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Book Reviews: Technical Books Section

(Page 4 a - Review by Dr. Gyan Fernando, UK)



FEATURED BOOK : REVIEW 1

WELL PRESENTED

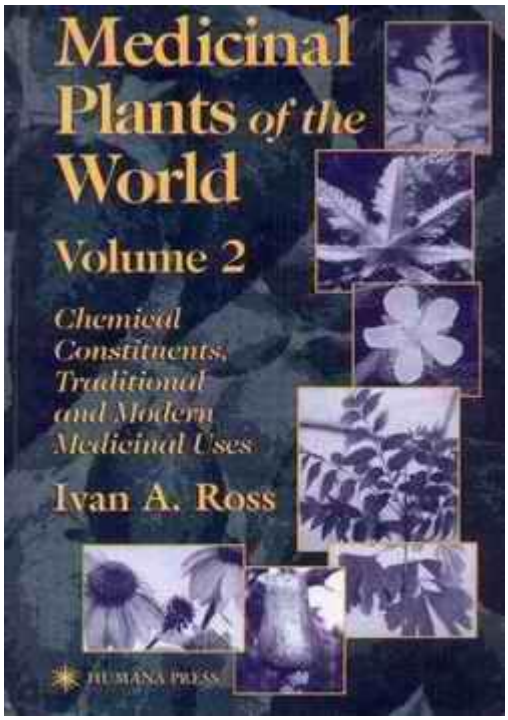
[Review 1] [Main Page] [Review 2]

Rating : 9.5

★★★★★★★★★½ (9.5/5)

Medicinal Plants of the World (Vol 2): Chemical Constituents, Traditional and Modern Medicinal Uses *by* Ivan A. Ross. 7" x 10" Hardcover.
Humana Press Inc., 999 Riverview Drive, Suite 208, Totowa, New Jersey 07512; Publication Date 2001. xiv+487 pages, ISBN 0-89603-877-7 (acid-free Paper). Price $110.00

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This book is the second volume on the subject of medicinal plants of the world and contains information on 24 plant species - and as the preface informs the reader - 3225 references. There is no doubt that this is an impressive collection of plants and references.

The criteria used by the author in selecting plants for inclusion in this volume, as stated in the preface, are: Their distribution, their uses in developing countries where they are needed as a primary source of medicine, the amount of information available on the plant and consumer interest.

The criteria used in the selection of plants for this book has resulted in a fascinating collection of plants, which for the most part are unrelated to each other.

It should be noted that this book does not fall into the 'medical' category of books and neither was it meant to be a medical book. From this reviewers point of view this book is best described as a fascinating botanical text with considerable pharmacological and physiological information. This is especially so if one has some familiarity with at least a few of the plants discussed in the book.

A pharmacologist would view the book differently. Perhaps as a source of inspiration in developing new drugs. After all most of the best known and versatile 'Western' drugs were, at least originally, plant extracts. Drug such as Aspirin, Digoxin, Reserpine, Atropine and Vincristine immediately spring to one's mind.

View this book on Amazon

Ivan A. Ross



A native of Guyana, Ivan A. Ross is a biologist at the United States Food and Drug Administration. At the age of seventeen he was awarded a scholarship by the United States Agency for International Development to study agriculture at Tuskegee University. After completing his studies he returned to Guyana and was appointed to the Guyana Ministry of Agriculture. During his tour of duty, most of his time was spent in the isolated communities of the Aborigines population, incorporating modern agriculture and health care methods with the traditional system. Dr. Ross' interest in tradional medicine originated at this time. He Later entered the University of Maryland, College Park, where he studied animal science and biochemisrty. In 1987 he joined the United States Department of Health and Human Services, Food and Drug Administration, as a biologist in the Division of Toxicological Research. He is an active investigator and has published several research articles, primarily dealing with food safety. Other areas of his wide-ranging experience include Lecturer of Agricultural and Rural Development at the Gambia College, Gambia, West Africa, and seminars throughtout Gambia on food safety, health awareness, and agricultural techniques. When not in the laboratory, Dr. Ross is either farming or writing.

