Drug-Test Interactions Handbook

EDITED BY
J.G. Salway

FIRST EDITION

Raven Press

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Preface and acknowledgements

It was in the mid 1960s, as a postgraduate research student with Professor J.N. 'Tim' Hawthorne, that I learned to consider that an exciting 'new discovery' might be simply either an irritating methodological artefact, or a failure to include adequate experimental controls. The problem has not changed – there remains amongst scientists the temptation to succumb with blinkered enthusiasm to pursuing the exciting and hoped-for interpretation of their results without first eliminating the tedious, mundane and dull alternative explanations.

I learned from Dr Peter Watkins, at Birmingham General Hospital, that severely ill patients, who are usually being given several drugs, are very imperfect subjects for study. He had been trying to measure creatinine clearance in ketotic patients. However, his results demonstrated anomalies due to interference by acetoacetate with the Jaffé reaction used to measure creatinine.

By 1975, working with Dr Brian Payne at St James's University Hospital at Leeds, I had become increasingly convinced of the problems posed by drugs and other factors affecting laboratory tests. There were thousands of articles and scores of reviews on the subject – indeed the overwhelming quantity of information encouraged a blinkered attitude by many practitioners. The scale of the problem was really identified in 1975 by Dr D.S. Young's classic publication in *Clinical Chemistry* and many laboratories to this day still use this reference publication*.

In 1975, I contacted Professor Joan Zilva, then meetings secretary of the Association of Clinical Biochemists (ACB), and suggested that I might be allowed to present a paper on drug–test interactions at the next National Meeting. The proposal was welcomed and I went on to organize a 2-day conference in Leeds in 1976. My presentation caused a great deal of hostile discussion at the conference, presumably due to the implication that some test results might occasionally be unreliable, and I was grateful to find I had the support of Dr Alan Bold who explained to the meeting that I had simply reviewed the published literature.

In 1977 I moved to Guildford where Professor Vincent Marks provided the steady encouragement and support which has sustained over the last 12 years what has become an increasingly time-consuming project. At that time I was invited to join the Expert Panel on Drug Effects in Clinical Chemistry, formed under the auspices of the International Federation of Clinical Chemistry, with Professor Gérard Siest of Nancy, France, as Chairman. The formation of this panel finally gave international recognition to the problem, and it was through this that I met the other individuals who were pioneering the same cause in their own countries – these were to include Drs Marie-Madeleine Galteau, Josef Breuer, F.W. 'Bill' Sunderman Jr and Nils Tryding.

By 1979 support was increasing, particularly from Dr Stan Brown, then secretary of the ACB. It was then that Dr Barry Shurlock, the Medical Editor at Chapman and Hall, wrote to me expressing an interest in publishing the work and, on David Rees' suggestion, I applied to the Research Committee of the South West Regional Health Authority and obtained funding for a 1 year pilot study to establish a computerized database on drug-test interactions. Sarah Dawkins was recruited, and together with Anne Smith, compiled the original database, initially on cards. Tom Goodwin, Director of the Computing Unit at Surrey University, suggested computerization and Mark Alford, under the supervision of Valerie Harmer, achieved this in a matter of weeks.

In 1982 – 'Information Technology Year' – I was invited to speak at the BMA's IT82 Conference. I gave a demonstration of the database and, with the attendance at the conference of Kenneth Baker, then Minister of Information Technology, I was encouraged to apply to the Department of Industry for funding under the IT82 scheme. At this stage I was helped by Linda Mattin, and was fortunate to have the advice of the Bureau of Industrial Liaison at the University of Surrey who guided me in the direction of DG-13 of the European Community at Luxembourg. This directorate was supporting the compilation of computerized medical databases – I discovered that European beaurocrats were in fact very approachable and helpful people!

Support from South West Surrey District Health Authority and the University of Surrey, especially from P.J. Salmon, M. Whelan, L.J. Kail and K.J. Joyner, continued during 1984–86. Over this period the following people joined me to form a happy and dynamic team: Linda Allen, Pamela Anson, Jacqueline Artis, Gunni Dedhia, Anne Dowie, Miss De Gray, Jenny Heyes, Linda Holland, John Morton, Fiona Savundra (née Pearson), Mary Stapleton, Kate Sim, Julia Tudor, Bob Thomas, Dr Sam Tong, Jenn Walker and Elizabeth Wallace. Invaluable help was given by

*Young, D.S., Pestaner, L.C. and Gibberman, V. (1975) *Clin. Chem.* **21**, ID-432D.

many of the staff at St Luke's Hospital, Guildford, especially Michael Carmel, Tina McKee, Caroline Sawers and Ian Wells.

A major technical setback towards the end of this period seemed likely to put the entire database in jeopardy – it was rescued by Tony Tarpey with stoical hard work and the help of newcomer Carol Lewis and again Linda Mattin.

The publishers, Chapman and Hall, have maintained their active support and encouragement through Dr Peter Altman, who has been the Medical Editor since 1983. It is a pleasure to have this opportunity to acknowledge the help provided by Peter and his colleagues, especially Sharon Duckworth and Brian West.

During these last 2 years Jackie Wilkinson has written the software necessary to adapt the database to the format required for computerized typesetting and has coped admirably with the changes and design enhancements implemented during development. Carol Lewis has been the mainstay on the editing side, working hard to establish the final accuracy and consistency of the material. In the final few months Mandy Joint arrived to help.

The handbook still represents only part of the full database – all of the available information would run to several volumes of text. I regretably also accept the difficulty in keeping this work fully comprehensive and up to date when I estimate that there are approximately 1000 new entries worthy of inclusion every year. To this end I am grateful to all those authors who have sent me data based on their work for inclusion in the database and in this book. Furthermore I am grateful to all those students and colleagues, many of whom are in industry and the health service, who, although not mentioned by name, have nevertheless made valuable contributions to this work. I am also grateful to the following companies for their generous support: Boehringer Ingelheim, Bayer, Pharmacia, Janssen, and Smith Kline & French.

Finally the entries have been checked at least four times each and hopefully there are few inaccuracies. However, I would be very grateful to receive advice on any mistakes or ambiguities which are identified by users of the handbook so that they can be corrected in the database and in subsequent editions.

J.G. Salway
June 1989

How to use this book

Parts

The book is divided into three parts depending on the type of specimen being used for the test. To distinguish the Parts clearly each has been printed on a different coloured paper. Part One (Blood Specimens) is on pink paper; Part Two (Urine Specimens) is on yellow and Part Three, which accommodates clearance studies and a selection of other types of sample, is on blue.

Within each Part the tests covered have been divided into the Test Groups listed on the first page of the Part. (A complete list of tests covered in the book appears as Appendix B.) Each Part then consists of two Matrices and the Entries.

Matrices

The Matrices summarize the results recorded for each drug–test or factor–test interaction, and then refer the user directly on to the specific entry number for further expansion. There are two types of Matrix: **Matrix A** lists the interactions according to the test of interest, whilst **Matrix B** lists them according to the drug or factor concerned. A particular interaction can be found in either case by the alphabetical appearance of the tests, drugs and factors. In Matrix A the tests are collated in their appropriate Test Groups.

