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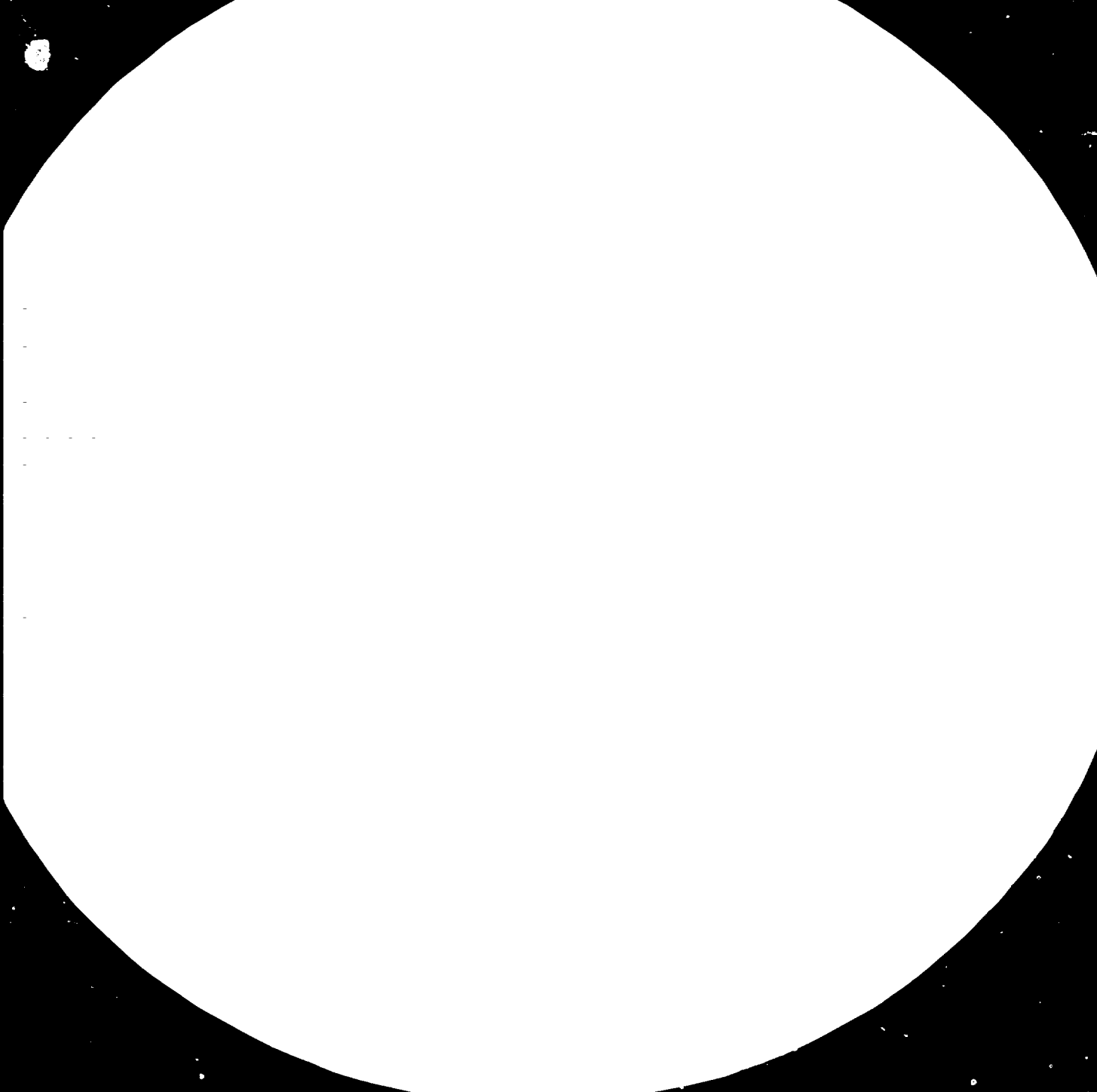
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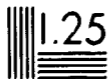
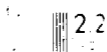
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Resolution Test Chart

Resolution Test Chart

Resolution Test Chart

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DIRECTORY OF SOURCES OF SUPPLY OF 26 ESSENTIAL BULK DRUGS, THEIR
CHEMICAL INTERMEDIATES AND SOME RAW MATERIALS *

Prepared by
the UNIDO secretariat

003330

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V.82-30236

PREFACE

1. The First Consultation on the Pharmaceutical Industry convened in Lisbon, Portugal in December 1980, recommended that UNIDO compile a directory of sources of essential bulk drugs from developed and developing countries.
2. This first version of the Directory covers the 26 Bulk Drugs jointly selected by UNIDO and WHO, from the WHO list of Essential Drugs for consideration at the First Consultation. In addition, the Directory identifies world-wide sources of supply for some major raw materials and intermediates required for the local production of these 26 selected Bulk Drugs, emphasis has been put on those with limited sources of supply.
3. Although some national and regional directories of chemical producers already exist, it is believed that this is the first attempt to compile a world-wide directory of suppliers of pharmaceutical products. It is hoped that the information provided will be valuable to purchasers who experience difficulties in identifying sources of supply.
4. The Round Table meeting held in Mohammadia, Morocco in December 1981, suggested that in addition to compiling this Directory, UNIDO should, whenever so requested by a developing country, use its best endeavours to provide information on indicative prices for drugs and intermediates. Thus, this publication can be seen as the first step in assisting developing countries to obtain their requirements of pharmaceuticals at the best possible prices and on most suitable delivery schedules.
5. The information contained in this Directory has been compiled by UNIDO from published sources and by writing to the International Federation of Pharmaceutical Manufacturers Association, national manufacturer associations and suppliers in various countries. Although care has been taken to ensure that the information is accurate, UNIDO cannot guarantee (a) that all sources of supply have been included; (b) that each producer is continuing production of the product in question; and (c) that the mailing and telex addresses given are the most recent ones.

6. For these reasons, UNIDO intends to treat this first version of the Directory as a draft, and to update the Directory from time to time. It will be given wide circulation so that additions and corrections may be suggested by both purchasers and suppliers who review its contents. Such corrections should be addressed to :

The Chief,
Pharmaceutical Industries Unit,
Chemical Industries Branch,
Division of Industrial Operations,
UNIDO,
P.O. Box 300,
A-1400 Vienna,
Austria.

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INTRODUCTION

The coverage of the Directory

1. The 26 essential drugs included in this Directory are as follows:

Acetylsalicylic acid	Insulin
Ampicillin	Isoniazid
Ascorbic acid	Mebendazole
Benzyl-penicillin	Paracetamol
Blood and Blood Fractions	Piperazine
Chloroquine phosphate	Primaquine
Cyanocobalamine	Propranolol
Iapsone	Reserpine
Diethylcarbamazine	Retinol
Erythromycin	Streptomycin
Ethambutol	Sulphadimidine
Ethinylestradiol + Norgestrel (Levo)	Tetracycline
Furosemide	
Hydralazine	

2. Some major raw materials and chemical intermediates required for the manufacture of these bulk drugs are included in this Directory and are listed in Table I.

3. In Section I, a comprehensive list of sources of supply of each of the bulk drugs has been compiled. For each bulk drug the synonyms, reference to specifications, details regarding storage requirements are listed in addition to the names of manufacturers and suppliers. A distinction has been made between "a source of supply", which includes brokers and sales agents, i.e. "a supplier", and a manufacturer of the product, the former has been marked by an asterisks (*) in the Directory.

4. In Section II, a comprehensive list of sources of supply of the major raw materials and intermediates required for the manufacture of the 26 bulk drugs are provided. Emphasis has been placed on the more important intermediates, and those for which there are only a few suppliers. The more common Chemicals and solvents, which are readily available, and are widely used, have not been included.

5. In Sections I and II, only the name of the suppliers and the country of origin has been given. In Section III, the full address, telephone number and telex number of each supplier/manufacturer is provided as far as available at the time of completing this draft document.

SECTION I

BULK DRUGS

Manufacturers/Suppliers

and

Miscellaneous Details

26 ESSENTIAL BULK DRUGS

ACETYLSALICYLIC ACID
AMPICILLIN
ASCORBIC ACID
BENZYL-PENCILLIN
BLOOD AND BLOOD FRACTIONS
CHLOROQUINE PHOSPHATE
CYANOCOBALAMINE
DAPSONE
DIETHYLCARBAMIZINE
ERYTHROMYCIN
ETHAMBUTOL
ETHINYLESTRADIOL + NORGESTREL (LEVO)
FUROSEMIDE
HYDRALAZINE
INSULIN
ISONIAZID
MERENDAZOLE
PARACETAMOL
PIPERAZINE
PRIMAQUINE
PROPRANOLOL
RESERPINE
RETINOL
STREPTOMYCIN
SULPHADIMIDINE
TETRACYCLINE

SECTION I - BULK DRUG

Therapeutic Category: Analgesic and Antipyretic

Name of Product: Acetylsalicylic acid

Name of Manufacturers/
Suppliers:

- * Albright and Wilson, UK
- Alta Laboratories, Bombay, India
- Atabay, Istanbul, Turkey
- Bayer AG, F.R. Germany
- Chemapol, Checkoslovakia
- China National Chemicals, China
- Ciba Geigy, Basel, Switzerland
- Dow Chemicals, USA
- El Nasar, Egypt
- Farmitalia Farmaceutici, Milan, Italy
- Farmos Group, Finland
- Fine Chemicals Epping Industria, South Africa
- Grasser Salicylate, UK
- Hoechst, F.R., Germany
- Hyun Dai Thorm, S. Korea
- Industria Quimica Andia, Bogota, Columbia
- Lars Chistensen, Denmark
- Lepetit, Mexico City, Mexico
- * Marcing and Co., Denmark
- * Medexport, USSR
- Merck, F. R. Germany
- * Mitsui Pharmaceuticals, Tokyo, Japan
- * Mitsui Toatsu Chemicals, Japan
- Monsanto, UK
- Morton Norwich, USA
- * Nipper Kayaka, Tokyo, Japan
- Orion, Finland
- * Oxyde Joba, The Netherlands
- Oy Rohto, Finland
- Polfa, Poland
- Products Pyre, Spain
- Quim, Farm Platens, Buenos Aires, Argentina
- Rhone Poulenc, France

/Acetylsalicylic acid - continued

Salicilato De Mexico, S. A. Mexico

Sanofi, France

* Sojuzchimexport, USSR

Spofa, Czechoslovakia

Sterling Drugs, USA

Sydney Ross, Rio De Janeiro, Brazil

Sudamfos S.A., Buenos Aires, Argentina

Union Fine Chemicals, S. Korea

Uzina Chimixport, Rumania

Addendum

*Helm, F.R. Germany

*H and E Greaf, U.K.

*Marsing, U.S.A.

Angelini Spa, Roma, Italy

ISF Spa, Milan Italy

/-----
* denotes supplier

Acetyl Salicylic acid:

Miscellaneous Details:

Synonyms:

Acetylsal Acid, Acesal, Acetosal,
Salicylic acid acetate, Acetyl-Salol,
Acidum Acetylsalicylicum, Polopiryna -0-
Acetoxybenzoic acid.

Specifications:

As per recognized official compendia.
International Pharmacopoeia, British
Pharmacopoeia, United States Pharmacopoeia,
British Pharmaceutical Codex, French Pharmacopoeia.

Description, Uses,
undesirable effects,
etc.

Reference Martindale 27th edition, pages 177-184
and relevant information as in official compendia.

Storage:

Store in airtight containers at temperature
not exceeding 30°C.

