 0

Il proprio lactone

Gradisca i miei
più cordiali saluti



Witkin 2980
Home 3482 J
Cold Spring Harbor

isotonic 0.15 to 0.2 M NaCl

Hypertonic 0.3 M NaCl

Spont
lac⁻ . mutate
B/r

.25 x
1000

UV induced

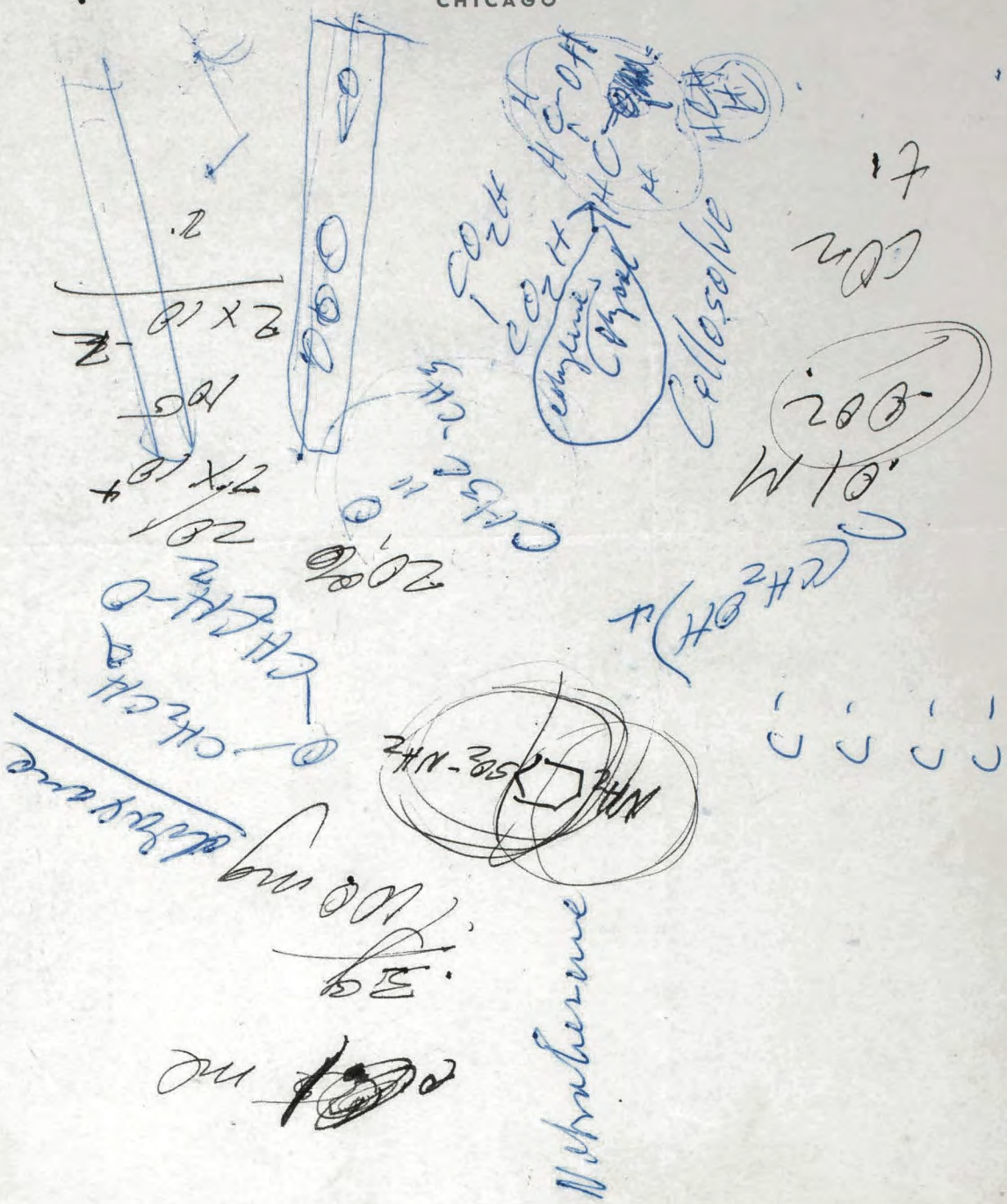
lac⁻ same for lac+
spontaneously
10^{-8} 10^{-10}
all same rate
with U.V.