Results summary

Each result has been classified into one of seven categories:

+B	Increase due to biological effect
−B	Decrease due to biological effect
0B	No biological effect
+A	Increase due to analytical interference
−A	Decrease due to analytical interference
0A	No analytical interference
Unc	Unclassified

The total number of results observed in each category is shown in the results summary line.

The classification of each result has been achieved using certain constraints:

Increase or decrease due to a biological effect

Drugs (or other factors) can sometimes have an effect on a biochemical component causing a genuine increase or decrease either of its concentration in the blood, or of its excretion in the urine. This effect may be due to, amongst other things: an adverse reaction; unexpected changes in the metabolism or clearance of the test substance; or a desired therapeutic effect. In this edition of the handbook the latter has not usually been included on the grounds that the effects would be anticipated. For example, it would be expected that insulin would decrease the blood glucose concentration. However, users will observe that this guideline blurs, as novel therapeutic applications have been developed for drugs following serendipitous opportunities presented by unexpected effects on biochemical tests.

A biological effect has been defined as 'being independent of the method of analysis used to assay the component'. Regretably the evidence to confirm unequivocally a genuine biological effect is frequently missing from the original article. Strictly speaking the minimal evidence needed for this classification requires the component to have been analysed by at least two analytical procedures based on different methodological principles. This idealistic objective is rarely achieveable given the current sources of information. Therefore the user must always be aware that the conclusion of an abstract represents the **net effect** of the drug/factor on a test. For example a genuine biological decrease in a component can be overwhelmed by an artefactual analytical increase, resulting in a spurious **net** increase.

Increase or decrease due to analytical interference

Drugs (or other factors) can sometimes interfere with the chemistry of the analytical method used to determine a biochemical component in blood, urine etc. In this case the result is spuriously inaccurate because of an analytical artefact. If the biochemical component is assayed by an alternative procedure based on different analytical principles, a different result would normally be obtained. Therefore, by definition, a phenomenon is an 'analytical interference' if the evidence suggests that it is method-dependent.

No biological effect, no analytical interference

These classifications are used when an abstract concludes that the balance of evidence in the original article implies that the drug or factor in question has

no significant influence on the test substance. This conclusion may need careful interpretation especially in those cases where the native drug has been studied *in vitro* to exclude analytical interference. There are many examples where the metabolites of a drug interfere but the native compound does not.

Unclassified

There are invariably a few abstracts which cannot be classified accurately according to the above conventions. For example a drug may cause an initial transient decrease in a component only to be followed by a sustained increase in concentration. In these and similar fluctuating cases, or where the evidence for a change is limited, the abstract has been designated 'unclassified'.

Entries

Each **entry** is an expansion of the results summary line for a given drug/factor-test interaction. For each observed result the published work has been summarized as follows:

Method of analysis
Dose
Duration
Subjects
Description
Summary
Reference number

The user can therefore refer on to the original published Reference if he/she wishes.

The entry can also be found without first refering to a matrix, by using the alphabetical sequence of tests and drugs/factors within each Test Group.

Method of analysis

This has only been included in the entries which comment on analytical interference, for two reasons. Firstly, biological effects are considered to be independent of the method of analysis; and secondly, far too many publications are extraordinarily vague about methodology (e.g. 'glucose was measured by routine laboratory procedures'), or thirdly, there is no mention whatsoever of the analytical method used.

Usually the policy adopted has been to include the principle of the method, with comments on modifications if and when available.

Drug, dose and duration of treatment

The user of this handbook will soon become aware of apparently contradictory statements between various entries. Very often, reports of an effect or lack of effect are explicable by taking into account the dose of drug, route of administration and duration of treatment.

Number of subjects

This field has presented far more problems than might be expected. It has been included to give quantitative insight into the extent of the population studied, e.g. a single case, 20 patients or 200 patients. Frequently it serves this purpose without complications. However, on some occasions the information may be deceptive. For example, the authors may have selected a half-dozen or fewer rare cases from 10 years or more of clinical experience without giving any numerical indication of the total population studied. It would be misleading under these circumstances to interpret the conclusion of the entry as applying universally to the entire population.

Description of patients/subjects

The aphorism applies that when making comparisons, the observer should always compare like with like. Thus when using this handbook to interpret an unexpected test result, one should note whether the entries are based, for example, on studies using healthy volunteers, patients in chronic renal failure or even animal studies! Thus the test result should always be interpreted cautiously in the light of the clinical conditions prevailing in an individual subject.

Summary

This field attempts to summarize concisely how the test is affected by the drug or factor. It should be noted that sometimes the mean value for a test result can be significantly increased or decreased by a drug or factor, but nevertheless remains within the normal reference limits. Attempts have been made to quantify changes as percentages whenever possible.

Changes in enzyme activities must be interpreted with caution since apparently dramatic 'percentage' changes might nevertheless remain within normal reference limits. This is indicated whenever possible, but regretably, many authors omit to include their laboratory's normal reference ranges for enzymes which can of course vary enormously depending on methodological differences. Often, qualification of

changes in enzyme activity have been expressed by relating them to the upper limit of normal.

Finally, the abstracts of some entries have been rejected during editing, but not because of their triviality or paucity of information. On the contrary, on some occasions it has proved impossible to summarize accurately all the complex detail into the limited format of this book. This reinforces the fact that, although the abstracts are a useful starting point, there can be no real substitute for the original source material with its corroborative detail.

USA equivalent names

Some of the tests, drugs and factors covered are known under different names in the UK and in the USA. The authors have adopted standard international terms throughout but have included the USA equivalent name in parentheses, where it occurs, in headings. The USA name also appears in correct alphabetical order in the A matrix listings for convenience. Appendix A is a full alphabetical list of drugs and factors, including the USA equivalent names. Appendix B does the same for tests.

Numbering of Entries

The Entries have all been given three-tier numbers. The first number indicates the number of the Test Group, the second the number of the test and the third the drug/factor number. The numbering begins again with each Part.

Examples showing how to find information you require are worked through on the next page.

Example

To find what drugs and other factors affect particular tests

You are investigating an epileptic patient for bone disease and want to know whether the drug Carbamazepine affects the test for blood calcium.

The contents page at the beginning of the Blood section shows that the test for calcium comes under the test group Bone and joint diseases.

Blood Specimens

1. Bone and joint diseases

Consulting editors: J.A. Nisbett and K. Spencer
Associate editors: J. Morton and J. Walker

1.1 Calcium
1.2 Ionized calcium
1.3 Parathyroid hormone
1.4 Phosphate
1.5 Urate

2. Cardiovascular diseases

Consulting editor: P.O. Collinson
Associate editors: S.J. Dawkins, L.J. Holland, M.T. Stapleton and S. Tong

2.1 Cholesterol
2.2 Creatine kinase
2.3 HDL-cholesterol

Note that the information you require is listed in Section 1.1, Calcium.

Turn then to the Matrix. In this case in Matrix 1A, under Bone and joint diseases, you will find the entry for Carbamazepine listed alphabetically within Section 1.1.