SECTION I - BULK DRUG

Category of Product: Antibiotics

Name of Product: Ampicillin

Name of Manufacturers/
Suppliers:

Alembic, India
Antibioticos, Spain
Archifar, Italy
Astra, USA
Ayrest, USA
Bago Laboratories, Argentina
Bayer, F. R. Germany
Beecham, USA and UK
Benvenides Chimona de Mexico, Mexico
Biochemie GmbH, Austria
*Borge Pharmaceuticals, USA
Bristol Meyer, USA
Centro Industrial Bioquímicos, Mexico
Ciba Geigy, Switzerland
Cipan, Portugal
Compañía Brasilia Antibioticas, Brazil
Compañía Española Antibioticos, Spain
Deva, Turkey
Diamond Shamrock, USA
Dong Wha Pharma, S. Korea
Eurolatin Pharm, Mexico
Fako, Turkey
Farmitalia, Milan, Italy
Fermentaones Sentisis, Mexico
Fermic, Mexico
Fermion Oy, Finland
Flamma S.A.S., Italy
Gist Brocade, The Netherlands
Gruenthal GmbH, F.G. Germany
Hindustan Antibiotics, India
Hoechst, F. R. Germany
*ICL, Roma, Italy
IDPL, India
Inkapharm Ltd., Isreal

/Ampicillin

- continued

Instituto Biochemico Italiano, Milan, Italy
Lepiex, Argentina
* Medexports, Moscow, USSR
* Meiji-Seiko, Tokyo, Japan
Medimpex, Hungary
* Nikko Chemicals Co., Tokyo, Japan
Orion Pharmaceuticals, Finland
Orsase, Cuevnavaca Moreios, Mexico
Proter, Milan, Italy
Quimica Industrial Santo, Brazil
Quimica Lorenzini Sao Paulo, Brazil
Quinanas De Mexico, Mexico
Schering A.C. Berlin, F.R.Germany
Sin Tequini Industria Farma, Brazil.
Societe Bristol Meyer, France
Squibb, USA
* Takeda Chemicals, Japan
Wyeth, USA
Young Jin Pharma Ind., S. Korea

Addendum

Lab CT Srl, Sanromo, Italy
IDI, Milano, Italy
ISF, Milano, Italy
Pierrel Spa, Milan, Italy
Sigma Tau, Italy

/ _____

* denotes Supplier

Ampicillin:

Miscellaneous Details:

Synonyms: Ampicillinum, Aminobenzpenicillin

Specifications: As per recognised official compendia,
British Pharmacopoeia, U.S. Pharmacopoeia.

Description, Uses, undesirable effects etc. Reference Martindale 27th edition pages 1071-1077
and other relevant information as in official compendia.

Storage: Store in airtight containers at a temperature
not exceeding 30°C. If intended for parental
administration the container should be sterile
and sealed to exclude microorganisms.

SECTION I - BULK DRUG

Therapeutic Category:

Vitamins

Name of Product:

Ascorbic acid

Name of Manufacturers/
Suppliers:

- * Agvar Chemicals, USA
- Alagoas Matevias Primas Maceio, Brazil
- * Alwit Ltd., UK
- Bayer AG, F.R. Germany
- * Byron Chemicals, USA
- Comptoir Chimique, France
- * Dolder Ltd., Switzerland
- * Fallek Chemicals, USA
- * Graymor Chemicals, USA
- * GYMA Laboratories, USA
- Hoechst AG, F.R. Germany
- Hoffman La Roche, Switzerland
- Jayant Vitamin, Bombay, India
- * K and K Greef, Co., UK
- * Marcing Ltd., USA
- * Medexport, USSR
- Merck, F.G. Germany
- Montoil S.A.R.L., France
- Orion Pharmaceutica, Finland
- Oy Rohto AG, Finland
- Pfizer International, USA
- Pfizer, Groton CT, Canada
- Pliva, Zagreb, Yougoslavia
- * Roland, Belgium
- Sarabhai Chemical, India
- Sanofi, France
- Strang Chemicals Co., UK
- * Syntetic, Denmark
- * Takeda Chem Industry, Hikari, Japan
- * Universal Perservachem Inc., USA
- Vitamin Inc., USA
- Yang Pharma, S. Korea
- Yu Yu Ind., S. Korea

/ _____
* denotes Supplier

Adjendum:

Name of Bulk Drug: Ascorbic acid

Name of Manufacturer/ Angelini, Roma, Italy
Supplier: Lab CT, Italy

Ascorbic Acid:

Miscellaneous Details:

Synonyms:

Ascorb Acid, Acidum Ascorbicum, Vitamin C,
L Ascorbic acid, Cevitamin Acid, 3 OXO-L
Gulfuranolactone (enolic form), Hexuronil
acid.

Specifications:

As per recognized official compendia
International Pharmacopoeia, British Pharmacopoeia,
European Pharmacopoeia.

Description, Uses
undesirable effects,
etc.

Reference Martindale 27th edition pages 1666-1671
and other relevant information as in official
compendia.

Storage:

Store in airtight container free from contact
with metal. Protect from light.

SECTION 1 - BULK DRUG

Therapeutic Category:

Antibiotic

Name of Product:

Benzyl Penicillin (Sodium/Potassium)

Name of Manufacturer/
Suppliers:

Aktibolagetkabi, Stockholm, Sweden
Ankarfarm, Milan, Italy
Antibioticos, Spain
*Asahi Chemicals, Tokyo, Japan
Bago Labs, Argentina
Bayer A.G., F.R. Germany
Biochemie Cmbli, Austria
Boehringer Mannheim GmbH., F.R. Germany
Bristol Meyer, USA
Centrala Industriala Medic, Romania
C.H.G. Blu, F.R. Germany
China National Chemicals, China
Ciba Geiga, Switzerland
Cibiosa, Mexico
Cipan, Portugal
Compania Española de la Penicilin y Antibioticos, Spain
Diamond Shamrock, USA
Eurolatin Pharma, Mexico
Farmitalia Farmaceuticii, Milan, Italy
Fontoura, Brazil
Gist Brocade, The Netherlands
Glaxo, UK
Gruenthal GmbH, F.R. Germany
Hindustan Antibiotics, India
Leo Pharma, Denmark
*Marcing and Co. Denmark
Medexport, USSR
Meiji Seika, Gifu, Japan
Merck, USA
Novo, Denmark
Orion Pharmaceutica, Finland
*Oxyde, Joba, The Netherlands
Pfizer International Inc., USA
Quimsa Industrial, Sao Paulo, Brazil

/Benzyl Penicillin (Sodium/Potassium) - continued

Rhone Poulenc, France
Serabhai, India
Squibb and Sons, USA
*Tokyo Tanaby, Japan
Wyeth, Philadelphia, USA

Addendum

ISF Spa, Milano, Italy

/ _____

* denotes Supplier

Benzyl Penicillin:

Miscellaneous Details:

Synonyms: Crystalline Penicillin G, Penicillin,
Penicillin G, Sodium or Potassium 2,3 dimethyl
7 OXO 6 phenyl acetamide-4-thial-azabicyclo
(3,2,0) heptane-2 carboxylate, Sodium or
Potassium phenylacetamidopenicellanate,
Benzyl Penicillium Notricum or Kalicum.

Specifications: As per recognised official compendia,
International Pharmacopoeia, British
Pharmacopoeia, European Pharmacopoeia,
United States Pharmacopoeia.

Description, Uses,
undesirable effects,
etc.: Reference Martindale 27th edition pages
1081 to 1089 and other relevant information
as in official compendia.

Storage: Store in airtight container at temperature not
exceeding 30°C. If intended for parenteral
administration the container should be sterile
and sealed to exclude microorganisms.

SECTION I - BULK DRUG

Therapeutic Category: Immunological

Name of Product: Blood and Blood Fractions

Name of Manufacturers/
Suppliers:

Alpha Therapeutics, USA
Behringwerke Aktiengesellschaft, F.R. Germany
Biotest Serum Institut GmbH, F.R. Germany
Curewell Ltd., India
Duphar Interfram Ltd. India
Greencross Corp., S. Korea
Immuno A.G., Austria
Immuno GmbH. F.R. Germany
Institut Merriex, France
Kabi A.B., Sweden
Laboratories Landerlan, Spain
Laboratories Grifols, Spain
Laboratories Hubbev, Spain
*Marsing Div. Instel, USA
San Quisan mbH, Austria
Schweiz Serum, Bern, Switzerland
Sero, Wien, Austria
Troponwerke GmbH, Koein 80, West Germany
Turkiye Kizilay, Ankara, Turkey
US Biochemicals Co., USA

/ _____
* denotes Supplier

Blood Preparations:

Synonyms:

Specifications:

As per recognized official compendia,
International Pharmacopoeia, US Pharmacopoeia,
European Pharmacopoeia, British Pharmacopoeia.

Description, Uses
Undersirable effects
etc.:

Reference Martindale 27th edition, pages
257 to 270 and other relevant information in
official compendia.

Storage:

Store in sterile containers sealed to exclude
microorganism at 4-6°C.

SECTION I - BULK DRUG

Therapeutic Category: Antimalarial

Name of Product: Chloroquine Phosphate

Name of Manufacturers/
Suppliers: Bayer AG, Leverkusen, Bayerwerk, W. Germany
BEC Chemicals, Bombay, India
Bengal Chemicals, Co. Calcutta, India
China National Chemicals, Peking, China
* Ciba Geigy, Basel, Switzerland
* Farnos, Turku, Finland
ICI, Millbank, London SW1, UK
* Mørcing and Co., Denmark
* Medexport, Moscow, USSR
* Medimpex, Budapest, Hungary
* Orion Pharmaceutica, Helsinki, Finland
* Oxyde-Joba, Netherlands
Rhone Poulenc, Paris, France
Sanofi, Paris, France
Sterling Drug Inc., New York, USA
Suneeta Labs Indore, India

Addendum: Angelini, Roma, Italy

/ _____
* denotes Supplier

Chloroquin Phosphate:

Miscellaneous Details:

Synonyms: Chloroquin Phosphate

Specifications: As per recognized official compendia,
British Pharmacopoeia, United States
Pharmacopoeia.

Description, Uses, Reference Martindale 27th edition, pages
undesirable effects, 344-346 and other relevant information as
etc. in official compendia.

Storage: Store in well closed container at temperature
not exceeding 30°C. Protect from light.

SECTION I - BULK DRUG

Category of Product: Vitamin

Name of Product: Cobalamine (Hydrox/cyano)

Name of Manufacturers/
Suppliers:

Armour Pharmaceuticals, USA
Bago Labs, Argentina
Chemical Dynamics, USA
*Falle K. Chemicals, USA
Farmitalia (Montedison) Milan, Italy
Glaxo Holdings, UK
*Greef, R.W. Co. Ltd., USA
Harmonas Vitamins, Mexico
Hoffman La Roche, F.R. Germany
Istituto delle Vitamin, Italy
Kenika Industrial, Mexico
Laboratories Delgrange, France
Lilly Eli, USA
Medimpex, Hungary
Merck, E. F.R. Germany
Merck, Rahway, USA
Merck, Sharp Dhome, USA
Mexoper, Mexico
Orion Pharmaceutica, Finland
Pfizer Inc., USA
Phillips Dupher, F.R. Germany
Pierrel Spa, Italy
Products Químicos, Mexico
Quimo, Product Químico, Brazil
Rhone Poulenc, France
Roussel Uclaf, France
Sanofi, France
Sintequini S.A. Industria Farm, Pelota, Brazil
Strang Chemical Co., UK
Themis Chemicals, India
Unipex, France
Vitamin Inc., USA

Addendum

Name of Bulk Drug: Cyanocobalamine

Name of Manufacturer/ Angelini Spa, Italy

Supplier: Farmitalia Carlo Erba, Italy

Cyanocobalamin, Vitamin B12

Miscellaneous Details

Synonyms: Cyanocobal, Cyanocobal aminum, Cobamin,
Cycobemin, Vitamin B12, L 5, 6
Dimethylbenzimidazol-1-yl-cyanocobamide.

Specifications: As per recognised official compendia,
International Pharmacopoeia, British
Pharmacopoeia, European Pharmacopoeia,
United States Pharmacopoeia.

Description, Uses Reference Martindale 27th edition pages
undersirable effects 1679-1681 and other relevant information as
etc. in official compendia.

Storage: Store in airtight container. Protect from
light.

SECTION I - BULK DRUG

Therapeutic Category: Antileprotic

Name of Product: Dapsone

Name of Manufacturers/
Supplier: Ayerst, New York, USA
Bengal Chemicals, Calcutta, India
China National Chemicals, Peking, China
Hoechst A.G., Frankfurt, F.R. Germany
* K and K Greef. Chemicals, UK
* Medexport, Moskow, USSR
* Mercing and Co., Denmark
* Oxyde - Joba, The Netherlands
Rhone-Poulenc, Paris, France
Roussel Uclaf, Paris, France
* RSA Corporation, Ardsley, USA
Sree Krishna Pharma, Hyderabad, India
Theodor Schuchard, F.R. Germany

/-----
* denotes Supplier

Dapsone:

Miscellaneous Details:

Synonyms: Daps, Dapsonu, Diaphenylsulfone, DDS,
Disulone.