0 50 bact
1 min 200 bact
2 ~~[illegible]~~ min 1000 bact
3 500
5 10
colonies on plate

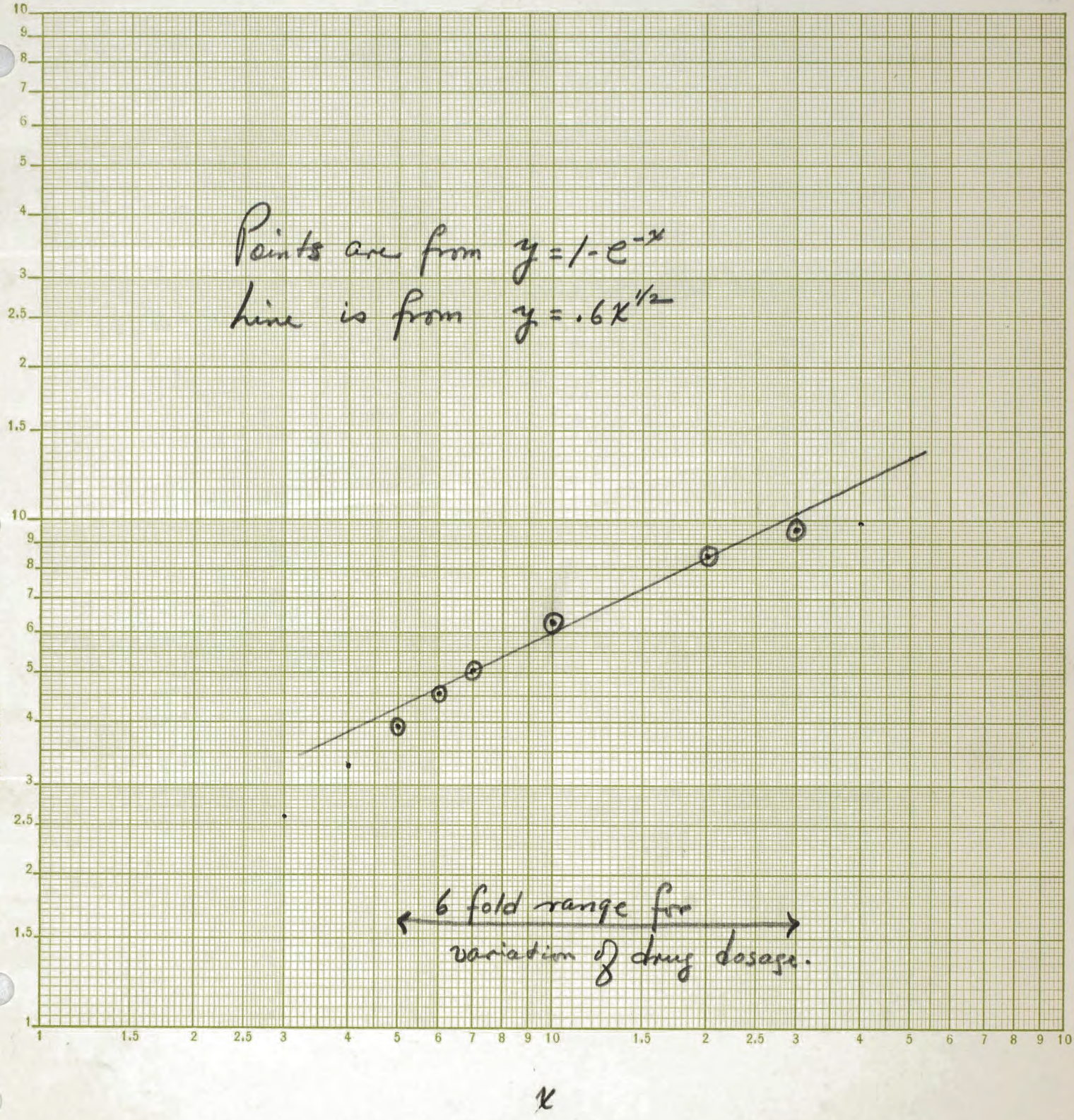
Smith
W.H.
Dept of
Plant
Breeding
Cornell

THE QUADRANGLE CLUB

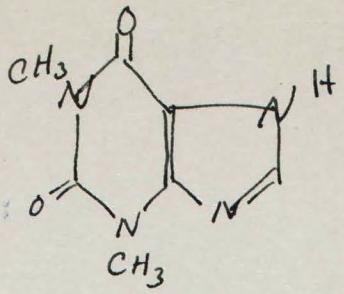
CHICAGO



Approximation of an exponential function by a power of x over a limited range.