1.1 Calcium

DRUG	+B	−B	0B	+A	−A	0A	Unc	Entry
Acetaminophen	–	–	–	–	–	1	–	1.1.62
Acetazolamide	–	–	–	–	–	1	–	1.1.1
Amitriptyline	–	–	–	–	–	1	–	1.1.2
Amphotericin B	–	–	1	–	–	–	–	1.1.3
Antiepileptics	–	3	–	–	–	–	–	1.1.4
Ascorbic acid	–	–	1	–	–	–	–	1.1.5
Aspirin/salicylates	–	–	–	–	–	1	1	1.1.6
Barbital	–	–	–	–	–	1	–	1.1.7
Barbitone	–	–	–	–	–	1	–	1.1.7
Carbamazepine	–	2	–	–	–	–	–	1.1.8
Cefotaxime/ desacetylcefotaxime	–	–	–	–	–	1	–	1.1.9
Chlordiazepoxide	–	–	–	–	–	1	–	1.1.10
Chlorpheniramine	–	–	–	–	–	1	–	1.1.11
Chlorthalidone	1	–	–	–	–	–	–	1.1.12
Cimetidine	–	1	3	–	–	–	–	1.1.13
Cisplatin	–	–	–	–	–	–	1	1.1.14
Co-trimoxazole	–	–	1	–	–	–	–	1.1.15
Cocaine	–	–	–	–	–	1	–	1.1.16
Codeine	–	–	–	–	–	1	–	1.1.17
Corticosteroids	–	–	–	–	–	–	1	1.1.18
Deslanoside	–	–	–	–	–	1	–	1.1.19
Dextropropoxyphene	–	–	–	–	–	1	–	1.1.20
Diazepam	–	–	–	–	–	1	–	1.1.21
Diclofenac	–	–	–	–	–	1	–	1.1.22
Diethylpropion	–	–	–	–	–	1	–	1.1.23
Digitoxin	–	–	–	–	–	1	–	1.1.24
Digoxin	–	–	–	–	–	1	1	1.1.25
Diphenhydramine	–	–	–	–	–	1	–	1.1.26

Key

+B Increase due to biological effect
−B Decrease due to biological effect
0B No biological effect
+A Increase due to analytical interference
−A Decrease due to analytical interference
0A No analytical interference
Unc Unclassified

This shows that two published reports have found a decrease in blood calcium levels in patients taking Carbamazepine – both results were due to a biological effect rather than analytical interference (see key).

This will alert you to the fact that the result could be subject to a drug effect.

Further details of the original work will then be found under Entry 1.1.8:

1.1.8
Test Calcium
Drug Carbamazepine

+B	−B	0B	+A	−A	0A	Unc
–	2	–	–	–	–	–

−B *Decrease due to biological effect*

Specimen Serum
Dose
Duration > 1 year
Subjects 30
Description Epileptic patients in otherwise good health, and controls
Summary Patients taking carbamazepine had calcium levels which were significantly 4% lower than normal controls.
[2993]

Specimen Serum
Dose 758 mg/d (mean)
Duration Mean 1.7 years
Subjects 31
Description Epileptic outpatients and 19 matched controls
Summary Carbamazepine decreased calcium levels by 4%. Three of the 31 patients studied were hypocalcaemic.
[2128]

Each entry provides data on dosage, duration of treatment, number of subjects, description of patients and a summary abstracted from the original published articles. Finally, the original references are quoted in the Reference section at the end of the book, so that these can be consulted if necessary.

2126 O'Donnell J.R., Burnett A.K., Sheehan T. *et al. Lancet* (1981) **1**, 498.
2127 O'Gorman T., Koff R.S. *Gastroenterology* (1977) **72**, 726–8.
2128 O'Hare J.A., Duggan B. *et al. Acta Neurol Scand* (1980) **62**, 282–6.
2129 O'Hare J.A., Murnaghan D.J. *Am J Med* (1984) **77**, 229–32.
2130 O'Kell R.T., Knepper D.F. *Clin Chem* (1972) **18**, 1039.
2131 O'Kelly R., McKenna T.J. *Ir J Med Sci* (1982) **151**, 378–83.
2132 O'Leary P.C., Edelman J., Riley W.J., *Clin Chim Acta* (1982) **126**, 323–6.
2133 O'Leary T.D., Prior A.P., Hallsworth C.E. *Clin Chem* (1981) **27**, 1950.

To find what tests are affected by a particular drug

You have a patient on Allopurinol and need to know what blood tests are affected by this drug.

This information is contained in the B Matrices, in this case Matrix 1B.

Allopurinol

TEST	+B	−B	0B	+A	−A	0A	Unc	Entry
Alanine aminotransferase	1	–	–	–	–	–	–	6.1.1
Alkaline phosphatase	3	–	–	–	–	–	–	6.3.1
Aspartate aminotransferase	3	–	–	–	–	–	–	6.5.1
Bilirubin	1	–	1	–	–	–	1	6.7.1
Creatinine	1	–	–	–	–	–	–	5.1.3
Lactate dehydrogenase	1	–	–	–	–	–	1	2.5.1
Phenytoin	–	–	–	–	–	–	1	7.6.1
Theophylline	1	–	2	–	–	–	–	7.8.2
Urate	–	3	–	–	1	1	–	1.5.3

You can then find further information the same way as above.

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Part One

Blood Specimens

1. Bone and joint diseases

Consulting editors: J.A. Nisbett and K. Spencer
Associate editors: J. Morton and J. Walker

1.1 Calcium
1.2 Ionized calcium
1.3 Parathyroid hormone
1.4 Phosphate
1.5 Urate

2. Cardiovascular diseases

Consulting editor: P.O. Collinson
Associate editors: S.J. Dawkins, L.J. Holland, M.T. Stapleton and S. Tong

2.1 Cholesterol
2.2 Creatine kinase
2.3 HDL-cholesterol
2.4 LDL-cholesterol
2.5 Lactate dehydrogenase
2.6 Triglycerides

3. Glucose and diabetes

Consulting editor: J.M. Smith
Associate editors: S.J. Dawkins, G. Dedhia and L.J. Holland

3.1 Glucose
3.2 Glucose tolerance test
3.3 Insulin
3.4 Ketone bodies

4. Hormones

Consulting editors: J.A. Cristofides and M. Eggerton
Associate editors: L.J. Holland and S.J. Dawkins

4.1 Adrenaline (Epinephrine)
4.2 Catecholamines (total)
4.3 Cortisol
4.4 Follicle-stimulating hormone
4.5 Free testosterone
4.6 Insulin stress test
4.7 LH-releasing hormone test
4.8 Luteinizing hormone (LH)
4.9 Noradrenaline (Norepinephrine)
4.10 Oestradiol (Estradiol)
4.11 Oestriol (Estriol)
4.12 Oestrogens (total)
4.13 Progesterone
4.14 Prolactin
4.15 Sex-hormone binding globulin
4.16 Testosterone

5. Kidney function tests

Consulting editor: K. Spencer
Associate editors: K. Sim and S. Tong

5.1 Creatinine
5.2 Urea (Blood urea nitrogen)

6. Liver function tests

Consulting editors: P.R.N. Kind, J. Morton and G. Mould
Associate editors: M.T. Stapleton and S. Tong