Specifications: As per recognized official compendia
International Pharmacopoeia, British
Pharmacopoeia, United States Pharmacopoeia.

Description, Uses,
undesirable effects,
etc.: Reference Martindale 27th Edition, pages
1499-1503 and other relevant information
as in official compendia.

Storage: Store in well-closed light-resistant container
at temperature not exceeding 30°C.

SECTION I - BULK DRUG

Therapeutic Category: Antifilarial

Name of Product: Diethylcarbamazine

Name of Manufacturers/
Suppliers:

- Aceto Chemicals, USA
- American Cyanamid, USA
- * B.H. Schilling, Italy
- Burroughs Wellcome, India
- * Helm New York Chemicals, USA
- Hoechst AG, F.R. Germany
- IDPL, India
- * Marcing and Co. Denmark
- * Maypro Industries, USA
- Rexolin Chemicals AB, Sweden
- Rhone Poulenc, France
- Roussel Uclaf, France
- * R. W. Greef Co., USA
- * S.S.T. Corporation, USA
- Wanderchemie AG, Switzerland
- Wardblenkinsop, UK
- Unipex, France

/ _____
* denotes Supplier

Diethylcarbamazine:

Miscellaneous Details:

Synonyms:

(Diethylcarbane Cit, Diethyl Carbamazini Citras, Ditradini Citras, Diethylcarbazine Acid Citrate, 1 Diethylcarbamoyl-4-methylpiperazine dihydrogen citrate).

Specifications:

As per recognised official compendia, International Pharmacopoeia, United States Pharmacopoeia.

Descriptions, Uses, Undesirable effects, etc.

Reference Materials 27th edition pages 101-102 and other relevant information in official compendia.

Storage:

Store in air tight containers at a temperature not exceeding 30°C.

SECTION I - BULK DRUG

<u>Category of Product:</u>	Antibiotics
<u>Name of Products:</u>	Erythromycin
<u>Name of Manufacturers/ Suppliers:</u>	Abbot, USA Achifar, Italy Alembic, Broda, India Ankerfarm, Milan, Italy Antiboticos, S.A., Italy *Borge International, USA CEPA, Arenjuz, Spain Chemikalien AG, F.R. Germany Ciba Geigy, Switzerland Cipan, Portugal Companian Brasileirade Antibiotics, Brazil Diamond Shamrock, USA Dista Products, Liverpool, UK *Dolder Ltd., Switzerland Eli Lilly, USA Farnos Group, Finland Fermic, Inapalpa, Mexico *Flavine International, USA *GYMA Labs, USA *K and K Greef Chemical, UK *Marcing and Co. Denmark Orion Pharmaceutica, Finland Pfizer, USA Pierrel, Milan, Italy Priti Chemical Industries, India Proter, Milan, Italy Roussel Uclaf, France Upjohn, USA

* denotes Supplier

Erythronycin

Miscellaneous Details

Synonyms: Erythromycinum

Specifications: As per recognized official compendia,
International Pharmacopoeia, British Pharmacopoeia,
European Pharmacopoeia, United States Pharmacopoeia.

Description Uses, Reference Martindale 27th edition pages
undesirable effects 1130-1134 and other relevant information as
etc.: in official compendia.

Storage: Store in airtight container at temperature not
exceeding 30°C. Protect from sunlight.

SECTION I - BULK DRUG

Therapeutic Category: Antituberculosis, Tuberculostatic

Name of Product: Ethambutol

Name of Manufacturers/
Suppliers: Abbot Universal Ltd., Chicago USA
American Cyanamid Co., New Jersey, USA
Chong Kun Dang, S. Korea
Farmaceutica Milanese, Milan, Italy
Handock Remedia, S. Korea
Huhtamaki OY, Turku, Finland
Istituto Chemitrepico, Milan, Italy
Italsintex, S.R.L., Padova, Italy
*Lupin Laboratories, India
Medexport, Moscow, USSR
Medimpex, Budapest, Hungary
Orion Pharmaceutica, Helsinki, Finland
*Oxyde - Joba - The Netherlands
Pierrel, Milan, Italy
Priti Chemicals, Bombay, India
*Rapto Kos Brett, Worli, India
Sobio Laboratories, Paris, France
Themis Pharmaceuticals, Bombay, India

Addendum

Vecchi and Piam, Genova, Italy

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* denotes Supplier

Ethambutol:

Miscellaneous Details:

Synonyms:

Ethambutol Hydrochloride, 2:2 ethylene
diminodi 1 butanol

Specifications:

As per recognized official compendia,
British Pharmacopoeia, United States
Pharmacopoeia.

Description, uses,
undersirable effects,
etc.

Reference Martindale 27th edition,
pages 1586-1587 and the relevant
information as in official compendia.

Storage:

Preserve in well closed container at
temperature not exceeding 30°C.

SECTION I - BULK DRUG

Category of Product: Oral Contraceptive

Name of Product: Ethinyloestradiol + Norgestrel (Levo)

Name of Manufacturers/
Suppliers:

*Alwitt Ltd., UK
*Agvar Chemicals, USA
*Dolder, Switzerland
*GYMA Laboratories, USA
Orion Pharmaceutica, Finland
Organon Inc. USA
Roussel Uclaf, France
Schering AG, F.R. Germany
Searle Chemical, USA
Syntex, Mexico
Wyeth, USA

Addendum:

*Medimpex, Hungary

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* denotes Supplier

Ethinylestradiol

Miscellaneous Details:

Synonyms: Ethinydoestr., Aethinyloestradiolum,
Ethyinyl Estradiol, Ethinylestradiolum,
Ethinilestradiol

Specifications: As per recognized official compendia, British
Pharmacopoeia, European Pharmacopoeia, U.S. Phar-
macopoeia.

Description, Uses Reference Martindale 27th edition pages 1396 to
undesirable effects, 1398 and other information as in official compendia.
etc.:

Storage: Store in cool place, air tight container.
Protect from sunlight.

Norgestrel (levo)

Miscellaneous Details

Synonyms: Levonorgestrel, Denorgestrel

Specifications: As per recognized official compendia.

Description, Uses
undersirable effects
etc: Reference Martindale pages 1413-1414 and
other relevant information as in official
compendia.

Storage: Store in cool place air tight container.
Protect from light.

SECTION I - BULK DRUG

Therapeutic Category: Diuretic

Name of Product: Furosemide

Name of Manufacturers/
Suppliers: Ache Laboratories S.A., Sao Paulo, Brazil
 China National Chemicals, China
 Fabbrica Italiana, Sintetics, Italy
 Farmos Group, Finland
 Han Dok, Remedia, Seoul, S. Korea
 Hoechst AG. W. Germany
 IDPI, India
 *K and K Greaf Chemicals, UK
 Labetica, South Africa
 Laboratories Mag, Milan, Italy
 Laboratories Almirall, Cardoner, Spain
 *Marcing and Co. Denmark
 Medimpex, Hungary
 Orion Pharmaceuticals, Finland
 Polfa, Poland
 Scharper Care EMA, USA

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* denotes Supplier

Furosemide:

Miscellaneous Details:

Synonyms:

Furseamide, Fruseamide, Furosemide, 4 chloro-2
furfurylamino 5, sulphamoylbenzoic acid,
4 chloro-N-furfuryl-5-sulphomoylanthranilic acid

Specifications:

As per recognized official compendia,
International Pharmacopoeia, British Pharmacopoeia
and United States Pharmacopoeia.

Description, Uses

Reference Martindale 27th edition pages 554 to

Undesirable effects

560 and other relevant information as in

etc.:

official compendia.

Storage:

Store in airtight container. Protect from light.

SECTION I - BULK DRUG

Category of Product: Antihypertensive

Name of Product: Hydralazine Hydrochloride

Name of Manufacturer/
Suppliers:

*Alba Chemicals, USA
*American Roland Corp., USA
Bayer AG, F.R. Germany
Beutex Chemicals, USA
Chemical Dynamics, USA
Ciba Geigy, Switzerland and USA
*Davos Chemicals, USA
Eisen Pharma, India
*Flavine International, SUA
*GYMA Laboratories, USA
*Maypro Industries, USA
*MWM Chemicals, USA
*Napp Chemicals, USA
Rhone Poulenc, France
*Sumitomo Chemicals, Japan
*Toyama Chemicals, Japan
Toyo Hydrazine Industry, Japan

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* denotes Supplier

Hydrallazine Hydrochloride

Miscellaneous Details

Synonyms: Hydrallazine Hydrochloride, Apressinum,
Hydralazini Hydrochloridum Hydrazinophthalazine
Hydrochloride

Specifications: As per recognized official compendia,
International Pharmacopoeia, British Pharmacopoeia,
United States Pharmacopoeia.

Description Uses, Reference Martindale 27th edition pages 664 to
undesirable effect, 665 and other relevant information as in official
etc. compendia.

Storage: Store in airtight containers at temperature not
exceeding 30° C.

SECTION I - BULK DRUG

Therapeutic Category: Antidiabetic

Name of Product: Insulin

Name of Manufacturers/
Suppliers:

Alembic Chemicals, India
Armour Pharmaceuticals, USA
Biofar Insumos, Monte Carlos, Brazil
Boots Co., UK
Chemapol, Czechoslovakia
China National Chemicals Corporation, China
Choay Laboratories, France
Christian Brunnengraeber, Chemische Fabrik,
F.R. Germany
Connaught, Toronto, Canada
Diosynth, The Netherlands
Eli Lilly and Co., USA
Hoechst Spa, Italy .
Leo Laboratories, UK
* Marcing and Co. Denmark
Muenchen Gmbh, F.R. Germany
Nordisk, Denmark
Novo Industries, Denmark
Opos SRI, Italy
Organon, N.V., The Netherlands
Pfanstiehl Laboratories, USA
Pharmachin, Sofia, Bulgaria
Philips Duphar, The Netherlands
* Strang Chemicals, U.K.
* Weddel Pharmaceuticals, Clwyd, UK
Wellcome, UK

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* denotes Supplier

Insulin

Miscellaneous Details

Synonyms: Insulin Injection, Insulini Injecto,
Insulini solutio Injunctabilis, Insulin,
Insulin Hydrochloride, Ordinary Insulin,
Regular Insulin, Soluble Insulin, Unmodified
Insulin.

Specifications: As per recognized official compendia,
International Pharmacopoeia, European
Pharmacopoeia, British Pharmacopoeia.

Description, Uses
undesirable effects
etc.: Reference Martindale 27th edition pages
799 to 804 and other relevant information
as in official compendia.

Storage: Store at 2-10^oC. Should not be allowed to freeze.

SECTION I - BULK DRUG

Category of Product: Antituberculosis

Name of Product: Isoniazid

Name of Manufacturers: *Alwitt Ltd., UK
*American Roland, USA
Asia Pharmaceuticals, S. Korea
Bayer AG. F.R. Germany
Bofors AB, Sweden
Chemical and Pharmaceutical Laboratories, India
China National Chemicals, China
*Dolder Ltd., Switzerland
*FBA Pharmaceuticals, USA
Gerardo Ramon, Nuenos Aires, Argentina
*GYMA Laboratories, USA
*Helm New York Chemicals, USA
Hoffman La Roche, Switzerland
*Iwaki and Co. Japan
Lepetite, Euenos Aires, Argentina
*Marcing and Co. Denmark
*Marsing, Div Intsel, USA
Orion Pharmaceutica, Finland
Park Davis, USA
Pfizer International, USA
Reilly Tar, and Chemicals, USA
Rhone Poulenc, France
S.S. T. Corporation, USA
Sunecta Labs, India
*Takeda Chemicals, Japan
Yu Yu Industrial, S. Korea

Addendum: Vecchi and Piam, Genova, Italy

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* denotes Supplier

Isonizid:

Miscellaneous Details:

Synonyms:

Isoniaz, Isoniazidium, Isonicotinic acid,
Hydrazide, Isonicotinylhydrazide,
Isonicotinylhydrazine, Tubazid
Isonicotinoylhydrazine, Pyridine-4-carbohydrazide.

