

Progress in Drug Research 73

Series Editor: K.D. Rainsford

A.N.M. Alamgir

Therapeutic Use of Medicinal Plants and Their Extracts: Volume 1

Pharmacognosy

 Springer

Progress in Drug Research

Volume 73

Series editor

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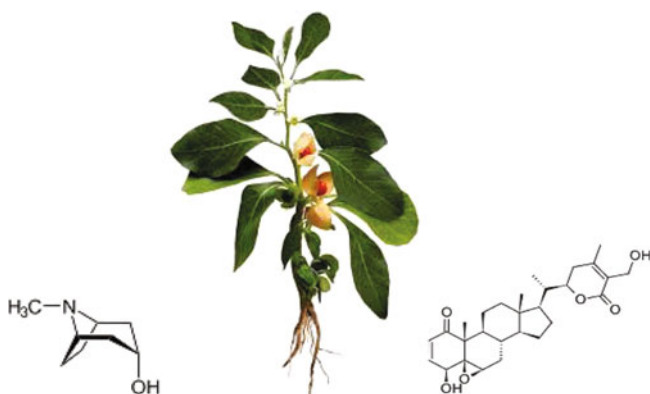
A.N.M. Alamgir

Therapeutic Use of Medicinal Plants and Their Extracts: Volume 1

Pharmacognosy

(Botany, pharmacology, therapy, culture and commerce of
medicinal herbs)

For B. Sc. and M. Sc. Students



Tropane alkaloid - Tropine, *Withania somnifera*, Steroidal lactone - Withaferin A

 Springer

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ISSN 0071-786X

Progress in Drug Research

ISBN 978-3-319-63861-4

DOI 10.1007/978-3-319-63862-1

ISSN 2297-4555 (electronic)

ISBN 978-3-319-63862-1 (eBook)

Library of Congress Control Number: 2017947480

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Printed on acid-free paper

This Springer imprint is published by Springer Nature

The registered company is Springer International Publishing AG

The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

*Dedicated to the memory of my beloved
parents*

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Abbreviations

2,4,5-T	2,4,5-trichlorophenoxyacetic acid
2,4-D	Dichlorophenoxy acetic acid
4 CPA	4-chlorophenoxyacetic acid
5-MeO-DMT	5-methoxy-N,N-dimethyltryptamine, bufotoxin
AAS	Atomic absorption spectrophotometer
ABA	Abscisic acid
AC	Activated charcoal
AD	Anno domini
ADA	Adenosine deaminase
ADP	Adenosine diphosphate
AHAs	Alpha hydroxy acids
AHP	American herbal pharmacopoeia
AIDS	Acquired immunodeficiency syndrome
ALA	Alpha-lipoic acid
AMP	Adenosine monophosphate
ANF	American National Formulary
ANS	Autonomic nervous system
AP	African pharmacopoeia
API/APP	Active pharmaceutical ingredient/product
ATC	Anatomical therapeutic chemical
ATP	Adenosine triphosphate
BA	6-benzyladenine
BAP	6-benzylaminopurine
BC	Before Christ
BCG	Bacillus calmette-guerin
BDNF	Bangladesh national formulary
BHC	Benzene hexachloride
BNF	British National Formulary
BOL	Barcode of Life
BoNT	Botulinum neurotoxins