6.1 Alanine aminotransferase
6.2 Albumin
6.3 Alkaline phosphatase
6.4 Ammonia
6.5 Aspartate aminotransferase
6.6 Bile acids
6.7 Bilirubin
6.8 Bromosulphthalein retention
6.9 γ-glutamyltransferase
6.10 5′-Nucleotidase
6.11 Total protein

7. Therapeutic drug monitoring

Consulting editor: J. Morton

7.1 Carbamazepine
7.2 Digoxin
7.3 Lithium
7.4 Paracetamol (Acetaminophen)
7.5 Phenobarbitone (Phenobarbital)
7.6 Phenytoin
7.7 Primidone
7.8 Theophylline
7.9 Valproate

8. Thyroid function tests

Consulting editor: R. Goodburn
Associate editor: L.J. Holland

8.1 Free thyroxine
8.2 Free thyroxine index
8.3 Free triiodothyronine
8.4 Free triiodothyronine index
8.5 Reverse triiodothyronine
8.6 TSH-releasing hormone test
8.7 Thyroid hormone-binding capacity
8.8 Thyroid-stimulating hormone (TSH)
8.9 Thyroxine
8.10 Thyroxine uptake
8.11 Thyroxine-binding globulin
8.12 Thyroxine-binding prealbumin
8.13 Triiodothyronine
8.14 Triiodothyronine uptake

Matrix 1A Listed by test

1 Bone and joint diseases

1.1 Calcium

DRUG	+B	−B	0B	+A	−A	0A	Unc	Entry
Acetaminophen	–	–	–	–	–	1	–	1.1.62
Acetazolamide	–	–	–	–	–	1	–	1.1.1
Amitriptyline	–	–	–	–	–	1	–	1.1.2
Amphotericin B	–	–	1	–	–	–	–	1.1.3
Antiepileptics	–	3	–	–	–	–	–	1.1.4
Ascorbic acid	–	–	1	–	–	–	–	1.1.5
Aspirin/salicylates	–	–	–	–	–	1	1	1.1.6
Barbital	–	–	–	–	–	1	–	1.1.7
Barbitone	–	–	–	–	–	1	–	1.1.7
Carbamazepine	–	2	–	–	–	–	–	1.1.8
Cefotaxime/ desacetylcefotaxime	–	–	–	–	–	1	–	1.1.9
Chlordiazepoxide	–	–	–	–	–	1	–	1.1.10
Chlorpheniramine	–	–	–	–	–	1	–	1.1.11
Chlorthalidone	1	–	–	–	–	–	–	1.1.12
Cimetidine	–	1	3	–	–	–	–	1.1.13
Cisplatin	–	–	–	–	–	–	1	1.1.14
Co-trimoxazole	–	–	1	–	–	–	–	1.1.15
Cocaine	–	–	–	–	–	1	–	1.1.16
Codeine	–	–	–	–	–	1	–	1.1.17
Corticosteroids	–	–	–	–	–	–	1	1.1.18
Deslanoside	–	–	–	–	–	1	–	1.1.19
Dextropropoxyphene	–	–	–	–	–	1	–	1.1.20
Diazepam	–	–	–	–	–	1	–	1.1.21
Diclofenac	–	–	–	–	–	1	–	1.1.22
Diethylpropion	–	–	–	–	–	1	–	1.1.23
Digitoxin	–	–	–	–	–	1	–	1.1.24
Digoxin	–	–	–	–	–	1	1	1.1.25
Diphenhydramine	–	–	–	–	–	1	–	1.1.26
Estrogens	–	1	–	–	–	–	–	1.1.59
Ethacrynate sodium	–	–	–	–	–	1	–	1.1.27
Ethchlorvynol	–	–	–	–	–	1	–	1.1.28
Ethinamate	–	–	–	–	–	1	–	1.1.29
Etretinate	–	–	–	–	–	–	1	1.1.30
Flurazepam	–	–	–	–	–	1	–	1.1.31
Frusemide	1	–	1	–	–	1	–	1.1.32
Furosemide	1	–	1	–	–	1	–	1.1.32
Gentamicin	–	–	–	–	–	–	1	1.1.33
Glucagon	–	2	1	–	–	–	–	1.1.34
Glutethimide	–	–	–	–	–	1	–	1.1.35
Growth hormone	–	–	–	–	–	–	1	1.1.36
Heparin	–	–	–	–	1	–	–	1.1.37
Hydrochlorothiazide	1	–	–	–	–	–	–	1.1.38
Ibuprofen	–	–	–	–	–	1	–	1.1.39
Indomethacin	–	–	–	–	–	1	–	1.1.40
Ketoprofen	–	–	–	–	–	1	–	1.1.41
Lidocaine	–	–	–	–	–	1	–	1.1.42
Lignocaine	–	–	–	–	–	1	–	1.1.42
Lithium	–	–	2	–	–	–	5	1.1.43
Lithium carbonate	1	–	–	–	–	–	–	1.1.44
Magnesium citrate laxative	–	–	–	–	–	–	1	1.1.45
Magnesium compounds	–	–	–	–	–	–	1	1.1.46
Mannitol	–	–	–	–	–	1	–	1.1.47
Meperidine	–	–	–	–	–	1	–	1.1.65
Meprobamate	–	–	–	–	–	1	–	1.1.48
Meralluride	–	–	–	–	–	1	–	1.1.49
Mesoridazine	–	–	–	–	–	1	–	1.1.50
Methadone	–	–	–	–	–	1	–	1.1.51
Methaqualone	–	–	–	–	–	1	–	1.1.52
Methprylon	–	–	–	–	–	1	–	1.1.53
Methylphenidate	–	–	–	–	–	1	–	1.1.54
Metoprolol	–	–	1	–	–	–	–	1.1.55
Morphine	–	–	–	–	–	1	–	1.1.56
Nifedipine	–	–	1	–	–	–	–	1.1.57
Nortriptyline	–	–	–	–	–	1	–	1.1.58
Oestrogens	–	1	–	–	–	–	–	1.1.59
Oral contraceptive combined pill	–	–	1	–	–	–	–	1.1.60
Oral contraceptive progestogen-only pill	–	–	1	–	–	–	–	1.1.61
Paracetamol	–	–	–	–	–	1	–	1.1.62
Pentobarbital	–	–	–	–	–	1	–	1.1.63
Pentobarbitone	–	–	–	–	–	1	–	1.1.63
Perphenazine	–	–	–	–	–	1	–	1.1.64
Pethidine	–	–	–	–	–	1	–	1.1.65
Phenacetin	–	–	–	–	–	1	–	1.1.66
Pheneturide	–	1	–	–	–	–	–	1.1.67
Phenobarbital	–	1	–	–	–	2	–	1.1.68
Phenobarbitone	–	1	–	–	–	2	–	1.1.68
Phentolamine	–	–	–	–	–	–	1	1.1.69
Phenytoin	–	2	–	–	–	2	–	1.1.70
Phosphate enema/laxative	–	4	–	–	–	–	–	1.1.71
Practolol	–	–	1	–	–	–	–	1.1.72
Primidone	–	1	–	–	–	–	–	1.1.73
Probucol	–	–	–	–	–	–	1	1.1.74
Procainamide	–	–	–	–	–	1	–	1.1.75
Promethazine	–	–	–	–	–	1	–	1.1.76
Propoxyphene	–	–	–	–	–	1	–	1.1.20
Propranolol	–	–	2	–	–	1	2	1.1.77
Pyribenzamine	–	–	–	–	–	1	–	1.1.78
Quinidine	–	–	–	–	–	2	–	1.1.79
Quinine	–	–	–	–	–	1	–	1.1.80
Reserpine	–	–	–	–	–	1	–	1.1.81
Secobarbital	–	–	–	–	–	1	–	1.1.82
Sodium fluoride	–	1	–	–	–	–	2	1.1.83
Stilboestrol	1	–	–	–	–	–	–	1.1.84
Streptozocin	–	–	–	–	–	–	1	1.1.85
Sulfamethoxazole/ trimethoprim	–	–	1	–	–	–	–	1.1.15
Sulphonamides	–	–	–	–	–	–	1	1.1.86
TRH	–	1	–	–	–	–	–	1.1.87
Tamoxifen	3	–	–	–	–	–	–	1.1.88
Tetracyclines	–	–	1	–	–	–	–	1.1.89