Specifications:

As per recognised official compendia, International
Pharmacopoeia, British Pharmacopoeia, United
States Pharmacopoeia.

Description, Uses
undesirable effects,
etc.:

Reference Martindale 27th edition pages 1589-
1593 and other relevant information in official
compendia.

Storage:

Store in airtight containers. Protect from light.

SECTION I - BULK DRUG

Therapeutic Category: Anthelmintic

Name of Product: Mebendazole

Name of Manufacturers/
Suppliers: ACIC Ltd., Toronto, Canada
Bayer, W. Germany
Chemapol, Czechoslovakia
China National Chemical, China
*Fairdeal Corporation, Bombay, India
FDC, Bombay, India
ICFI (Industrie Chimiche Farmaceutica Italia)
Italy
Janssen Pharmaceuticals, Belgium
*K and K Greef, UK
*Marsing, Denmark
Matthews and Wilson, UK
Priti Chemicals, India
Shin Pong Pharmaceuticals, S. Korea

Addendum: Istituto Franco Tosi, Milan, Italy

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* denotes Supplier

Mebendazole

Miscellaneous Details:

Synonyms: Methyl (5 benzol benzimidazol - 2 yl carbamate)

Specification: As per recognised official compendia, British Pharmacopoeia, United States Pharmacopoeia.

Description, Uses, Reference Martindale 27th edition pages
Undesirable effects, 106, and other relevant information in
etc. official compendia.

Storage: Store in air-tight container at temperature not exceeding 30°.

SECTION I - BULK DRUG

Therapeutic Category: Analgesic

Name of Product: Paracetamol

Name of Manufacturers/Suppliers:

Amphry Labs, Bombay, India
Asia Pharmaceuticals, Seoul, S. Korea
Atabay, Istanbul, Turkey
Bayer AG, Leverkusen Bayerwerk, Germany
China National Corporation, Peking, China
Ciba Geigy, Basel, Switzerland
Diamond Shamrock, USA
Duphar Interfran, Bombay, India
Framos Group, Turku, Finland
Fawdon, Newcastle on Tyne, UK
Graesser Salicylate, Clwyd, UK
Hoechst AG, Frankfurt, W. Germany
IDPL, India
Indian Drugs and Pharm., Gurgaon, India
Indian Process Chemicals, Bangalore, India
*Iwaki, Japan
*K and K Creef, UK
*Kawashi, Kawashi, Japan
Mallinc Krodt, Raleigh, USA
*Marsing and Co., Denmark
Monsanto, St. Louis, USA
Orion Pharma., Helsinki, Finland
*Oxyde, Joba, The Netherlands
Oy Rhoto, Tammisaari, Finland
Penick S.B., Lyndhurst, New Jersey, USA
Quimica Siul, Victoria, Argentina
Rhone Poulenc, Paris, France
Sampoong, Seoul, S. Korea
Sanofi, Paris, France
Sevenstar, Taiwan
Sigma S.A., Mexico
Sterling Drug, New York, USA

/Paracetamol

Sociedad Mexicana De Industrial, Mexico

Sree Krishna Pharmaceuticals, India

Sterling Organic, Dudley, UK

Union Fine Chemicals, Seoul, S. Korea

Addendum:

Angelini Spa, Roma, Italy

Paracetamol

Miscellaneous Details

Synonyms: Acetamenophen, 4 Acetamido phenol,
4 Hydroxyacetanilide, N Acetyl p aminophenol,
N-P-Hydroxyphenylacetamide.

Specifications: As per recognized official compendia,
British Pharmacopoeia, United States Pharmacopoeia.

Description, Uses, Reference Martindale 27th edition, pages
undesirable effects, 201-204 and other relevant compendia.

Storage: Store in well closed container at a temperature
not exceeding 30°C. Protect from light.

SECTION I - BULK DRUG

Category of Product: Antihelmintic

Name of Product: Piperazine

Names of Manufacturers/
Suppliers:

Aceto Chemicals, USA
AC Industries, USA
Acna, Cengio, (Savona), Italy

BASF, F. R. Germany
Bayer, F. R. Germany
Boehringer Ingelheim GmbH, F.R. Germany
Chemische Fabrik Schweizerhall, Switzerland
Delamine B.V. Delfzijl, The Netherlands
*Dolder Ltd., Switzerland
Dow Chemicals, USA
*Flavine International, USA
Ciusto Farvelli, Italy
Givandan, France
IDPL, India
Japan Hydrazine Co., Japan
*Joba B.V., The Netherlands
*K and K Greef, UK
*Marcing and Co. Denmark
*Mars Chemicals, USA
Rexolin Chemicals, Sweden
Rhone Poulenc, France
Ringer Chemicals and Co., USA
*Schilling BH, Italy
Sietetsa Kagawa, Japan
Sumitomo Chemicals, Ooka, Japan
Texaco Chemicals, USA
Union Carbide, USA
Ward Belinksop, UK

Addendum: Stip Lab Chimico Biologico, Italy

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* denotes Supplier

Piperazine:

Synonyms:

Piperazine (available as Piperazine Citrate, Piperazine Hydrate, Piperazine Phosphate).

Specifications:

For Piperazine Citrate as per British Pharmacopoeia. For Piperazine Hydrate (as per IPC. For Piperazine Phosphate as per British and United States Pharmacopoeias.

Description, Uses
undesirable effects.
etc.

Reference Martindale 27th edition pages 108-110, and other relevant information in official compendia.

Storage:

Store in airtight container. Protect from light.

SECTION I - BULK DRUG

Therapeutic Category: Antimalarial

Name of Product: Primaquine

Name of Manufacturers/
Suppliers: Alba Chemicals, USA
Bayer AG, F.R. Germany
*Conary Chemicals, USA
*Joba, The Netherlands
*Marsing and Co. Denmark
Sterling Drug, USA

Attdendum: I.C.I., U.K.

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* denotes Supplier

Primaquine

Miscellaneous Details

Synonyms: Primaquine Phosphate, Primaquini Diphosphas,
Primachin Phosphate, Primaquinium Phosphate.

Specifications: As per recognized official compendia,
International Pharmacopoeia, British
Pharmacopoeia, United States Pharmacopoeia.

Description, Uses Reference Martindale 27th edition page 353
undersirable effects and other relevant information as in official
etc.: compendia.

Storage: Store in airtight container. Protect from light.

SECTION 1 - BULK DRUG

Therapeutic Category: Cardiovascular - Antihypertensive

Name of Product: Propranolol

Name of Manufacturers/
Suppliers: *Ayrest Labs., New York, USA
 Centrala Industriala Medio, Romania
 Farnos Group, Turku, Finland
 I.C.I. London, UK
 I.C.F.I. Spa., Italy

Addendum: Istituto Franco Tosi, Milan, Italy

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* denotes Supplier

Propranolol:

Miscellaneous Details:

Synonyms: Propranolol,
Hydrochloride, Anaprilin, Proprasylyte.

Specifications: As per recognized official compendia,
British Pharmacopoeia, United States
Pharmacopoeia.

Description, Uses,
Undesirable effects,
etc.: Reference Martindale 27th edition
pages 1312-1319 and other relevant information
as in official compendia.

Storage: Protect from light. Store at temperature
not exceeding 30°C.

SECTION I - BULK DRUG

Category of Product: Antihypertensive

Name of Product: Reserpine

Name of Manufacturers/
Suppliers: Boehinger Ingelheim, F.R. Germany
Boehinger Mannheim GmbH, F.R. Germany
*Centerchem. Internationa, USA
*Flavine International, USA
Invernidelbaffa Vera, Via Rimpemont, Milan, Italy
*Marcing and Co. Denmark
*Maypro Industries, USA
*SST Corporation, USA

Appendum: Ciba Geigy, Switzerland

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* denotes Supplier

Reserpine

Miscellaneous Details

Synonyms: Reserpinum

Specifications: As per recognized official compendia,
International Pharmacopoeia,
European Pharmacopoeia, British Pharmacopoeia.

Description, Uses Reference Martindale 27th edition pages 674-677
undesirable effects and other official compendia
etc.:

Storage: Store in airtight container protected from light

SECTION I - BULK DRUG

Category of Product: Vitamin

Name of Product: Retinol

Name of Manufacturers: Alembic Products, UK
BASF Wyandotte, USA
Caveteco, Argentina
Chemical Dynamic, USA
Chemicals and Feeds, UK
* Fallek Chemicals, USA
Hoffmann La Roche and Co. Switzerland
ICC Industries, USA
Lannacher Heilmittel, Austria
Merck E, F.R. Germany
Pfizer Inc., USA
Pharm Chem Labs., USA
Productos Roch-Quimcoso, Brazil
Rhône Poulenc, USA
Riken Vitamin Oil Ltd., Japan
Roche Products, UK
Vitamins Inc., USA
Wander GmbH., Austria

Addendum: Lab CT, Italy

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* denotes Supplier

Retinol:

Miscellaneous Details:

Synonyms:

Vitaminum A, Retinol, Anti infective Vitamin,
Antixero phthalamie Vitamin, Azerophthol,
Axerophthylia.

Specifications:

As per recognised official compendia,
British Pharmacopoeia, United States
Pharmacopoeia.

Description, Uses,
Undesirable effects,
etc.

Reference Martindale 27th edition pages
1701-1704 and other relevant information
as in official compendia.

Storage:

Store in cool, well filled airtight
container under an atmosphere of inert gas.
Protect from light.

SECTION I - BULK DRUG

Therapeutic Category: Antibiotics

Name of Product: Streptomycin Sulphate

Name of Manufacturers/
Suppliers: Alba Chemicals, USA
Centrala Industria La Medic, Romania
China National Corp., China
Ciba Geigy, Switzerland
*Flavine International, USA
Glaxo Holdings, UK
*GYMA Labs, USA
*Helm New York Chemicals, USA
Hoechst AG, F.R. Germany
Hindustan Antibiotics, Poona, India
*Marcing and Co. Denmark
Orion Pharmaceutica, Finland
*Oxyde Joba, The Netherlands
Pfizer International, USA
Rhone Poulenc, France
Synbiotic, India

Addendum: Medexport, USSR
ISF Spa, Italy

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* denotes Supplier

Streptomycin Sulphate:

Miscellaneous Details

Synonyms: Streptomycini sulfas

Specifications: As per recognized official compendia,
International Pharmacopoeia, U.S.
Pharmacopoeia, British Pharmacopoeia,
European Pharmacopoeia.

Description, Uses
undesirable effects
etc.: Reference Martindale 27th edition pages
1181-1185 and other relevant information
in official compendia.

Storage: Store in airtight containers at a
temperature not exceeding 30°C. If
intended for parenteral administration
the container should be sterile and
sealed to exclude microorganisms.

SECTION I - BULK DRUG

Therapeutic Category: Antibacterial

Name of Product: Sulphadimidine

Name of Manufacturers/
Suppliers: Acetochemical, USA
ACF Chemifarma, The Netherlands
American Cyanamide, USA
Benaco, Italy
Bristol Meyer, USA
Chemapol, Czechoslovakia
China National Chemical, China
Cosima, Belgium
* Dolder, Switzerland
El Hasr, Egypt
Exico, UK
* Fallek Products, The Netherlands
Farmitalia, Milan, Italy
Giusto Faravelli, Italy
ICI, UK
IDPL, India
Istituto Chemioterapico, Italy

Laboratoris Julian, Mexico
* Marcing and Co., Denmark
May and Barker, UK
* Medimpex, Hungary
* Napp Chemicals, USA
* Oxyde - Joba - The Netherlands
Pharmachim, Bulgaria
Pierrel, Italy
Pliva, Zagreb, Yougoslavia
Polfa, Poland
Productora G. De Perfumaria, Spain
Rachelle Labs, USA
Sinbiotik, Mexico
Strang Chemicals, UK
Syntetic, Denmark
Unwin, R. V. UK

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* denotes Supplier

Sulphadimidine:

Miscellaneous Details:

Synonyms: Sulphadimidini Sodium, Sulphadimid Sodium
Sulfadimidine Sodium, Soluble Sulphadimidine,
Soluble Sulphadimethylpyrimidine Soluble
Sulphamethazine.