BP	British pharmacopoeia
BPC	British pharmaceutical codex
BSS	Balanced salt solutions
BTC	Behind-the-counter
C3/C4 pathway	Calvin-Basham (3 carbon acid) pathway / HatchSlack (4 carbon acid) pathway of CO ₂ assimilation
CA	Conservation agriculture
CAD	Charged aerosol detector
CAMs	Complementary and alternative medicines
CBD	Convention on biological diversity
CBOL	Consortium for the barcode of life
CCD	Charge-coupled device
CCEE	Countries of Central and Eastern Europe
CCK	Cholecystokinin
CE	Capillary electrophoresis
CE-DAD	Capillary electrophoresis with diode array detector
CF	Cystic fibrosis
CHD	Coronary heart disease
CIPIH	Commission on intellectual property rights, innovation and public health
CLA	Conjugated linoleic acid
CML	Cordyceps militaris lectin
CNS	Central nervous system
COMT	Catechol-o-methyltransferase
COMTRADE	Common format for transient data exchange
COX-1/2	Cyclooxygenase-1/2
CSIR	Council of scientific and industrial research
CTD	Common Technical Document
CTM	Chinese traditional medicine
CUOXAM	Ammoniacal solution of copper oxide
CZE	Capillary zone electrophoresis
DAD	Diode array detector
DDT	Dichlorodiphenyltrichloroethane
delta-9-THC	delta-9-tetrahydrocannabinol
DIM	Diindolylmethane
DMEM	Dulbecco's Modified Eagle's Medium
DMSO	Dimethyl sulfoxide
DMT	Dimethyltryptamine
DNA	Deoxy ribonucleic acid
DO	Doctor of osteopathy
DSHEA	Dietary Supplement Health and Education Act
ECM	Extra cellular matrix
ED	Erectile dysfunction
EDQM	European Directorate for the Quality of Medicines
EDTA	Ethylenediaminetetraacetic acid

EGCG	Epigallocatechin-3-gallate agency
ELISA	Enzyme-linked immunosorbent assay
ELSD	Electric light scattering detector
EMA	European medicines agency
EMEA	European medicines evaluation agency
EMEM	Eagle's Minimum Essential Medium
ENT	Ear, nose, and throat
ER	Endoplasmic reticulum
ESCOF	European Scientific Cooperative on Phytotherapy
EU	European union
FAO	Food and agriculture organization
FDA	Federal food and drug administration
FDCA	Federal food, drug, and cosmetics act
FID	Flame ionization detector
FOSHU	Foods for specified health uses
FYM	Farmyard manure
GA3	Gibberellic acid
GABBA	Gamma-aminobutyric acid A
GACP	Good agricultural and collection practice
GACPs	Good agricultural and collection practices
GC	Gas chromatography
GC-MS	Gas chromatography mass spectrophotometry
GI	Gastrointestinal
GI	Geographical indications
GLC	Gas-liquid chromatography
GLP	Good laboratory practice
GMP	Good manufacturing practice
GnRH	Gonadotrophin-releasing hormone
GP	General practitioner
GPAIP	Good Plant Authentication and Identification Practice
GRs	Genetic resources
HA	Hyaluronic acid
hCG	Human chronic gonadotropin
HCH	Hexachlorocyclohexane
HEPA	High efficiency particle air filter
hGH	Human growth hormone
HILIC	Hydrophilic interaction chromatography
HIV	Human immunodeficiency virus
HMPC	Committee on herbal medicinal products
HMPC	Herbal medicinal products
HPLC	High-performance liquid chromatography
HPLC-DAD	HPLC coupled to diode-array detection
HPLC-ELSD	HPLC-evaporative light scattering detector
HPTLC	High-performance TLC
HR-MS	High-resolution mass spectrometry

HRs	Hairy roots
HSCCC	High-speed counter-current chromatography
HTS	High-throughput screening
HYV	High yielding variety
I3C	Indole-3-carbinol
IAA	Indole-3 acetic acid
IBA	Indole butyric acid
ICDRA	International conference of drug regulatory authorities
ICN	International code of nomenclature
ICP	Inductively coupled plasma
ICP-OES	Inductively coupled plasma-optical emission spectrometry
IDO	Indoleamine 2,3-dioxygenase
IGC	Intergovernmental Committee
IgE	Immunoglobulin E
IP	Indian pharmacopoeia
IP	Intellectual property
IPR	Intellectual property right
IR	Infrared
IRS	Infrared spectroscopy
IUCN	International union for conservation of nature
ITS	International transcribed spacer
JKMA	Japan Kampo Medicines Manufacturer Association
kD	Kilo dalton
KTTKS	Collagen pentapeptide: Lys-Thr-Thr-Lys-Ser
LC	Liquid chromatography
LC-MS	Liquid chromatography coupled to mass spectrometry
L-DOPA	Levodopa or L-3,4-dihydroxyphenylalanine
LHRH	Luteinizing hormone-releasing hormone
LOD	Loss on drying
LS	Longitudinal section
LSD	Lysergic acid diethylamide
MAO	Monoamine oxidase
MAOIs	Monoamine oxidase inhibitors
matK	Maturase K, a plant plastidial gene
MC	Moisture content
MCF	Maximum final moisture content
MD	Medical doctor
MEM	Minimum essential medium
MECC	Micellar electronic capillary chromatography
MEKC	Micellar electrokinetic chromatography
MEP pathway	Methyl D-erythritol 4-phosphate pathway/non-mevalonate pathway
MHRA	Medicines and healthcare products regulatory agency
MIR	Mid-infrared