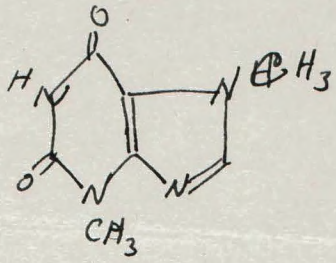


3.0 g.	48-14	2,6-diaminopurine
3.0 g.	47-28	8-azaguanine (sodium salt)
3.0 g.	46-15	5-amino uracil
3.0 g.	45-71	5-nitro uracil
3.0 g.	45-70	isobarbituric
3.0 g.	45-69	5-bromo uracil
3.0 g.	44-33	paraxanthene



theophylline

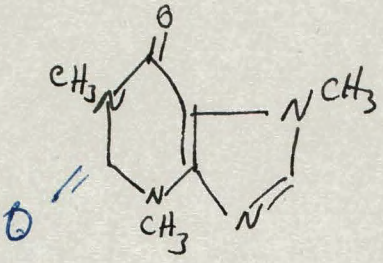
200



theobromine

1000

~



caffeine

10^6

Xanthine (unmethylated)

Purine

Adenine

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Adenine	Inostine
Adenine Sulfate	Iron Nucleate
Adenylic Acid	Maganese Nucleate
Adenosine	6 Methyl Uracil
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Cytidine	Protamine Nucleate
Cytidine Sulfate	Phosphoglyceric Acid
Cytidylic Acid	d Ribose
Cytosine	Sodium Nucleate
Desoxyribonucleic Acid	Sodium Desoxyribonucleate
Fructose-6-Phosphate (Barium)	Ammonium Uridylate
Glucose-1-Phosphate (Potassium)	Thymine (5 Methyl Uracil)
Glutathione	Uracil
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Guanine Hydrochloride	Uridylic Acid
Guanosine	Uramil
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PROTAMINE SULFATE

Protamines are sometimes referred to as the simplest of all proteins. However, many prefer to use the general name of Protamine for the soluble polypeptids of nuclei which are strongly basic in reaction, soluble in water, heat uncoagulable and composed of only several amino acids, mainly the basic ones.

Protamines from individual species are identified as salmine, clupeine, sturine and scombrine.

TYPICAL ANALYSIS
NBCo PROTAMINE SULFATE

Nitrogen	22.8%
Sulfate	16.6%
Moisture	3.5%

GENERAL PROPERTIES:

Strongly basic.

Soluble in water. Insoluble in alcohol and ether. Gives pink biuret color. Negative to Millon and Hopkins Cole Test.

On hydrolysis yields only a few amino acids, mainly arginine which usually accounts for 90% of the nitrogen content. Other amino acids reported as being present in protamine are: alanine, histidine, isoleucine, lysine, proline, serine and valine.

Isolectric point 9.6 to 12.4. Influenced and increased by increase of the arginine content.

Protamines are optically active. Specific Rotation—81° which falls on racemization or hydrolysis.

Protamines precipitate basic proteins from aqueous solution by combination (casein, albumen, globulin, gelatin). These combinations are, however, soluble in saline and alkaline solutions.

Protamines form precipitates with heparin and cephalin. They are precipitated by alkaloids at neutral pH. Stable salts are formed with mineral acids.

Protamines are hydrolyzed by protaminases, trypsin-kinase and papain HCN. They are not hydrolyzed by the erepsin or pepsin type of proteases.

Protamines act as anticoagulants since they inactivate heparin. They cause flocculation and hemagglutination. It has been reported that protamines synergize the bactericidal action of detergents.

The toxicity of protamine-casein combinations is negligible. Intravenously and intraperitonealy protamines are toxic at 40-120 mg. per kilo levels, 100-150 mg. per kilo is the subcutaneous MLD for rabbits and mice.

Protamines exhibit antibiotic and bacteriostatic effects. E. typhi being inhibited by 1:5,000 solution. E. coli at 1:25,000. S. aureus at 1:50,000. Trypanasomes at 1:80,000. L. arabinosus at 1:85,000. The antibiotic effect is enhanced by urea. Several gram negative bacteria have reportedly been sensitized by protamines to react to compounds previously affecting only gram positive organisms.

See page 4 for Protamine Sulfate Quotations.

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1 gm.		$19.00
100 mg.		2.50

ADENOSINE TRIPHOSPHORIC ACID

1 gram bottle	gm.	11.50

ADENINE

100 gram bottle	gm.	2.75
25 gram bottle	gm.	3.25
5 gram bottle	gm.	3.65
1 gram bottle	gm.	3.75

ADENINE SULFATE

100 gram bottle	gm.	1.55
25 gram bottle	gm.	1.85
5 gram bottle	gm.	2.25
1 gram bottle	gm.	3.00

ADENOSINE

25 gram bottle	gm.	1.25
10 gram bottle	gm.	1.45
5 gram bottle	gm.	1.60
1 gram bottle	gm.	2.25

ADENYLIC ACID (Adenosine-3-Phosphoric)

25 gram bottle	gm.	2.20
10 gram bottle	gm.	2.45
5 gram bottle	gm.	2.65
1 gram bottle	gm.	3.15

ADENYLIC ACID (Adenosine-5-Phosphoric) (MUSCLE)

1 gram bottle	gm.	35.00
100 mg. ampule		4.25

ADENYLIC ACID (Adenosine-5-Phosphoric)