Key

+B	Increase due to biological effect
−B	Decrease due to biological effect
0B	No biological effect
+A	Increase due to analytical interference
−A	Decrease due to analytical interference
0A	No analytical interference
Unc	Unclassified

DRUG	+B	−B	0B	+A	−A	0A	Unc	Entry
Thiazides	–	–	1	–	–	–	–	1.1.90
Thiopental	–	–	–	–	–	1	–	1.1.91
Thiopentone	–	–	–	–	–	1	–	1.1.91
Thyrotoxicosis treatment	–	1	–	–	–	–	–	1.1.92
Triamterene	–	–	1	–	–	–	–	1.1.93

FACTOR	+B	−B	0B	+A	−A	0A	Unc	Entry
Alcohol/ethanol	–	–	1	–	–	1	–	1.1.94
Aluminium	1	–	–	–	–	–	–	1.1.95
Aminophenazone	–	–	–	–	–	1	–	1.1.96
Aminopyrine	–	–	–	–	–	1	–	1.1.96
Applicator stick	–	–	–	1	–	–	–	1.1.97
Bed-rest	1	–	–	–	–	–	–	1.1.98
Bilirubin	–	–	–	–	–	1	–	1.1.99
Blindness	–	–	1	–	–	–	–	1.1.100
Cadmium	–	–	–	–	–	–	1	1.1.101
Caffeine/coffee	–	–	–	–	–	2	–	1.1.102
Circadian/diurnal variation	–	–	–	–	–	–	2	1.1.103
Comparison of serum/plasma	–	–	–	–	–	1	1	1.1.104
Cork stoppers	–	–	–	1	–	–	–	1.1.105
Dioxin	–	1	–	–	–	–	–	1.1.106
Disulphine blue	–	–	–	–	–	1	–	1.1.107
Ethylene glycol	–	1	–	–	–	–	–	1.1.108
Exercise	5	–	2	–	–	–	–	1.1.109
Glucose	–	1	–	–	–	–	–	1.1.110
Haemodialysis	–	–	–	–	–	–	1	1.1.111
Haemolysis	–	–	1	–	–	2	–	1.1.112
High protein diet	–	–	–	–	–	–	1	1.1.113
Hyperthyroidism	2	–	–	–	–	–	–	1.1.114
Intralipid/Liposyn	–	–	–	1	–	–	–	1.1.115
Lactation	–	1	–	–	–	–	1	1.1.116
Low phosphate diet	1	–	–	–	–	–	–	1.1.117
Methanol	–	–	–	–	–	1	–	1.1.118
Myocardial infarction	–	–	1	–	–	–	–	1.1.119
Oxalate	–	1	–	–	–	–	–	1.1.120
Phototherapy	–	1	–	–	–	–	–	1.1.121
Phytate	–	1	–	–	–	–	–	1.1.122
Posture	–	–	–	–	–	–	2	1.1.123
Pregnancy	–	3	–	–	–	–	–	1.1.124
Rheumatoid arthritis	1	1	–	–	–	–	–	1.1.125
Silicone implants	–	–	–	–	–	–	1	1.1.126
Stainless steel	–	–	–	–	1	–	1	1.1.127
Storage	–	–	–	–	1	1	1	1.1.128
Thyrotoxicosis	–	–	1	–	–	–	–	1.1.129
Triglyceride	–	–	–	–	–	1	–	1.1.130
Vagotomy	–	–	1	–	–	–	–	1.1.131
Vegetarian diet	–	–	1	–	–	–	–	1.1.132
Venous stasis	2	–	–	–	–	–	–	1.1.133

1.2 Ionized calcium

DRUG	+B	−B	0B	+A	−A	0A	Unc	Entry
Lithium	1	–	1	–	–	–	–	1.2.1

FACTOR	+B	−B	0B	+A	−A	0A	Unc	Entry
Alcohol/ethanol	–	–	1	–	–	–	–	1.2.2
Bed-rest	1	–	–	–	–	–	–	1.2.3
Bilirubin	–	1	–	–	–	–	–	1.2.4
Cardiac arrest	–	1	–	–	–	–	–	1.2.5
Diabetes	–	1	–	–	–	–	–	1.2.6
Exercise	1	–	–	–	–	–	–	1.2.7
Gallium nitrate	–	–	–	–	–	–	1	1.2.8
Herbicides	–	1	–	–	–	–	–	1.2.9
Hydrogen ion concentration (pH)	–	1	–	–	–	–	–	1.2.10
Hypertension	–	1	–	–	–	–	–	1.2.11
Method evaluation	–	–	–	–	–	–	1	1.2.12
Rheumatoid arthritis	1	–	–	–	–	–	–	1.2.13
Sample collection and handling	–	–	–	–	–	–	1	1.2.14
Storage	–	–	–	–	–	–	1	1.2.15
Venous stasis	1	–	–	–	–	–	–	1.2.16

1.3 Parathyroid hormone

DRUG	+B	−B	0B	+A	−A	0A	Unc	Entry
Cimetidine	–	–	2	–	–	–	–	1.3.1
Lithium	–	–	2	–	–	–	–	1.3.2
TRH	–	–	1	–	–	–	–	1.3.3
Thyrotoxicosis treatment	1	–	–	–	–	–	–	1.3.4

FACTOR	+B	−B	0B	+A	−A	0A	Unc	Entry
Aluminium	–	1	–	–	–	–	–	1.3.5
Ethylene glycol	–	–	–	–	–	–	1	1.3.6
Exercise	–	–	1	–	–	–	–	1.3.7
Gallium nitrate	1	–	–	–	–	–	–	1.3.8
Lactation	1	1	–	–	–	–	1	1.3.9
Thyrotoxicosis	–	–	1	–	–	–	–	1.3.10
Total parenteral nutrition	–	–	1	–	–	–	–	1.3.11
Vagotomy	–	–	1	–	–	–	–	1.3.12
Vegetarian diet	1	–	–	–	–	–	–	1.3.13