With the possible exception of Ricinus communis there are no real poisons in forensic terms in any of the plants in this volume to interest the forensic toxicologist. However it might be of some interest to clinical toxicologists especially when dealing with cases of children eating relatively poisonous parts of some of the plants.

In classifying the plants the author has quite logically used the Latin or 'botanical name' of the plants. However, each chapter opens with a list of common names. This list of common names is not a simple list but a very comprehensive list of common names from countries as far apart in cultural terms as Vietnam and the US of America. Furthermore the list acknowledges the vast diversity of cultures in some countries such as India and for some plants the list of common names includes several variants within the same country.

The book opens unpretentiously with *Allium cepa*, better known as the humble onion! In each chapter, after the list of common names there is a short Botanical Description and a section headed Origin and Distribution. This is followed by Traditional Medicinal Uses pertaining to each country. Then follows a list of Chemical Constituents, Pharmacological Activities and finally a comprehensive list of references. The references cite literature from a wide range of disciplines and also cover a wide period of time. All parts of the plants are referred to and not just the fruits or leaves or flowers. As can be seen from this book different parts of the same plant show widely differing pharmacological activity.

This interesting formula is repeated with each plant and this gives considerable consistency to each chapter making it easier for the reader to refer to the properties of each plant. The book ends with a traditional Index as well as a section titled Cross-Reference. This latter is based on the common names of each plant which links to the country and then to the Latin binomial. This is a good way of checking up plants using the common local name. For example if one were to look up the common

name 'Nelum' one would find it linked to the country Sri Lanka and the botanical name of Nelumbo nucifera. I certainly found this section quite useful.

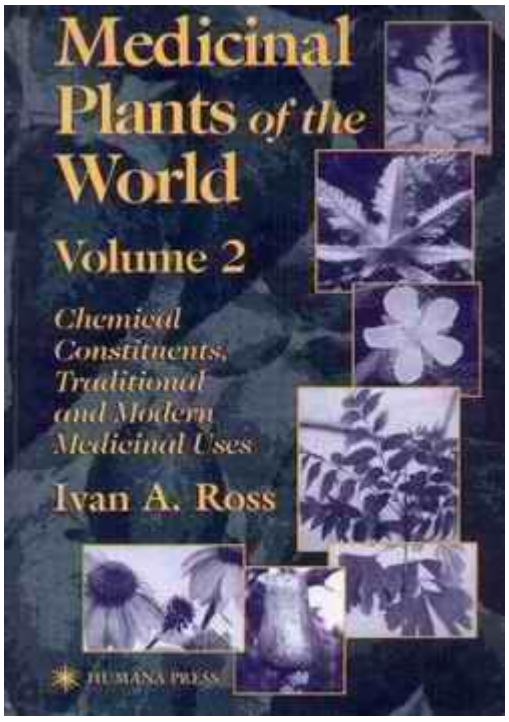
There is also a useful Glossary ranging from Abortifacient to Whitlow.

The book is illustrated and each chapter opens with a greytone photograph (maximum size 4cm x 4cm) of the plant under discussion. Smaller versions of the same photographs appear on the content page and colour versions of the same pictures on four pages of colour plates. Unfortunately the picture for Musa sapientum (banana) is just a picture of three bananas, which does not give the reader an impression of the majesty of the plant or its quite spectacular inflorescence. This is only a very minor criticism.

What about the plants themselves?

When first turning the covers of this book one would think that *Allium cepa* or the onion is too common and well known to be of much interest. That certainly was this reviewer's initial impression. However it soon became apparent that there is a lot to the humble onion than meets the eye.

Apparently in Egypt the roasted bulb is used intra-vaginally as a contraceptive before and after coitus. Is there a pharmacological/physiological basis for this use? The book informs us that the essential oil has a spermicidal effect on guinea pigs. What are the other effects of onion? We are informed that extracts have a prostaglandin inhibiting effect, has effects on lipid metabolism, hypolipaemic effects and an inhibitory effect on plant pollen tube elongation inhibition. A total of 239 chemical constituents are listed for Allium cepa alone. The reviewer hopes that the above quick snapshot of Allium cepa will give the reader an insight as to what to expect from this book.