MJ	Methyl jasmonate
MPAs	medicinal and aromatic plants
MPs	Medicinal plants
MPS I	Mucopolysaccharidosis type I
MS	Mass spectrometry
MS medium	Murashige and Skoog medium
Mw	Mass of water
NA	Numerical aperture
NAA	Neutron activation analysis
NAA	Naphthaleneacetic acid
NAPRALERT	Natural Medicines Comprehensive Database
NBSB	National Biological Standards Board
NCCAM	National Center for Complementary and Alternative Medicines
NE	Norepinephrine
NF	National formulary
NGA	N-acetyl-glucosamine
NHPD	Natural health products directorate
NIRS	Nearinfrared spectroscopy
NIS	Newly independent states
NMR	Nuclear magnetic resonance
NPK fertilizers	Nitrogen, phosphorus, and potassium fertilizers
NPs	Natural products
NSAIDs	Non-steroidal anti-inflammatory drugs
NTA	Notice to Applicants
omega-3 PUFAs	Omega-3 polyunsaturated fatty acids
MEG-3 brand omega-3 EPA/DHA	Eicosapentaenoic acid/docosahexaenoic acid
OPLC	Over-pressured layer chromatography
OTC	Over-the-counter
PAF	Platelet activity factor
PBS	Phosphate-buffered saline
PCPA	p-chlorophenoxyacetic acid
PEITC	Phenethyl isothiocyanate
PEP	Phosphoenolpyruvate
Ph. Int.	International pharmacopoeia
PIPs	Plant-incorporated protectants
POM	Prescription only medicines
POPs	Persistent organic pollutants
PP2A	Protein phosphatase-2A
PVP	Polyvenyl pyrrolodin
QDG	Quality Drafting Group
QP	Qualified Person
QTLC	Quantitative TLC
R&D	Research and development

Rad-br	Radium bromatum
RBC	Red blood corpuscles
rcbL	Ribulose biphosphate carboxylase large chain
RECOMBIVAX HB	Recombinant hepatitis B vaccine
Rf	Retention factors or relative to front, determined as distance moved by the compound/distance moved by the solvent
RH	Relative humidity
RIA	Radioimmunoassay
RNA	Ribonucleic acid
RP	Reversed phase
RP-IPC-HPLC	Reversed-phase ion pair chromatography-HPLC
RPMI	Roswell park memorial institute
SA	Salicylic acid
SAX-HPLC	Strong anion exchange-HPLC
SCID	Severe combined immunodeficiency
SEC	Size exclusion chromatography
SH medium	Schenk and Hildebrand medium
SI	Stomatal index
SOD	Superoxide dismutase
SSM	Siddha system of medicine
STN	Scientific and technical network
TBGRI	Tropical Botanic Garden and Research Institute
TCA cycle	Tricarboxylic acid cycle
TCAM	Traditional/complementary and alternative medicine
TCM	Traditional Chinese Medicine
TEM	Transmission electron microscope
T DNA	Transfer DNA
TeNT	Tetanus neurotoxin
THM	Traditional herbal medicine
TK	Traditional knowledge
TKDL	Traditional knowledge digital library
TKRC	Traditional knowledge resource classification
TLC	Thin-layer chromatography
TL DNA	Left T DNA
TMK	Traditional medical knowledge
tPA	Tissue plasminogen activator
TR DNA	Right T DNA
TS	Transverse section
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific, and Cultural Organization
US	Ultrasound
USP	United States Pharmacopeia
USPTO	United States Patent and Trademark Office

UV	Ultraviolet
VIDS	Venation Image Database System
wb	Wet basis
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WWF	World Wide Fund for Nature
XRFS	X-ray fluorescence spectroscopy