1.4 Phosphate

DRUG	+B	−B	0B	+A	−A	0A	Unc	Entry
Acetaminophen	–	–	–	–	–	1	–	1.4.36
Amitriptyline	–	–	–	–	–	1	–	1.4.1
Antiepileptics	–	–	2	–	–	–	–	1.4.2
Ascorbic acid	–	–	1	–	–	–	–	1.4.3
Barbital	–	–	–	–	–	1	–	1.4.4
Barbitone	–	–	–	–	–	1	–	1.4.4
Carbamazepine	–	–	2	–	–	–	–	1.4.5
Cefotaxime/ desacetylcefotaxime	–	–	–	–	–	–	1	1.4.6
Chlordiazepoxide	–	–	–	–	–	1	–	1.4.7
Chlorpheniramine	–	–	–	–	–	1	–	1.4.8
Cimetidine	–	–	2	–	–	–	–	1.4.9
Co-trimoxazole	–	–	1	–	–	–	–	1.4.10
Cocaine	–	–	–	–	–	1	–	1.4.11
Codeine	–	–	–	–	–	1	–	1.4.12
Dextropropoxyphene	–	–	–	–	–	1	–	1.4.13
Diazepam	–	–	–	–	–	1	–	1.4.14
Diethylpropion	–	–	–	–	–	1	–	1.4.15
Diphenhydramine	–	–	–	–	–	1	–	1.4.16
Estrogens	–	2	–	–	–	–	–	1.4.33
Ethchlorvynol	–	–	–	–	–	1	–	1.4.17
Ethinamate	–	–	–	–	–	1	–	1.4.18
Flurazepam	–	–	–	–	–	1	–	1.4.19
Glucose–insulin–potassium	–	1	–	–	–	–	–	1.4.20
Glutethimide	–	–	–	–	–	1	–	1.4.21
Hydrochlorothiazide	–	1	–	–	–	–	–	1.4.22
Meperidine	–	–	–	–	–	1	–	1.4.39
Meprobamate	–	–	–	–	–	1	–	1.4.23
Mesoridazine	–	–	–	–	–	1	–	1.4.24
Methadone	–	–	–	–	–	1	–	1.4.25
Methaqualone	–	–	–	–	–	1	–	1.4.26
Methicillin	–	–	–	1	–	–	–	1.4.27
Methprylon	–	–	–	–	–	1	–	1.4.28
Methylphenidate	–	–	–	–	–	1	–	1.4.29
Metoprolol	1	–	–	–	–	–	–	1.4.30
Morphine	–	–	–	–	–	1	–	1.4.31
Nortriptyline	–	–	–	–	–	1	–	1.4.32
Oestrogens	–	2	–	–	–	–	–	1.4.33
Oral contraceptive combined pill	–	–	1	–	–	–	–	1.4.34
Oral contraceptive progestogen-only pill	–	–	1	–	–	–	–	1.4.35

DRUG	+B	−B	0B	+A	−A	0A	Unc	Entry
Paracetamol	–	–	–	–	–	1	–	1.4.36
Pentobarbital	–	–	–	–	–	1	–	1.4.37
Pentobarbitone	–	–	–	–	–	1	–	1.4.37
Perphenazine	–	–	–	–	–	1	–	1.4.38
Pethidine	–	–	–	–	–	1	–	1.4.39
Phenobarbital	–	–	–	–	–	1	–	1.4.40
Phenobarbitone	–	–	–	–	–	1	–	1.4.40
Phenytoin	–	–	–	–	–	1	1	1.4.41
Promethazine	–	–	–	–	–	1	–	1.4.42
Propoxyphene	–	–	–	–	–	1	–	1.4.13
Propranolol	2	–	–	–	–	–	–	1.4.43
Pyribenzamine	–	–	–	–	–	1	–	1.4.44
Quinidine	–	–	–	–	–	1	–	1.4.45
Quinine	–	–	–	–	–	1	–	1.4.46
Secobarbital	–	–	–	–	–	1	–	1.4.47
Sulfamethoxazole/ trimethoprim	–	–	1	–	–	–	–	1.4.10
Tetracyclines	–	–	1	–	–	–	–	1.4.48
Thiopental	–	–	–	–	–	1	–	1.4.49
Thiopentone	–	–	–	–	–	1	–	1.4.49
Thyrotoxicosis treatment	–	1	–	–	–	–	–	1.4.50

FACTOR	+B	−B	0B	+A	−A	0A	Unc	Entry
Alcohol/ethanol	–	–	1	–	–	1	–	1.4.51
Aluminium	–	–	1	–	–	–	–	1.4.52
Cadmium	–	2	–	–	–	–	–	1.4.53
Caffeine/coffee	–	–	–	–	–	1	–	1.4.54
Circadian/diurnal variation	–	–	–	–	–	–	1	1.4.55
Comparison of serum/plasma	–	–	–	–	–	–	1	1.4.56
Disulphine blue	–	–	–	–	–	1	–	1.4.57
Exercise	1	–	1	–	–	–	–	1.4.58
Gallium nitrate	–	1	–	–	–	–	–	1.4.59
Haemolysis	–	–	–	1	–	–	2	1.4.60
Hypertension	–	1	–	–	–	–	–	1.4.61
Lactation	–	–	1	–	–	–	1	1.4.62
Methanol	–	–	–	–	–	1	–	1.4.63
Pregnancy	1	1	–	–	–	–	–	1.4.64
Rheumatoid arthritis	–	1	–	–	–	–	–	1.4.65
Thyrotoxicosis	–	–	1	–	–	–	–	1.4.66
Total parenteral nutrition	–	1	–	–	–	–	1	1.4.67
Vagotomy	–	–	1	–	–	–	–	1.4.68

1.5 Urate

DRUG	+B	−B	0B	+A	−A	0A	Unc	Entry
Acetaminophen	–	–	–	5	–	6	1	1.5.136
Acetazolamide	2	–	–	–	–	1	–	1.5.1
Acetohexamide	–	1	–	–	–	–	–	1.5.2
Allopurinol	–	3	–	–	1	1	–	1.5.3
Alprenolol	3	–	–	–	–	–	–	1.5.4
Amiloride	–	–	1	–	–	–	–	1.5.5
Aminophylline	–	–	–	–	–	1	–	1.5.6
Amithiozone	–	–	–	–	–	–	1	1.5.182
Amitriptyline	–	–	–	–	–	2	–	1.5.7
Amobarbital	–	–	–	–	–	1	–	1.5.11
Amoxapine	1	–	–	–	–	–	–	1.5.8
Amphotericin B	–	–	–	–	–	1	–	1.5.9
Ampicillin	–	–	–	–	–	1	–	1.5.10
Amylobarbitone	–	–	–	–	–	1	–	1.5.11
Anaesthetics	–	–	1	–	–	–	–	1.5.12
Ascorbic acid	–	2	3	3	5	6	–	1.5.13
Aspirin/salicylates	1	4	–	–	–	7	2	1.5.14
Atenolol	1	–	1	–	–	–	–	1.5.15
Azathioprine	–	1	–	–	–	–	–	1.5.16
Azlocillin	–	2	–	–	–	–	–	1.5.17
Barbital	–	–	–	–	–	2	–	1.5.18
Barbitone	–	–	–	–	–	2	–	1.5.18
Bendrofluazide	2	–	–	–	–	–	–	1.5.19
Bendroflumethiazide	2	–	–	–	–	–	–	1.5.19