Some thoughts from the reviewer

& The blurbs on the back cover of the book describes it as "an unprecedented collection of vital scientific information for pharmacologists, herbal medicine practitioners, drug developers,

phytochemists, medicinal chemists, phytologists, toxicologists and researchers who want to explore the use of plant materials for medicinal and related purposes." I have no doubt that this book fulfils that aim.
& In spite of its modest size at 487 pages it is actually a massive reference work and is catalogued as an encyclopaedia.
& The criteria used in the selection of plants for this book has resulted in a fascinating collection of plants, which for the most part are unrelated to each other.
& From this reviewers point of view this book is best described as a fascinating botanical text with considerable pharmacological and physiological information.
& Reading this book makes one look at plants in a more appreciative, respectful and enlightened manner!

Another well-known plant is Ananas comosus or the pineapple. The pineapple itself is an aggregate fruit or a syncarp and grows throughout the tropics. One of the strangest traditional uses mentioned is its use in the Cook Islands for the treatment of impotence, which involves amongst other things a green coconut and a heated stone! In a number of countries it is used as an abortifacient or as an emmenagogue. The scientific literature shows no evidence of an abortifacient effect but shows an anti-implantation effect. A better known effect of Pineapple is the proteolytic activity, which seems to be the basis of the common belief that pineapple is good for digesting meat.

The tomato (*Lycopersicon esculentum*) is another familiar plant. As one would expect from a member of the Solanaceae family, which includes Black Nightshade, tomato has interesting pharmacological effects but mostly in the leaf extracts. Interestingly, the leaf is used as a haemostatic in the Ivory Coast and in Oman. The leaf extract does show anticoagulant activity on human whole blood.

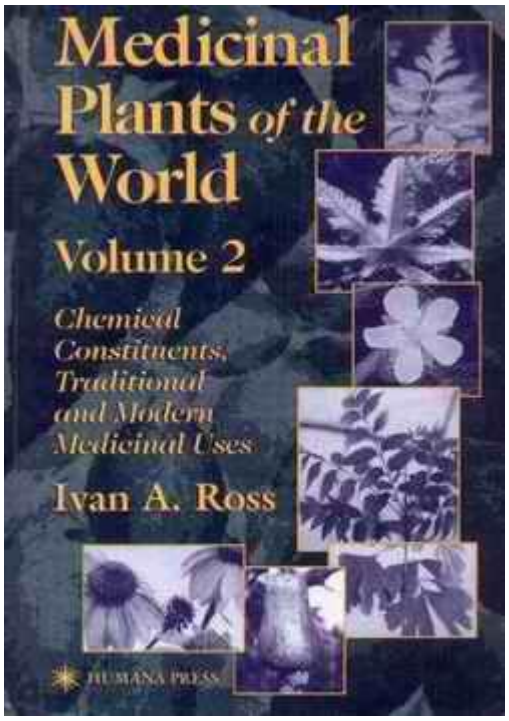
Musa sapientum or the well-known banana is discussed in chapter 17. The female flowers of this plant develop into the familiar fruit by parthenocarpy. i.e. without fertilisation. The plant also produces bisexual flowers, which do not develop into fruit but produce nectar. It also produces male flowers the need for which is not clear and one assumes is a vestige from evolution. In botanical terms at least the banana is a strange and interesting plant.

Another common plant considered a spice is *Myristica fragrans* or the nutmeg, which has been attributed aphrodisiac and hallucinogenic properties in various parts of the world. Only the latter activity has been proved scientifically although a penile erectile function has been reported.

Ricinus communis or the castor oil plant is also a familiar plant to most and makes interesting reading.