Specifications: As per recognized official compendia.
British Pharmacopoeia, United States
Pharmacopoeia.

Description, Uses
undersirable effects,
etc.: Reference Martindale 27th edition pages
1430-1481, and other relevant information
as in official compendia.

Storage: Store in airtight containers Protect from light.

SECTION I - BULK DRUG

Therapeutic Category: Antibiotics

Name of Product: Tetracycline

Name of Manufacturers/
Suppliers:

Alba Chemicals, USA
Archifar, Milan, Italy
American Cynamid Co., USA
American Roland, Corp, USA
Ansa, Turkey
Antibioticos S.A. Spain
Astra, Sweden
Banyu Pharma, Japan
Bentex Chemicals, USA
Bristol Meyers, USA
Carlo Erba, Milan, Italy
China National Chemical, Peking, China
Chong Kong Dong, S. Korea
Ciba Geigy, Switzerland
Cipan, Portugal
Cosima PVBA, Belgium
Dong Wha Pharma, South Korea
*Fallek Products, The Netherlands
Farmitalia, Milan, Italy
Fermic S.A., Mexico
*GYMA Labs, USA
*Helm New York Corporation, USA
Hindustan ANTibiotics, India
Hoechst, F.R. Germany
IGL, Italy
ICN-Arco, Switzerland
*Iwakis, Japan
*K and K Greef, UK
Krka Pharm, Yougoslavia
Lepetit, Italy
*Marcing Div. Intsel, USA
*Marsing and Co. Denmark
Meiji Seika Kaisha, Japan
Novo Industries, Denmark
Orion Pharmaceutica, Finland
*Oxyde Joba, The Netherlands

Pfizer, USA
Pharmuka, France
Pierrel Spa, Italy
Pliva Pharmaceuticals, Zagreb, Yougoslavia
Polfa, Poland
Proter, Milan, Italy
Quimasa, Sao Paulo, Brazil
Rachell Laboratories, Long Beach, California, USA
Roussel, Uelaf, France
Societe Bristol Meyer, France
Société Chimique Pointed Girad, France
Squibb, Princeton, USA
Sterling, USA
Strang Chemicals, UK
Takeda Chemicals, Ooka, Japan
Upjohn Company, USA

Addendum:

Pharmachen, Bulgaria
Angelini, Roma, Italy
IBI, Italy

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* denotes Supplier

Tetracycline

Miscellaneous Details

Synonyms: Tetracycline Hydrochloride, Tetracyclinihydrochloridum

Specifications: As per recognized official compendia, International Pharmacopoeia, British Pharmacopoeia, European Pharmacopoeia, United States Pharmacopoeia.

Description, Uses Reference Martindale 27th edition pages 1186 to
undersirable effects, 1193 and other relevant information as in official
etc. compendia.

Storage: Store in airtight container. If intended for injection the container should be sterile and sealed to exclude microorganisms. Protect from light.

SECTION II

RAW MATERIALS/CHEMICAL INTERMEDIATES

MANUFACTURERS/SUPPLIERS

LIST OF RAW MATERIALS/CHEMICAL INTERMEDIATES - TABLE 1

Acetic Anhydride
Acetyl Acetone
Acetanilide
Alphanthol
6 Amino Penicillanic acid
Para Aminophenol
D-2-Aminobutanol
P-Anisidine
M Chloroaniline
Chloroanthranilic Acid
P Chloronitrobenzene
Chlorosulphonic Acid
3:4 Diaminobenzophenone
4:4 Dichlorodiphenylsulfone
4:6 Dichloro-3-Sulfamoylbenzoic Acid
4:7 Dichloroquinoline
N:N Dimethylaniline
Diethylcarbamylchloride
Diphenyloxide
Epichlorohydrin
Ethylene Dichloride
Erythromycin Thiocyanate
Estrone/Estradiol and Salts/Esters
Ethylene Diamine Hydrochloride
Gamma Picoline
Guaridine Nitrate
Hydrazine Hydrate
Isonicotinic Acid
Isopropylamine
1 Methylpiperazine
Mono Ethanolamine
1:4 Nitrobenzene
Novaldiamine (5 Diethylamino 2 - amino pentane)
D Phenylglycine
Salicylic acid
Sorbitol
Sulphaguanidine
Sulphurychloride
Tetracycline Arquad Salt

Raw Materials/Chemical Intermediates

Name of Product:

Acetylsalicylic acid

Name of Raw Material/
Chemical Intermediate:

Acetic Anhydride

Name of Manufacturer/
Supplier:

Amcel Europe S.A. Chemical Group, Belgium
Arnaud Chemicals, France
Ashland Chemicals, USA
BDH Chemicals, UK
Celanese Chemicals, USA
Charles Tennant, UK
Chemproha Chemische, The Netherlands
Comptoir Chimique, France
C Van Epenhuysen Chemische, The Netherlands
Distilleri Italane, Italy
Eastman Chemicals, USA
Eastman Chemicals International, UK
Erba Carlo Spa, Italy
Heim and Lundin, Norway
Hoechst AG, F. R. Germany
Hopkin William, UK
J.T. Baker Chemicals, USA
Joba BV, The Netherlands
KWR Chemical Ltd., UK
Lonza Ltd., Switzerland
Lux Chemicals, USA
Marcel Quarr and Cie, France
Mckesson Chemicals, USA
Montedison, UK
Pioneer Salt and Chemicals, USA
Productora General de Perfumeria SL, Spain
Roland, Belgium
Rhone Poulenc, France
Schilling, Italy
T.R. International, UK

/Acetic Anhydride

Union Carbide, USA

Universal Preservam, USA

Versaillaise de Product Chimique, France

Wacker Chemie, F.R. Germany

White Court, UK

Wynmouth Lehr, UK

Raw Materials/Chemical Intermediates

Name of Product:

Sulphadimidine

Name of Raw Material/
Chemical Intermediate:

Acetyl Acetone

Name of Manufacturer/
Supplier:

Acetochemical Co., USA
Arnaud et SA Raymond, France
British Celanese Ltd., UK
Daicel, Japan
Devineau, France
Henley and Co., UK
Hopkin William, UK
Joba, The Netherlands
Schilling B.H., Italy
Union Carbide Corp., USA
Wacker Chemie, F.R. Germany
Westco Chemicals, USA

Raw Materials/Chemical Intermediates

Name of Product:

Sulphadimidine

Name of Raw Material/
Chemical Intermediate:

Acetanilide

Name of Manufacturer/
Supplier:

Acetochemicals, USA
Alba Chemicals, USA
Albright and Wilson, UK
AMC S.A. , France
Bayer A.G., F.R. Germany
Conary Chemicals, USA
Dolder Ltd., Switzerland
Erba Carlo, Italy
Giusto Faravelli, Italy
Hindustan Organic Chemicals, India
Hoechst, Italy
Hopkin William, UK
Joba B.V., The Netherlands
May and Baker, UK
Merck, E., F.R. Germany
Nipa Lab., F.R. Germany
Orlex Chemicals, USA
Rhone Poulenc, France
Unipex, France

Raw Materials/Chemical Intermediates

Name of Product: Propranolol

Name of Raw Materials/
Chemical Intermediates Alphanaphthol

Name of Manufacturers/
Suppliers: ACN Aziende, Italy
B.H. Schilling, Schilling Societa', Italy
BDH Chemicals Ltd., UK
Bayer A.G., West Germany
Hopkins and Williams, U.K.
Joba Ltd., Netherlands
E. Merck, West Germany
Union Carbide, USA

Raw Materials/Chemical Intermediates

Name of Product:

Ampicillin

Name of Raw Material/
Chemical Intermediate:

6 Amino Penicillanic acid

Name of Manufacturers/
Suppliers:

Aldrich Chemicals, USA
Antibioticos, Spain
Atabay, Turkey
Bago Laboratorios, Argentina
Bayer, F.R. Germany
Biochemie, Austria
Borge Pharmaceuticals, USA
Bristol-Meyer, USA
Centrala Industriala de Medicament, Romania
Chemical Dynamics, USA
Cipan, Portugal
Deva, Turkey
Fermentaciones Synthesis, Mexico
Fermic S.A., Mexico
Flavine International, USA
Gist Brocade, The Netherlands
Hoechst, F.R. Germany
Medimpex, Hungary
Meiji-Seiko, Japan
Mexdexport, U.S.S.R.
Mustafa Nevzat, Turkey
Orion Pharmaceutica, Finland
Orsabe S.A. Cuernacavo, Mexico
Rhone Poulenc, France
Takeda Chemicals, Japan
Yong Jin, S. Korea

Raw Material/Chemical Intermediates

Name of Product:

Paracetamol

Name of Raw Material/
Chemical Intermediates:

Para Aminophenol

Nam

Name of Manufacturers/
Suppliers:

ACN Ziende C.N.A., Italy
Bayer AG., F.R. Germany
Boehringer Ingelheim, F.R. Germany
Chemapol, Czechoslovakia
Chemical Dynamics, USA
Hilton Davis Chemical, UK
Hoechst AG, F.R. Germany
Howard Hall International, USA
Hopkin William, UK
ICI, Belgium
J.H. Lowenstein and Sons, USA
Knoh Light Labs, UK
Mallinckrodt Inc., USA
Maypro Industries, USA
Orlex Chemicals Corp., USA
Pacific Gateway Co., USA
Rhone Poulenc Chemicals, France
Schilling, B.H. Italy
Sterling Organics, UK
Universal Preservachem, USA

Raw Materials/Chemical Intermediates

Name of Product:

Ethambutol

Name of Raw Materials/
Chemical Intermediates:

D-2-Aminobutanol

Name of Manufacturers/
Suppliers:

American Cyanamid, USA
American Hoechst Corp., NJ, USA
Arnaud et SA Raymond, France
Borg International, USA
Chemische Werke, Lahr, FR Germany
Farchemica di Martino, Treviglio, Italy
Fluka, Buchs, Switzerland
ICI, Blackley, Manchester, UK
Klockner, U. Germany
Lupin Laboratorias, Bombay, India
Mediumpek, Hungary
Raptakos Brett, India
Rhone Poulenc, Chimia Fine, France

Raw Materials/Chemical Intermediates

<u>Name of Product:</u>	Primaquine
<u>Name of Raw Material/ Chemical Intermediate:</u>	P-Anisidine
<u>Name of Manufacturer/ Supplier:</u>	Aceto Chemical Co., USA Bayer AG., F.R. Germany Bayer Chimi, France Biddle Sawyer, USA Du Pont De Nemour International, Switzerland Hoechst AG., F.R. Germany Hopkin and William, UK E. Merck, F.R. Germany Orlex Chemicals, USA Rhone Poulenc, France Schilling B.H., Italy Unipex, France
<u>Addendum:</u>	I.C.I., UK

Raw Materials/Chemical Intermediates

Name of Product:

Chloroquine Phosphate

Name of Raw Materials/
Chemical Intermediates:

m-Chloroaniline

Name of Manufacturers/
Suppliers:

ACNA, Casella, Milan, Italy
American Hoechst Corporation, Somerville, NJ, USA
Bayer AG, Bayerwerke, W. Germany
BDH Chemicals, Poole, Dorset, UK
F.H. Schilling Chimica, Italy
Du Pont de Nemour, USA
Clayton Aniline, Clayton, Manchester, UK
Hoechst, Frankfurt, W. Germany
Fickson and Welsh, Castlefield, UK
Hopkin and Williams, UK
I.C.I., Blackley, Manchester, UK
Maypro Industries, New York, USA
Merck, Darmstadt, W. Germany
Mitsubishi Chemicals, Tokyo, Japan
Orlex Chemical, Farlawn, NJ, USA
Ravand et Monscade, France
Vicker Labs, Burley in Wharfedale, Ilkely, UK

Raw Materials/Chemical Intermediates

Name of Product:

Furosemide

Name of Raw Material/
Chemical Intermediates:

Chloroanthranilic Acid

Name of Manufacturer/
Supplier:

Fabbrica Italiana, Italy

National Chemical Corporation, USA

S.S.T. Corporation, USA

Raw Materials/Chemical Intermediates

Name of Product:

Dansone

Name of Raw Materials/
Chemical Intermediates:

p Chloronitrobenzene

Name of Manufacturers/
Suppliers:

Bayer U.K. Ltd. Richmond, U.K.