DRUG	+B	−B	0B	+A	−A	0A	Unc	Entry
Benzylpenicillin	–	–	–	–	–	1	–	1.5.20
Bezafibrate	–	–	1	–	–	–	–	1.5.21
Bumetanide	2	–	–	–	–	–	–	1.5.22
Butabarbital	–	–	–	–	–	1	–	1.5.23
Captopril	–	2	1	–	–	–	–	1.5.24
Carbamazepine	–	1	–	–	–	–	–	1.5.25
Carbenicillin	–	–	–	–	–	1	–	1.5.26
Cefotaxime/ desacetylcefotaxime	–	–	–	–	–	1	–	1.5.27
Cephazolin	–	–	–	–	–	1	–	1.5.28
Chlordiazepoxide	–	–	–	–	–	1	–	1.5.29
Chlormezanone	–	–	–	–	–	1	–	1.5.30
Chlorothiazide	3	–	–	–	–	–	–	1.5.31
Chlorphenesin	–	–	–	–	–	1	–	1.5.32
Chlorpheniramine	–	–	–	–	–	2	–	1.5.33
Chlorprothixene	–	2	–	–	–	1	–	1.5.34
Chlorthalidone	6	–	–	–	–	–	–	1.5.35
Cimetidine	1	–	–	–	–	–	–	1.5.36
Clofibrate	1	7	2	–	–	–	–	1.5.37
Cocaine	–	–	–	–	–	2	–	1.5.38
Codeine	–	–	–	–	–	2	–	1.5.39
Contraceptive implants	–	–	1	–	–	–	–	1.5.40
Corticotrophin	–	4	–	–	–	–	–	1.5.41
Cortisone	–	1	–	–	–	–	–	1.5.42
Cyclopenthiazide	–	–	1	–	–	–	–	1.5.43
Cyclosporin	3	–	–	–	–	–	–	1.5.44
Desipramine hydrochloride	–	–	–	–	–	1	–	1.5.45
Dextropropoxyphene	–	–	–	–	–	1	–	1.5.46
Diazepam	–	–	–	–	–	3	–	1.5.47
Diazoxide	2	–	–	–	–	–	–	1.5.48
Diclofenac	–	–	–	2	–	–	–	1.5.49
Diethylpropion	–	–	–	–	–	1	–	1.5.50
Diflunisal	–	4	–	–	–	–	–	1.5.51
Digitoxin	–	–	–	–	–	1	–	1.5.52
Digoxin	–	–	–	–	–	1	–	1.5.53
Diphenhydramine	–	–	–	–	–	2	–	1.5.54
Disulfiram	–	–	–	–	1	1	–	1.5.55
Diuretics	2	–	–	–	–	–	–	1.5.56
Dopamine	–	–	–	1	–	–	–	1.5.57
Doxycycline	–	–	1	–	–	–	–	1.5.58
Enalapril	–	2	–	–	–	–	–	1.5.59
Estrogens	–	1	–	–	–	–	–	1.5.124
Ethacrynic acid	1	–	1	–	–	–	–	1.5.60
Ethambutol	6	–	–	–	–	–	–	1.5.61
Ethchlorvynol	–	–	–	–	–	2	–	1.5.62
Ethinamate	–	–	–	–	–	1	–	1.5.63
Ethosuximide	–	–	–	–	–	1	–	1.5.64
Ethyl biscoumacetate	–	1	–	–	–	–	–	1.5.65
Etoposide	–	–	–	1	–	2	–	1.5.66
Fenofibrate	–	–	1	–	–	–	–	1.5.67
Fenoprofen	–	1	–	–	–	–	–	1.5.68
Flurazepam	–	–	–	–	–	1	–	1.5.69
Flurbiprofen	1	–	–	–	–	–	–	1.5.70
Frusemide	5	–	1	–	–	–	–	1.5.71
Furosemide	5	–	1	–	–	–	–	1.5.71
Gentamicin	–	–	–	–	1	1	–	1.5.72
Gentisic acid	–	–	–	–	–	2	–	1.5.73
Glutethimide	–	–	–	–	–	1	–	1.5.74
Guaiphenesin	–	1	–	–	–	–	–	1.5.75
Halofenate	–	6	–	–	–	–	–	1.5.76
Halothane	2	1	2	–	–	–	–	1.5.77
Heparin	–	–	–	–	1	1	–	1.5.78
Hexobarbital	–	–	–	–	–	1	–	1.5.79
Hydralazine	–	–	–	–	–	1	–	1.5.80
Hydrochlorothiazide	8	–	1	–	–	–	1	1.5.81
Ibuprofen	–	1	–	–	–	2	–	1.5.82
Immunoglobulin	–	–	–	1	–	–	–	1.5.83
Indanone	–	–	–	–	–	–	1	1.5.84
Indapamide	1	–	1	–	–	–	–	1.5.85