One of the plants that most would recognise by its common name is the cashew available almost worldwide as a snack but not many people would be familiar with its rather strange fruit. The plant is known as Kaju in the reviewer's native country of Sri Lanka and variations of this name are used elsewhere. The cashew plant or *Anacardium occidentale* is actually a tree capable of a height of up to 12m. The part that most native people refer to as the fruit (cashew apple) is the brightly coloured (red/orange/yellow), swollen and fleshy fruit stalk which is sweet but rather astringent. The true fruit (the nut) is kidney shaped and hangs from the bottom of the cashew apple. On splitting the 'nut' or the true fruit the familiar cashew kernel is revealed.

Another plant familiar to the reviewer is *Nelumbo nucifera* or the water lily known as the Lotus or Nelum in the Indian sub-continent. The flowers are well known offerings to Buddha. Extracts of the flower are known to produce a hypoglycaemic effect in rabbits and are also known to increase glucose uptake.



List of plants that appear in the book

1. *& Allium cepa*
2. *& Althaea officinalis*
3. *& Anacardium occidentale*
4. *& Ananas cosmos*
5. *& Angelica sinensis*
6. *& Azadirachta indica*
7. *& Echinacea angustifolia*
8. *& Ephedra sinica*
9. *& Eucalyptus globulus*
10. *& Ginkgo biloba*
11. *& Glycyrrhiza glabra*
12. *& Hypericum perforatum*
13. *& Laurus nobilis*
14. *& Lycopersicon esculentum*
15. *& Matricaria chamomilla*
16. *& Morinda citrifolia*
17. *& Musa sapientum*
18. *& Myristica fragrans*
19. *& Nelumbo nucifera*
20. *& Pimpinella anisum*
21. *& Ricinus communis*

22. & Tanacetum parthenium
23. & Tribulus terrestris
24. & Vitex agnus-castus

Glycyrrhiza glabra or Licorice root is a well-known Ayurvedic plant and is known as Welmi in the Indian sub-continent. The pharmacological activities of this plant include ACTH induction and a decrease in Anti-Diuretic Hormone. Many ayurvedic remedies make use of this plant. A well known combination in the Indian subcontinent is that of Glycyrrhiza and Adhatoda zelanica (or indica) given orally for bronchial problems.

Another well-known plant in tropical countries is *Azadirachta indica* or the Margosa tree. Hot water extracts of this plant is traditionally used in the East to treat fevers. Extracts of this plant show strong antibacterial activity. For instance: "Acetone extract of the oven-dried leaf, on agar plate, was active on *Escherichia coli, Klebsiella pneumoniae, Neisseria gonorrhea, Proteus vulgaris, Pseudomonas aeruginosa, Salmonella typhimurium Type 2, Shigella dysenteriae, Staphylococcus aureus, Streptococcus faecalis* and *Vibrio cholera*". Not surprisingly this property is made use of in the form of Margosa soap available in some tropical countries.

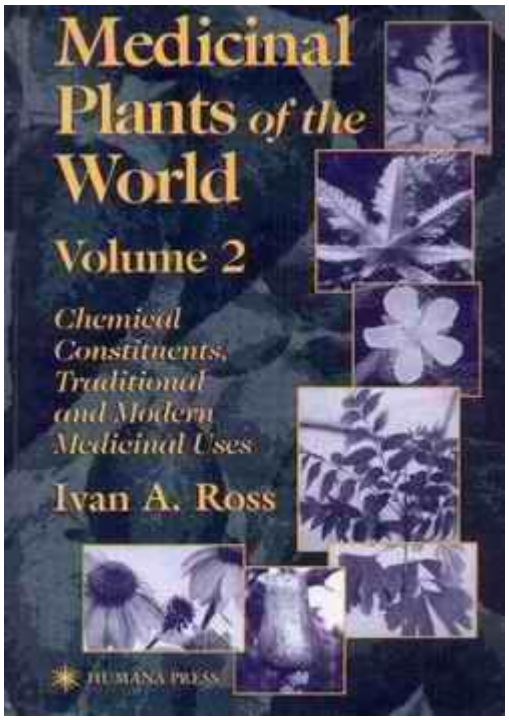
Ginkgo biloba or the MaidenHair tree is another well-known plant in the West at least by name. Readers familiar with Ginkgo biloba based products but unfamiliar with the actual plant would be interested to know that it belongs to the Cycadaceae family, is 30-40m high and has a girth of about 4m. It can live for hundreds of years and flowers for the first time when 20 to 30 years old. Although indigenous to China Japan and Korea it is now grown in Europe.