5 gram bottle	gm.	6.00
1 gram bottle	gm.	7.30

COZYMASE (COENZYME I)

1 gram bottle	gm.	82.50
100 mg.		8.50

CYTIDINE

1 gram bottle	gm.	15.00
500 mg. ampule		8.00

CYTIDINE SULFATE

1 gram bottle	gm.	13.00
500 mg. ampule		7.50

CYTIDYLIC ACID

10 gram bottle	gm.	5.00
5 gram bottle	gm.	6.75
1 gram bottle	gm.	7.00

CYTOSINE

1 gram bottle	gm.	35.00
100 mg. ampule		3.90

DESOXYRIBONUCLEIC ACID

1000 gram bottle	gm.	.08½
100 gram bottle	gm.	.11
25 gram bottle	gm.	.14

FRUCTOSE-6-PHOSPHATE (Barium)

5 gram bottle	gm.	2.50
1 gram bottle	gm.	2.90

GLUCOSE-1-PHOSPHATE (Potassium)

5 gram bottle	gm.	4.50
1 gram bottle	gm.	4.75

GLUTATHIONE

5 gram bottle	gm.	5.00
1 gram bottle	gm.	5.50

GUANINE

25 gram bottle	gm.	.75
5 gram bottle	gm.	.90

GUANINE HYDROCHLORIDE

25 gram bottle	gm.	.60
5 gram bottle	gm.	.70

GUANOSINE

25 gram bottle	gm.	2.35
5 gram bottle	gm.	2.90
1 gram bottle	gm.	3.00

GUANYLIC ACID

25 gram bottle	gm.	2.35
5 gram bottle	gm.	2.90
1 gram bottle	gm.	3.00

HEXOSE DIPHOSPHATE (Fructose-1-6-Diphosphate)

5 gram bottle	gm.	.70

HYPOXANTHINE

25 gram bottle	gm.	4.50
5 gram bottle	gm.	4.75
1 gram bottle	gm.	5.75

INOSINE

5 gram bottle	gm.	9.25
1 gram bottle	gm.	9.50

6 METHYL URACIL

25 gram bottle	gm.	.27
10 gram bottle	gm.	.30

NUCLEATES, Iron, Manganese

10 gram bottle	gm.	.15

NUCLEIC ACID (Ribose Nucleic Acid)

100 gram bottle	gm.	.05
25 gram bottle	gm.	.09
10 gram bottle	gm.	.10

PHOSPHOGLYCERIC ACID

5 gram bottle	gm.	.70

PROTAMINE NUCLEINATE

100 gram bottle	gm.	.25
5 gram bottle	gm.	.36

d RIBOSE

25 gram bottle	gm.	1.75
10 gram bottle	gm.	1.85
1 gram bottle	gm.	2.00

SODIUM NUCLEATE

10 gram bottle	gm.	.10

SODIUM DESOXYRIBONUCLEATE

1000 gram bottle	gm.	.09
100 gram bottle	gm.	.11¼
25 gram bottle	gm.	.14

AMMONIUM URIDYLATE

1 gram bottle	gm.	14.00

THYMINE (5 METHYL URACIL)

100 gram bottle	gm.	.15
50 gram bottle	gm.	.20
10 gram bottle	gm.	.28
5 gram bottle	gm.	.30

URACIL

100 gram bottle	gm.	.12
25 gram bottle	gm.	.15
5 gram bottle	gm.	.20

URIDINE

5 gram bottle	gm.	5.50
1 gram bottle	gm.	5.75

URIDYLIC ACID

1 gram bottle	gm.	18.50
500 mg. ampule		9.50

URAMIL

5 gram bottle	gm.	.60

XANTHINE

100 gram bottle	gm.	.70
25 gram bottle	gm.	.90
10 gram bottle	gm.	.95
1 gram bottle	gm.	1.50

XANTHOSINE

1 gram bottle	gm.	7.75

RELATED MATERIALS

NAPTHORESORICINOL

25 gram bottle	gm.	3.20
10 gram bottle	gm.	3.75
1 gram bottle	gm.	3.90

THIOURACIL

500 gram bottle	gm.	.02½
50 gram bottle	gm.	.03

6 METHYL THIOURACIL

100 gram bottle	gm.	.06
25 gram bottle	gm.	.10

PROPYL THIOURACIL

100 gram bottle	gm.	.11
25 gram bottle	gm.	.15

PROTAMINE SULFATE

1000 gram bottle	gm.	.35
100 gram bottle	gm.	.46½
25 gram bottle	gm.	.50
5 gram bottle	gm.	.70

l SORBOSE

1000 gram bottle	gm.	.03¼
100 gram bottle	gm.	.04
25 gram bottle	gm.	.05

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