E.D.H. Chemicals UK

Ciba Geigy, Whittleford, Cambridge, UK

Dow Chemicals, Manslow, UK

Du Pont de Nemour, USA

Fickson and Welch, UK

Hoechst Intermediate Div., Somerville, USA

Hopkins and Williams, UK

Medexport, Moscow, USSR

Mitchell, Cotts, Mirfield, UK

Monsanto Chemical Intermediates, St. Louis, USA

Raw Materials/Chemical Intermediates

Name of Product:

Furosemide

Name of Raw Material/
Chemical Intermediate:

Chlorosulphonic Acid

Name of Manufacturer/
Supplier:

A.C.N.A. Azienda, Italy

Aldrick Chemicals, USA

Bayer A.G., F.R. Germany

Chemapol, Czechoslovakia

Dupont De Nemour, USA

Hoechst A.G., F.R. Germany

I.C.I., UK

Kum Yang Co., USA

Monsanto, USA

Productora Generale de Perfumaria, Spain

Rhone Poulenc, France

Societe d'Equipment Industrial Ele, France

UCB, Belgium

Raw Materials/Chemical Intermediates

Name of Product:

Mebendazole

Name of Raw Materials/
Chemical Intermediates:

3:4 Diaminobenza-phenone

Name of manufacturer/
Supplier:

Biosynth International, USA

Chemical Dynamic, USA

Delmar Inc., USA

FDC, Bombay, India

Janssen Pharmaceutica, Belgium

Raw Materials/Chemical Intermediates

Name of Product: Dapsone

Name of Raw Materials/
Chemical Intermediate: 4:4 Dichlorodiphenylsulfone

Name of Manufacturers/
Suppliers: Aldrich Chemicals, USA
BASF, F.R. Germany
Birk Glover, USA
China National Corporation, China
Ferak Berlin OHG, Berlin, W. Germany
K and K Laboratories, Plainview, USA
Schuchardt, Dr. Theodor, München, W. Germany
Wasgchemie, Werk Schan Kavaiburg, W. Germany

Raw Materials/Chemical Intermediates

Name of Product:

Furosemide

Name of Raw Material/
Chemical Intermediate:

4:6 Dichlor-3 Sulfamoylbenzoic acid

Name of Manufacturer/
Supplier:

Biosynth International, USA

Chemical Dynamics, USA

Medimpex, Hungary

Polar, Finland

Raw Materials/Chemical Intermediates

Name of Product:

Chloroquine Phosphate

Name of Raw Materials/
Chemical Intermediates

4:7 Dichloroquinoline

Name of Manufacturers/
Suppliers:

BASF, F.R. Germany

Chemical Dynamics, NJ, USA

Hopkins and William, UK

ICI, Millbank, London, UK

Medimpex, Budapest, Hungary

Orlex Chemicals, Fairlawn, NJ, USA

SST Corporation, Clifton NJ, USA

Raw Materials/Chemical Intermediates

Name of Product: Ampicillin

Name of Raw Material/
Chemical Intermediate: N:N Dimethylaniline

Name of Manufacturers/
Suppliers: Aceto Chemicals, USA
Buffalo Colour Corp., USA
Dupont De Nemour and Co., USA
Fairmount Chemical Co., USA
Hopkin and Williams, UK
Inland Chemicals, USA
Orlex Chemical Corp., USA
Schilling B.H. Societa Chemica, Italy
Universal Preservachm, USA

Raw Materials/Chemical Intermediates

Name of Product:

Diethylcarbamazine

Name of Raw Material/
Chemical Intermediate:

Diethylcarbonylchloride

Name of Manufacturer/
Supplier:

Aldrich Chemical, USA

BASF, F.R. Germany

C.H.G. und Blau, F.R. Germany

Essex Chemical Corp., USA

Kennedy and Klim, USA

National des Poudere et Explosifs, France

Schilling B.H., Societa Chemica Spa, Italy

Raw Materials/Chemical Intermediates

Name of Product

Chloroquine Phosphate

Name of Raw Materials/
Chemical Intermediates

Diphenyloxide

Name of Manufacturers/
Suppliers:

Alba Chemicals, Tenafly NJ, USA

S.M. Schilling Chimica, Italy

Dow Chemicals, Manslow, UK

Civandan (SARL), France

ICI, (France), France

Monsanto Chemicals, St. Louis, USA

Raw Materials/Chemical Intermediates

Name of Product:

Propranolol

Name of Raw Materials/
Chemical Intermediates

Epichlorohydrin

Name of Manufacturers/
Suppliers:

Dow Chemicals, USA

Mc Kesson Chemicals, USA

Shell Chemicals, USA

Raw Materials/Chemical Intermediates

Name of Product: Ethambutol

Name of Raw Material/
Chemical Intermediates: Ethylene Dichloride

Name of Manufacturers/
Suppliers: Arnaud SA, France
Bayer AG, W. Germany
Coneo Chemicals, Houston, USA
Dow Chemicals, Midland, USA
Ethylgroupchemicals, USA
Great Lake Chemicals, Lafayette, USA
Hopkin and William, UK
Pan Britanica Ind., Waltham Cross, UK
PPG Chemical, Pittsburg, USA
Montedison, Italy
Rhone Poulenc, France
Sherman Chemical, Bedfordshire, UK
Union Carbide SA, Switzerland

Raw Materials/Chemical Intermediates

Name of Product:

Erythromycin

Name of Raw Material/
Chemical Intermediates:

Erythromycin Thiocynate

Name of Manufacturer/
Supplier:

Abbot Laboratories, USA

Chemi Kaliem A.G., F.R. Germany

Cipan, Portugal

Compania Espanola de la Penicillina y
Antibioticos, Spain

Upjohn Co., USA

Raw Materials/Chemical Intermediates

Name of Product:

Ethinylestradiol

Name of Raw Material/
Chemical Intermediates:

Estrone/Estradiol and Salts/Esters

Name of Manufacturers/
Suppliers:

Alwitt, UK

Delmar Inc., USA

Dolder, Switzerland

Henley, USA

Napp Chemicals, USA

Organon Inc., USA

Roussel Corporation, USA

Searle, USA

Raw Materials/Chemical Intermediates

Name of Product:

Piperazine

Name of Raw Material/
Chemical Intermediate

Ethylene Diamine Hydrochloride

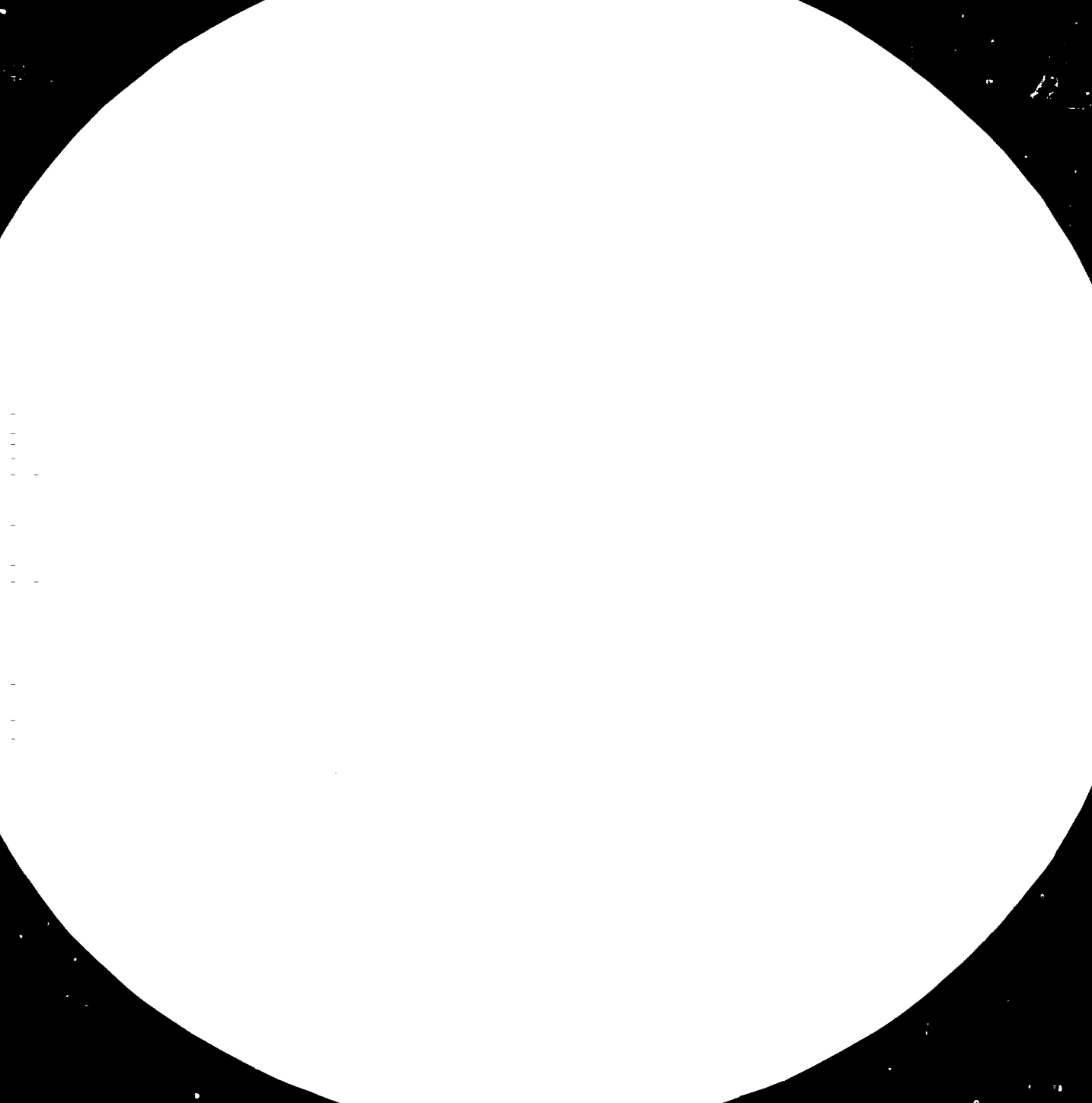
Name of Manufacturer/
Supplier:

Ethyl Chemicals, USA

Hetako Chemicals, Switzerland

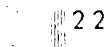
R.S.A. Corporation, USA

Texaco Chemicals, USA





2.5



7

1

Raw Materials/Chemical Intermediates

Name of Product:

Isoniazid

Name of Raw Material/
Chemical Intermediate:

Gamma Picoline

Name of Manufacturer/
Supplier:

Browning Chemical Corporation, USA
Chemapol Ltd., Czechoslovakia
China National Corporation, China
Croda Synthetic Chemicals, UK
FBA Pharmaceuticals, USA
Joba B.V., The Netherlands
Merck, E., F.R. Germany
Miki Sangyo, USA
Montedison Deutschland, F.R. Germany
Nepera Chemicals, USA
Reilly Tar and Chemicals, USA
Schilling B.H., Italy
T.R. International, UK
Union Carbide Corp., USA
Wynmouth Lehr, UK

Raw Materials/Chemical Intermediates

Name of Product:

Sulphadimidine

Name of Raw Material/
Chemical Intermediate:

Guanidine Nitrate

Name of Manufacturers
Suppliers:

Advent Chemicals, USA

American Drug and Chemicals, USA

Chemical Dynamics, USA

Hoechst A.G., F.R. Germany

Hummel Chemical, USA

Joba, The Netherlands

Nippon, Japan

Ortex Chemical, USA

Ravit, Italy

Schilling B.H., Italy

Schuchardt Theodar, F.R. Germany

Unwin R.W.,UK

Versaillaise de Produit Chimiques, France

Raw Materials/Chemical Intermediates

Name of Product:

Isoniazid

Name of Raw Material/
Chemical Intermediate:

Hydrazine Hydrate

Name of Manufacturer/
Supplier:

Albright and Wilson Chemicals, U.K.
Aceto Chemicals, USA
Biddle Saw Year Corp., USA
China National Corporation, China
Comptoir Chimique Continental, France
Conray Chemicals, USA
D and O Chemicals, USA
FBA Pharmaceuticals, USA
Greef, R.W. and Co., USA
Otsuka Chemicals, Japan
Product Chimiques, France
Roland S.A. Belgium
RP Chemicals, USA
Stetley Corporation, UK
Thorson Chemicals, USA
United Mineral and Chemicals, USA

Raw Materials/Chemical Intermediates

Name of Product:

Isoniazid

Name of Raw Material/
Chemical Intermediates:

Isonicotinic Acid

Name of Manufacturers/
Suppliers:

Alwitt, UK

Bayer A.G. F.R. Germany

Bofors Lakeway, USA

Chemical Dynamics, USA

Dolder, Switzerland

Reilly Tar Chemicals, USA

Schilling, B.H., Italy

Unipex, France

Raw Materials/Chemical Intermediates

Name of Product: Propranolol

Name of Raw Materials/
Chemical Intermediates Isopropylamine

Name of Manufacturers/
Suppliers: Air Products and Chemicals, USA
Ashland Chemicals, USA
EASF, Parsippany, N.J. USA
Brenntag, Germany
Chemtech Industries, St. Louis, USA
Hoechst A.G., F.F. Germany
Mc Kesson Chemicals, USA
Merck, W. Germany
Union Chemicals, USA
Union Carbide, UK
Univar Chemicals, USA

Raw Materials/Chemical Intermediates

Name of Product:

Diethylcarbamazine

Name of Raw Material/
Chemical Intermediate:

1 Methylpiperazine

Name of Manufacturer/
Supplier:

Aldrich Chemicals, USA

BASF, France

B.H. Schilling, Italy

Chemical Dynamics Corp., USA

D and O Chemicals, USA

Delmar Inc., USA

Dow Chemicals, USA

Greef R. W. and Co., USA

Merck, F.R. Germany

Miki Sangyo, USA

R.S.A. Corp., USA

Rexolin Chemicals, Sweden

S.S. T Corp., USA

Thomson and Joseph, UK

Versaillaise de Produits Chimiques, France

Raw Materials/Chemical Intermediates

Name of Product:

Piperazine

Name of Raw Material/
Chemical Intermediate:

Mono Ethanolamine

Name of Manufacturer/
Supplier:

Alpha International Chemicals, USA

Aranaud S.A., France

Ashland Chemical, USA

BASF, F.R. Germany

BDH, UK

Centrala Industriala, Romania

Chemcentral Corp., USA

Comptoir Chimique, France

Fallek Chemical, Belgium

ICC Industries, The Netherlands

ICI, UK

Lux Chemicals, USA

Merck, F. R. Germany

Pioneer Salt and Chemicals, USA

Schilling B.H., Italy

Shell Chemicals, UK

Stinnes Oil and Chemicals, USA

Texaco, UK

Union Carbide, UK

Union Chemicals, USA

Universal Preservachem, USA

Raw Materials/Chemical Intermediates

Name of Product:

Dapsone

Name of Raw Materials/
Chemical Intermediates

1:4 Nitrobenzene

Name of Manufacturers/
Suppliers

American Cyanamide, Wayne, USA
BASF, Ludwigshafen, West Germany
Bayer A.G., West Germany
Brown Boveri, Mannheim, Denmark
Comptoir Chimique, France
Dupont de Nemour, Wilmington, USA
Giusto Faravelli, Italy
First Chemical Corporation, Jackson, USA
Hickson and Welch, Castleford, UK
Hoechst A.G., West Germany
I.C.I., Manchester, UK
Industrie Chimique, France
Lonza Ltd., Switzerland
Metexport, Moscow, USSR
May and Baker, Dagenham, UK
Nagasse, Dusseldorf, West Germany
Strang Chemicals Ltd., UK
Versaillaise de Produits Chem., France

Raw Materials/Chemical Intermediates

Name of Product:

Chloroquine Phosphate

Name of Raw Materials/
Chemical Intermediates

Novaldiamine (5 Diethylamino 2 - amino pentane)

Name of Manufacturers/
Suppliers:

BASF, Ludwigshafen, W. Germany

ICI, London, UK

Rhone Poulenc, Paris, France

Sterling Drug, New York, USA

Raw Materials/Chemical Intermediates

Name of Product:

Ampicillin

Name of Raw Materials/
Chemical Intermeidates:

D Phenylglycine

Name of Manufacturer/
Suppliers:

Aceto Chemicals, USA

Bentex Chemicals, USA

Chemical Dynamics, USA

ICN- Acro SA, Switzerland

Greef R.W., USA

Kay Fries (Dynamite Nobel), USA

Nippon, Japan

Tanabe, Japan

Upjohn Co., USA

Wall Chemicals, USA

Wilshire Chemicals Co., USA

Raw Materials/Chemical Intermediates

Name of Product:

Acetylsalicylic acid

Name of Raw Material/
Chemical Intermediate:

Salicylic acid

Name of Manufacturer/
Supplier:

A.C. Industries, USA
Albright and Wilson, UK
Alta Laboratorios, India
Arcode, UK
Aziende Colori Nazionali Affini, Italy
J. T. Baker Chemicals, USA
Bayer AG, F.R. Germany
Bentex Chemicals, USA
Browning Chemicals, USA
Chemphora Chemische, The Netherlands
Comptoir Chimique, France
Dolder Ltd., Switzerland
Dow Chemicals, USA
Eurochemiec S.A. France
Flavine International, USA
Giusti Faravelli, Italy
Grasser Salicylate, UK
Hilton Davis, UK
Joba B.V., The Netherlands
Lars Christensen, Denmark
MWM Chemicals, USA
Monsanto, UK
Ortex Chemicals, USA
Polfa, Poland
Productora Generale de Perfumaria, Spain
Roland, Belgium
R.W. Unwin, UK
Rhone Poulenc, USA
Schilling B.H., Italy
Sterling Drug Co., USA
Versaillaise de Produits Chimiques, France
White Court, UK

Raw Materials/Chemical Intermediates

Name of Product:

Ascarbic Acid

Name of Raw Materials/
Chemical Intermediate

Sorbitol

Name of Manufacturer/
Supplier:

Advent Chemicals, USA
Alwitt, UK
Bayer A.G., F.R. Germany
Biddle Sawyer, USA
Chemapol, Yougoslavia
Conary Chemical, USA
Davos Chemical, USA
Hefti, Switzerland
Helm New York Chemicals, USA
Istituto Chemterapico Italiano, Italy
Joba, The Netherlands
Laporte Industries, UK
Lar Christensen, Denmark
Lonza Inc., USA
Maypro Industries, USA
Merck and Co., USA/F.R. Germany
Mitsui, USA
Pacific Gateway, USA
Pfizer, USA
Roland, Belgium
Schilling E.H., Italy
Steeley Chemicals, UK
S.S.T. Corporation, USA
Stinnes Oil and Chemicals, USA
Syntetic, Denmark
Universal Preservacum, USA
Union Chimique, France
Westco Chemicals, USA

Raw Materials/Chemical Intermediates

Name of Product: Sulphadimidine

Name of Raw Material/
Chemical Intermediate: Sulphaguanidine

Name of Manufacturer/
Suppliers: Aceto Chemicals, USA
Agvar Chemicals, USA
Archemia, Italy
Chemapol Ltd., Czechoslovakia
Dolder, Switzerland
Fallek Products Int., The Netherlands
Flavine International, USA
Giusto Faravelli, Italy
GYMA Laboratories, USA
Howard Hall, USA
ICI, UK
Joba B., The Netherlands
Lars Christensen, Denmark
Maypro Industries, USA
MWM Chemicals, USA
Pliva, Yougoslavia
Polfa, Poland
Schilling BH, Italy
S.E.I.A., France
Strang Chemicals, UK
Syntetic AS, Denmark
Thomson and Joseph, UK
Union Chemique, France
Unwin R.W., UK

Raw Materials/Chemical Intermediates

Name of Product: Dapsone

Name of Raw Material/
Chemical Intermediate: Sulphurylchloride

Name of Manufacturers/
Suppliers: BASF Wyandotte Corp, USA
Bayer AG, F.R. Germany
Chemische F. Schweizerhall, Switzerland
Erba Carlo, Italy
Hooker Chemicals, USA
Société de Equip. Industriel, France

Raw Materials/Chemical Intermediates

Name of Product:

Tetracycline

Name of Raw Material/
Chemical Intermediate:

Tetracycline Anhyd Salt,
Tetracycline Urea Complex, Demethylchlortetra
Cycline Urea Complex

Name of Manufacturers/
Supplier:

Cipan, Portugal
Compania Espanola de la P. Antibioticos, Spain
Hoechst A.G., F.R. Germany
Pfizer, USA
Sterling Organics, USA

SECTION III

ADDRESSES OF MANUFACTURERS/SUPPLIERS

ADDRESSES OF MANUFACTURERS/SUPPLIERS

Abbot Universal,
Abbot Park,
400 Sheridan Road,
North Chicago,
Ill. 60064
U.S.A. (Telex 910-235-1584)

AC Industries, Sattva Chemicals Corp.,
P.O. Box 1335,
Stanford,
U.S.A. (Telex 96-5807)

ACIC,
40 St. Clair Ave.,
East Suite 301,
Toronto,
Canada

Acna,
Aziendi Casella Postale 3996,
30100 Milan,
Italy

Aceto Chemicals,
126-02, North Blvd.,
Flushing,
N.Y. 11368,
U.S.A. (Telex 62662)

ACF Chemifama N.V.,
P.O. Box 5,
Maarssen,
The Netherlands

Ache Laboratories S.A.
San Paulo,
Brazil

Advent Chemical,
527 Madison Ave,
New York,
N.Y. 10022,
U.S.A.

Agvar Chemicals,
One Lincoln Plaza,
New York,
N.Y.
U.S.A. (Telex 237704-Agvar)

Air Products and Chemicals,
P.O. Box 538,
Allentown,
Penn. 18105,
U.S.A.

Albright and Wilson,
475 Walnut Street,
Norwood,
N.J. 07648,
U.S.A. (Tel: 767-3014)
(Telex: 130345)

Albright and Wilson,
March on Works,
White Haven,
CA28 9QQ,
United Kingdom

Albright and Wilson,
Oldbury,
Worsc. B694,
United Kingdom

Alba Chemicals Inc.,
285 Country Road,
Tenafly,
N.J. 07670,
U.S.A. (Tel: 569-3636)
(Telex: 642139)

Alembic Products,
Oaklands House,
Oakland Drive,
Manchester,
United Kingdom (Telex 667740)

Alembic Chemicals,
Alembic Road,
Baroda,
India

Aldrich Chemicals,
940 W. St. Paul Ave.,
Millwaukee,
W.I.
U.S.A. (Telex 268434)

Allied Chemicals,
P.O. Box 2500,
Somerville N.J. 08876,
U.S.A.

Alpha Therapeutic Corp.,
555 Valley,
Los Angeles,
CA 90032,
U.S.A.

Alta Laboratories,
F.O. Box 7019,
Dadar,
Bombay,
400028,
India

Alagoas Materias,
Primas Maccio,
Alagoas,
Brazil

Alwitt,
Zelidi House,
2-4 Mountephran,
Tunbridge Wells,
Kent,
United Kingdom (Telex 95146)

Ancel Europa S.A. Chemicals,
Avenue Louise 251,
1050 Bruxelles,
Belgium

American Cyanamide,
Berdan Ave.,
Wayne, New Jersey,
N.J. 07470,
U.S.A. (Tel: 831-200)
(Telex: 130400)

American Drugs and Chemicals,
17901 San Fernando Road,
Sun Valley,
CA 91352
U.S.A.