As far as the pharmacological properties go leaf extracts show a therapeutic effect in AIDS and this biological activity has been patented. Extracts also show antiatherosclerotic activity and some antidementia activity has also been shown. There is also a well-known antiplatelet activity, which has led to intracranial haemorrhage.

A plant that is well known in the Western world as a result of its use as a flavouring agent in Western cuisine is *Laurus nobilis* or the Bay tree. Interestingly, this plant has antipyretic activity but then Aspirin or acetyl salicylic acid was originally a plant extract.

Other plants discussed in this book include *Hypericum perforatum* or St John's Wort, *Matricaria chamomilla* or Chamomile, *Angelica sinensis* or Angelica, *Althea officinalis* or Althea, *Ephedra sinica* or Ephedra or Ma Huang, *Morinda citrifolia* or Indian mulberry, *Tanacetum parthenium* or Feverfew and *Eucalyptus globulus* or Eucalyptus

Eucalyptus is a well-known plant and eucalyptus oil appears in balms, cough sweets, nasal decongestants and in cough syrups. In India the oil is used as a mosquito repellent and extracts are used in many countries for coughs and other bronchial conditions. Ephedra and Chamomile are also well known plants.



Interesting bits from the book

& Page 56, use of pineapple in Cook Islands:
"The unripe fruit is used to treat impotence. One half of an unripe pineapple, a handful of seeds of Ocimum basilicum and 4 Gardenia taitensis flowers are pounded together into the water of a green coconut. A siutable-sized stone is heated until it is red-hot and dropped carefully into the mixture in the coconut. A man considered to suffer from tira mao or tira ngara, or impotence, sits with the steaming coconut directed at his genitals, with a cloth wrapped around him. The healer massages him from the flanks to the genitals with coconut oil. Should the genitals retract in the steam they will return to normal with massage."
& Page 341, hallucinogenic activity of Myristica fragrans:
"Two college students who took approximately 14.0 gm of the dried seed each in milk were hospitalised"

As far as *Tanacetum parthenium* is concerned the common name Feverfew should give an idea as to one of its medicinal properties. Extracts of Feverfew have traditionally been used in Britain for fevers. Extracts are known to have an inhibitory effect on prostaglandin synthesis.

Reading this book makes one look at plants in a more appreciative, respectful and enlightened manner!

This was an enjoyable and very informative book to review.

The back cover describes the book as a "comprehensive yet compact presentation of scientific plant-use data from many sources". I can endorse that. In spite of its modest size at 487 pages it is actually a massive reference work and is catalogued as an encyclopaedia. Medical and scientific libraries would do well to consider this book for their shelves.

There are no real criticisms of the book. The book could be improved with the help of botanical drawings to supplement the photographs. My only disappointment is the lack of biographical data about the author Ivan A. Ross!

As is to be expected of books from the Humana Press the book is well printed, bound and presented. The blurbs on the back cover of the book describes it as "*an unprecedented collection of vital scientific information for pharmacologists, herbal medicine practitioners, drug developers, phytochemists, medicinal chemists, phytologists, toxicologists and researchers who want to explore the use of plant materials for medicinal and related purposes*."

I have no doubt that this book fulfils that aim.

Editor's Note: For review of Volume 1 of this book, please click here.



-Gyan Fernando
Dr Gyan C. A. Fernando is a native of Sri Lanka and is familiar with plants used in Ayurvedic remedies. He now works as a Forensic Pathologist in Devon, England.

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