DRUG	+B	−B	0B	+A	−A	0A	Unc	Entry
Indomethacin	–	–	2	1	–	2	–	1.5.86
Insulin	–	1	–	–	–	1	–	1.5.87
Iphosphamide	–	–	–	–	–	–	1	1.5.88
Iproniazid	–	–	–	1	–	1	–	1.5.89
Isoflurane	–	–	1	–	–	–	–	1.5.90
Isoniazid	–	–	–	1	–	1	–	1.5.91
Ketoprofen	–	–	–	–	–	2	–	1.5.92
Labetalol	–	–	2	–	–	–	–	1.5.93
Latamoxef	–	–	–	–	–	1	–	1.5.94
Levodopa	3	–	1	2	1	3	–	1.5.95
Mecamylamine	–	–	–	–	–	–	1	1.5.96
Mefruside	1	1	–	–	–	–	–	1.5.97
Meperidine	–	–	–	–	–	2	–	1.5.141
Mephenesin carbamate	–	–	–	–	–	1	–	1.5.98
Mephobarbital	–	–	–	–	–	1	–	1.5.114
Meprobamate	–	–	–	–	–	1	–	1.5.99
Mercaptopurine	–	–	–	–	1	–	–	1.5.100
Mesoridazine	–	–	–	–	–	1	–	1.5.101
Mesuximide	–	–	–	–	–	1	–	1.5.102
Methadone	–	–	–	–	–	2	–	1.5.103
Methamphetamine	–	–	–	–	–	1	–	1.5.104
Methapyrilene	–	–	–	–	–	1	–	1.5.105
Methaqualone	–	–	–	–	–	1	–	1.5.106
Methicillin	–	–	–	–	–	1	–	1.5.107
Methohexitone sodium	–	–	–	–	–	1	–	1.5.108
Methoxyflurane	7	–	–	–	–	–	–	1.5.109
Methprylon	–	–	–	–	–	1	–	1.5.110
Methylclothiazide	1	–	–	–	–	–	–	1.5.111
Methyldopa	–	–	–	1	1	3	–	1.5.112
Methylphenidate	–	–	–	–	–	1	–	1.5.113
Methylphenobarbitone	–	–	–	–	–	1	–	1.5.114
Metolazone	1	–	–	–	–	–	–	1.5.115
Metoprolol	1	–	–	–	–	–	–	1.5.116
Morphine	–	–	–	–	–	2	–	1.5.117
Moxalactam	–	–	–	–	–	1	–	1.5.94
Nafcillin	–	–	–	–	–	1	–	1.5.118
Naproxen	–	–	1	–	–	–	–	1.5.119
Niacin	3	–	–	–	–	–	–	1.5.120
Nicotinic acid	3	–	–	–	–	–	–	1.5.120
Nifedipine	–	–	1	–	–	–	–	1.5.121
Nitrofurantoin	–	–	–	–	–	1	–	1.5.122
Nortriptyline	–	–	–	–	–	2	–	1.5.123
Oestrogens	–	1	–	–	–	–	–	1.5.124
Oral contraceptive combined pill	–	–	1	–	–	–	–	1.5.125
Oral contraceptive progestogen-only pill	–	–	2	–	–	–	–	1.5.126
Orphenadrine	–	–	–	–	–	1	–	1.5.127
Oxametacin	–	–	–	–	–	–	1	1.5.128
Oxaprozin	–	1	–	–	–	–	–	1.5.129
Oxazepam	–	–	–	–	–	1	–	1.5.130
Oxipurinol	–	–	–	–	–	2	–	1.5.131
Oxprenolol	–	–	1	–	–	–	–	1.5.132
Pancrelipase	1	–	–	–	–	–	–	1.5.133
Papaverine	–	–	–	–	–	1	–	1.5.134
Para-aminosalicylic acid	–	–	–	–	–	1	–	1.5.135
Paracetamol	–	–	–	5	–	6	1	1.5.136
Paraldehyde	–	–	–	–	–	1	–	1.5.137
Pempidine	1	–	–	–	–	–	–	1.5.138
Pentobarbital	–	–	–	–	–	2	–	1.5.139
Pentobarbitone	–	–	–	–	–	2	–	1.5.139
Perphenazine	–	–	–	–	–	1	–	1.5.140
Pethidine	–	–	–	–	–	2	–	1.5.141
Phenacetin	–	–	–	1	–	1	–	1.5.142
Phencyclidine	–	–	–	–	–	1	–	1.5.143
Phenobarbital	–	–	–	–	–	4	–	1.5.144
Phenobarbitone	–	–	–	–	–	4	–	1.5.144
Phenoperidine	–	1	–	–	–	–	–	1.5.145
Phensuximide	–	–	–	–	–	1	–	1.5.146
Phenylbutazone	–	2	–	–	–	1	–	1.5.147
Phenylephrine	–	–	–	–	–	1	–	1.5.148
Phenytoin	–	1	–	–	–	2	–	1.5.149
Pindolol	–	–	1	–	–	–	–	1.5.150
Piperacillin	–	1	–	–	–	–	–	1.5.151
Piretanide	1	–	–	–	–	–	–	1.5.152
Piroxicam	–	1	–	–	–	–	–	1.5.153
Prazosin	–	–	1	–	–	–	–	1.5.154
Prednisone	–	–	1	–	–	–	–	1.5.155
Primidone	–	1	–	–	–	–	–	1.5.156
Probenecid	–	2	–	–	–	1	–	1.5.157
Probucol	–	–	1	–	–	–	–	1.5.158
Procainamide	–	–	–	–	–	1	–	1.5.159
Procaine	–	–	–	–	–	1	–	1.5.160
Promethazine	–	–	–	–	–	1	–	1.5.161
Propoxyphene	–	–	–	–	–	1	–	1.5.46
Propranolol	4	1	4	–	–	–	–	1.5.162
Proquazone	–	1	–	–	–	–	–	1.5.163
Pyrazinamide	4	–	–	–	–	–	–	1.5.164
Pyribenzamine	–	–	–	–	–	1	–	1.5.165
Quinethazone	1	–	–	–	–	–	–	1.5.166
Quinidine	–	–	–	–	–	2	–	1.5.167
Quinine	–	–	–	–	–	2	–	1.5.168
Secobarbital	–	–	–	–	–	2	–	1.5.169
Sodium fluoride	–	–	–	–	–	2	–	1.5.170
Spironolactone	–	–	2	–	–	–	–	1.5.171
Stilboestrol	–	1	–	–	–	–	–	1.5.172
Streptozocin	–	1	–	–	–	–	–	1.5.173
Sulfanilamide	–	–	–	–	–	1	–	1.5.174
Suloctidil	–	1	–	–	–	–	–	1.5.175
Sulphadiazine	–	–	–	–	–	1	–	1.5.176
Sulphaguanidine	–	–	–	–	–	1	–	1.5.177
Sulphinpyrazone	–	3	–	–	–	–	–	1.5.178
Tetracyclines	–	–	–	–	–	1	–	1.5.179
Theobromine	–	–	–	–	–	1	–	1.5.180
Theophylline	1	–	1	–	–	2	–	1.5.181
Thiacetazone	–	–	–	–	–	–	1	1.5.182
Thiadiazole derivatives	2	–	1	–	–	–	–	1.5.183
Thiopental	–	–	–	–	–	2	–	1.5.184
Thiopentone	–	–	–	–	–	2	–	1.5.184
Ticrynafen	–	11	–	–	–	–	–	1.5.185
Tienilic acid	–	11	–	–	–	–	–	1.5.185
Timolol	1	–	1	–	–	–	–	1.5.186
Triacetyl azauridine	–	1	–	–	–	–	–	1.5.187
Triamterene	–	–	1	–	–	–	–	1.5.188
Trichlorethylene	–	–	–	–	–	–	1	1.5.189
Valproate	–	–	1	–	–	–	–	1.5.190
Viokase	1	–	–	–	–	–	–	1.5.191
Warfarin	–	–	–	–	–	1	–	1.5.192

FACTOR	+B	−B	0B	+A	−A	0A	Unc	Entry
Age	1	–	–	–	–	–	–	1.5.193
Alcohol/ethanol	13	–	1	–	–	1	–	1.5.194
Aminophenazone	–	–	–	–	–	4	–	1.5.195
Aminopyrine	–	–	–	–	–	4	–	1.5.195
Angina	–	–	1	–	–	–	–	1.5.196
Asthma	2	–	–	–	–	–	–	1.5.197
Beryllium	1	–	–	–	–	–	–	1.5.198
Bilirubin	–	–	–	1	3	4	–	1.5.199
Blindness	1	–	–	–	–	–	–	1.5.200
Caesarian section	–	–	1	–	–	–	–	1.5.201
Caffeine/coffee	–	–	–	–	–	6	–	1.5.202
Cancer of the lymphatic system	1	–	–	–	–	–	–	1.5.203
Cardiac disease	1	–	–	–	–	–	–	1.5.204
Catalase	–	–	–	–	1	–	–	1.5.205
Cataract operations	–	1	–	–	–	–	–	1.5.206
Citrate	–	–	–	–	–	3	–	1.5.207
Comparison of serum/plasma	–	–	–	–	–	–	1	1.5.208