American Roland Corp.,
157, Chamber Street,
New York,
N.Y. 10007,
U.S.A. (Tel: 349-0170)
(Telex: RCA 222 771)

Amphray Laboratoris,
Sambava Chamber 4th Floor,
Sir P.M. Road,
Bombay,
India

Angelini Spa.,
Viale Amelia 70,
00181 Roma,
Italy. (Tel: 7933)
(Telex: 611427)

Ankerfarm Spa,
Casella Postale 42,
20092,
Cinisello, Balsamo,
Milan,
Italy

Antibioticos S.A.,
28 Bravo Muri'lo,
Madrid-3,
Spain (Tel: 446-7000)
(Telex: 22933 Antib E)

Ansa Antibiotics,
Ankara,
Anfalti K'osekoy Merkii,
PK 54,
Izmit,
Turkey

Atral Laboratories S.A.R.L. A,
Gomes Pereira 74,
1500 Lisbon,
Portugal. (Tel: 704151)
(Telex: 12241)

Astra A.B.,
15185 Sodertalje,
Sweden (Tel: 32980)
(Telex: 19237)

Ashi Chemicals Industry,
Mitsui Building,
1-2 Yurakacho,
1 Chome Chiyoda Ka.,
Tokyo,
Japan (Telex: 222 3518 Bernbrg)

Ashland Chemicals,
P.O. Box 2219,
Columbus,
Ohio,
U.S.A. (Tel: 889-3333)
(Telex: 245385)

Asia Pharmaceuticals,
413-13,
Shindovim Dong,
Kuru Ku,
Seoul-150,
S. Korea

Archemia,
Via Paglino 21,
20149,
Milano,
Italy

Archifar S.p.a.,
18 Via Trivulzio 20146,
Milan,
Italy.

Arcode Ltd.,
Plantatim House,
Mincing Lane,
London E.C.
United Kingdom

Armour Pharmaceuticals Co.,
6991 E. Camelback Road,
Suite A-210,
Scottsdale,
AZ 85251,
U.S.A.

Arnaud Chemicals,
21 rue Champ Elysees,
38 Grenoble,
France

Atabay,
Esentepe,
Kasap Sokak,
No 13, Levent,
Istanbul,
Turkey.

Ayrest Laboratories,
685 Third Ave.,
New York,
U.S.A.

Bago Laboratories,
Bernardo de Irigoyani 248
1407 Buenos Aires,
Argentina.

Bayer AG.,
D-5090 Leverkusen
Bayerwerk,
F.R. Germany (Tel: 301)
(Telex 81510881)

BASF,
(Badische Anilin and Soda Fabrik A.G.)
6700 Ludwigshafen,
Rheim,
F.R. Germany
(Tel: 601)
(Telex: BASF Ludwigshafen)

BASF Wyandotte Corp.,
100 Cherry Hill,
Parsippany,
N.J. 07054,
U.S.A.

Banyo Pharmaceuticals,
7-2 Chome,
Nihonbashi,
Honcho,
Chno-ku,
Japan

Baker Chemicals,
Philiphburg,
New Jersey 08065,
U.S.A.

Benaco Soc. die R.L. Donato,
Lonato Brescia,
Italy.

BEC Chemicals,
Victoria Building,
Abdullah Brelvi Road,
Fort ,
Bombay,
India (Telex: 011-2560)

B.D.H. Chemicals,
Poole,
BH 124 NN,
United Kingdom.

Behringwerke Aktiengesellschaft,
Postfach 1140,
D-3550 Marburg,
F.R. Germany.

Bengal Chemicals Co.,
Ganesh Chandra Ave.,
Calcutta 700013,
India.

Bentex Chemicals,
One Main Street,
Chatham,
N.J. 07928,
U.S.A. (Tel: 635-4841)
(Telex: 642-507)

Beecham Group Ltd.,
Beecham House,
Great West Road,
Brentford,
Middlesex ,
United Kingdom (Telex: 22743)

Beta Chemicals,
Gannow Lane,
Rose Grove,
Burnley,
BB 126JJ
United Kingdom.

Birk Glover,
Mont and Lincoln Ave.,
New Albany 47150,
U.S.A.

Biocest Serum Institute GmbH.,
Postfach 730260,
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Paris, France, 11 - 13 October 1982

DIRECTORY OF SOURCES OF SUPPLY OF 26 ESSENTIAL BULK DRUGS, THEIR
CHEMICAL INTERMEDIATES AND SOME RAW MATERIALS

Addendum *

Impact of the prices of intermediates on the
cost of production of essential bulk drugs

Prepared by
the UNIDO secretariat

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INTRODUCTION

1. The method illustrated in this document has been appended to the Directory of Sources of Supply for Essential Bulk Drugs, with the aim of assisting industrial managers in the developing countries to apply a mathematical approach in arriving at indicative prices for intermediates used in the local manufacture of Essential Bulk Drugs.
2. The method can also be used to compare certain technical and economical aspects of alternative technologies.

CHEMICAL INPUT COST AND UNIT MARGINAL
DIFFERENCE ANALYSIS FOR CHEMICAL PROCESSES
USED IN THE PRODUCTION OF PHARMACEUTICAL BULK SUBSTANCES
AN ENGINEERING APPROACH

Based on a UNIDO study^{1/}, intermediates and raw materials account for 61 to 96 per cent of the variable costs in the production of bulk pharmaceutical substances in developing countries.

The study concludes that it is cheaper to import certain essential drugs than to manufacture them from imported raw materials. Under such conditions, economically feasible new plants cannot be established in developing countries and existing production units should be either closed down or operated under government protection.

The method described here is intended to assist developing countries to analyse the impact of chemical input costs on the economic feasibility of the production of pharmaceutical bulk substances and to select essential drugs for local production through evaluation of the unit marginal difference values.

Symbols and Definitions

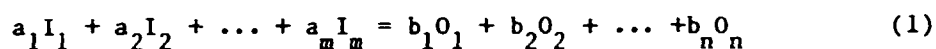
- I_n chemical input
- O_n chemical output
- f_{mn} chemical conversion factor, i.e. the number of units of chemical input(s) required for the production of 1 unit of chemical output(s).
- P_{I_m} unit price of a chemical input
- P_{O_n} unit price of a chemical output

^{1/} The pricing and availability of intermediates and bulk drugs, UNIDO ID/WG.331/4, 26 September 1980, pp. 12-35

- C_0 unit cost(s) of chemical input(s) required for the production of 1 unit of chemical output(s)
- M_n unit marginal difference, i.e. the difference between the unit price(s) of chemical output(s) and the unit cost(s) of chemical input(s)
- * actual value(s) at a given time
- ** desirable value(s) at the same time to indicate the limit beyond which the process becomes economically feasible.

Description of the Method

The generalized single-step chemical reaction can be described by the following equation:



where I_1, I_2, \dots, I_n are the chemical inputs (reactants), O_1, O_2, \dots, O_n are the chemical outputs (products) and a_1, a_2, \dots, a_m and b_1, b_2, \dots, b_n are coefficients indicating the number of moles of inputs and outputs, respectively. It should be noted that the number of inputs is not necessarily equal to the number of outputs, hence the index of the last terms are different on the two sides of the equation.

When there is a theoretical relation between a chemical input, I_m , and a chemical output, O_n , then the chemical conversion factor f_{mn} is described by the following formula:

$$f_{mn} = \frac{a_m \text{ mol wt } I_m}{b_n \text{ mol wt } O_n} \quad (2)$$

If the process cannot be described by an equation because the input is not a chemically defined substance - e.g., the cracking of petroleum -, or various outputs with the same chemical formula - e.g. structural

isomers - are simultaneously obtained in a chemical synthesis, then the chemical conversion factor is derived from experimental measurements and it can be defined by the following formula:

$$f_{mn} = \frac{wtI_m}{wtO_n} \quad (3)$$

Neither the theoretical, nor the maximum empirical chemical conversion factors are achieved in industrial practice and attempts to reach it would not always give economically optimum results. The greater is the difference between the optimum and industrial values, the less efficient is the technology studied.

The following formulae relate the unit costs of chemical inputs and the unit marginal difference to the unit price of a selected chemical output O_j :

$$C_{O_j} = \sum_{i=1}^m f_{ij} P_{I_i} \quad (4)$$

$$M_{O_j} = P_{O_j} - C_{O_j} \quad (5)$$

The actual values at a given time are obtained from the relationships:

$$C_{O_j}^* = \sum_{i=1}^m f_{ij} P_{I_i}^* \quad (6)$$

and

$$M_{O_j}^* = P_{O_j}^* - C_{O_j}^* = P_{O_j}^* - \sum_{i=1}^m f_{ij} P_{I_i}^* \quad (7)$$

Analogously, the desirable values are:

$$C_{0j}^{**} = \sum_{i=1}^m f_{ij} P_i^{**} \quad (8)$$

and

$$M_{0j}^{**} = P_{0j}^* - C_{0j}^{**} = P_{0j}^* - \sum_{i=1}^m f_{ij} P_i^{**} \quad (9)$$

The desirable values should be based both on the long-term observation of actual prices and on efficient chemical conversion factors. Spot market prices might distort the result and inefficient technologies do not reflect the techno-economic component of the unit marginal difference.

The unit marginal difference is not a constant. Its value depends on the type of product (commodity, pseudo-commodity, speciality chemical, etc.) on the conditions of both production (technology, costing elements) and marketing (domestic and exports) and it changes also as a function of the time.

The differences between the actual and desirable values can be calculated:

$$C_{0j} = C_{0j}^{**} - C_{0j}^* \quad (10)$$

$$M_{0j} = M_{0j}^{**} - M_{0j}^* \quad (11)$$

and

If $C_{0j}^* \leq C_{0j}^{**}$, or $M_{0j}^* \geq M_{0j}^{**}$, then the production is economically feasible.

If this is not the case, then (a) the price of the chemical inputs can be negotiated within reasonable limits, (b) the chemical conversion factor can be improved, or (c) the price of the chemical output can be subsidized.

The desirable individual chemical input price can be calculated by using the following formula:

$$P_{I_i}^{**} = P_{I_i}^* - P_{I_i}^* \frac{\Delta M_{O_j}}{C_{O_j}} \quad (12)$$

and the obtained value can serve as a basis for negotiation of the intermediate price.

The chemical conversion factor can be compared to the theoretical and industrially optimum values - indicative figures are available from process patent descriptions - and the difference can justify a cost-related process development project.

Example

Chemical reaction:	$C_7H_6O_3$	+	$(CH_3CO)_2O$	=	$C_9H_8O_4$	+	$C_2H_4O_2$
Common name of reactants and products:	salicylic acid		acetic anhydride		acetylsalicylic acid		acetic acid
Symbols used in this analysis:	SA		AA		ASA		-
Molecular weight:	138.12	+	102.09	=	180.16	+	60.05
Chemical conversion factors:	f_{SA}		f_{AA}				
- theoretical	0.767		0.567		1.000		
- industrial	0.776 ^{2/}		0.574 ^{2/}		1.000		

^{2/} Sittig, M.: Pharmaceutical Manufacturing Encyclopedia, Noyes Data Corporation, Park Ridge, New Jersey, U.S.A. pp. 39-40

Actual Values:

$$P_{SA}^* = \$ 1.53/1b^{3/} = \$ 3.37/kg$$

$$P_{AA}^* = \$ 0.41/1b^{3/} = \$ 0.90/kg$$

$$P_{ASA}^* = \$ 1.66/1b^{3/} = \$ 3.36/kg$$

$$C_{SA}^* = f_{SA} \times P_{SA}^* = 0.776 \times \$ 3.37 = \$ 2.62$$

$$C_{AA}^* = f_{AA} \times P_{AA}^* = 0.574 \times \$ 0.90 = \$ 0.52$$

$$C_{ASA}^* = C_{SA}^* + C_{AA}^* = \$ 3.14$$

$$M_{ASA}^* = P_{ASA}^* - C_{ASA}^* = \$ 3.66 - \$ 3.14 = \$ 0.52$$

Desirable Values:

If the unit marginal difference in a developing country is, for example, \$1.46/kg of ASA, then:

$$\Delta M_{ASA} = \$1.46 - \$0.52 = \$ 0.94$$

$$P_{SA}^{**} = P_{SA}^* - P_{SA}^* \frac{\Delta M_{ASA}}{C_{ASA}^*} = 3.37 - 3.37 \times \frac{0.94}{3.14} = \$ 2.36/kg$$

and

$$P_{AA}^{**} = P_{AA}^* - P_{AA}^* \frac{\Delta M_{ASA}}{C_{ASA}^*} = 0.90 - 0.90 \times \frac{0.94}{3.14} = \$ 0.63/kg$$

3/ Chemical Marketing Reporter (CMA), 3 May, 1982.

