

ETHNIC INDIAN PLANTS IN CURE OF DIABETES

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SCIENTIFIC PUBLISHERS (INDIA)

P.O. BOX 91

JODHPUR

Published by:
Pawan Kumar
Scientific Publishers (India)
5-A, New Pali Road, P.O. Box 91
JODHPUR - 342 001
www.scientificpub.com

© Sood *et al.* 2005

ISBN: 81-7233-412-5

Lasertype set: Rajesh Ojha
Printed in India

FOREWORD

Diabetes is one of the most dreaded ailments afflicting the mankind today. It is a slow killer which when comes stay permanently, weakens the immune system and predisposes human beings for greater health hazards and clinical complications. The modern man looks optimistically towards genetic engineering for final resolution of the ailment, but that is still a far cry. Till then, every individual suffering from diabetes has to rely on the medical aid available for controlling the disease. In the Indian system of medicine, there are a variety of plants which have been traditionally used for control and cure of diabetes. But, the indigenous knowledge has not been scientifically and properly documented. Moreover, this information is fragmented and scattered. The first step therefore, is to collect and collate the available information on plants that have been used since ancient times for cure of diabetes. In this compendium on "Ethnic Indian Plants in Cure of Diabetes", the authors have made a maiden attempt to gather and compile the information in such a manner that it can serve as a ready-reckoner for any further work which one wishes to undertake, be it on biochemical aspects or on pharmacological aspects.

The compilation lists 360 plants which find use in the treatment of diabetes. The botanical names have been followed by the common names prevalent in different languages and then is provided information on various aspects of uses. The information has been comprehensively consolidated and made available at one place.

I am sure, that, the compendium will serve as a good base for further research work and will be useful to different strata of society who are interested in such type of study.

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PREFACE

Diabetes, a chronic metabolic disorder, has assumed the dimensions of a global epidemic, affecting more than 150 million people. In India, many plants have been used traditionally for this purpose but, there is hardly any attempt to consolidate the widely scattered large mass of data for information on the inexpensive phytotherapeutic agents for alleviating the suffering of mankind due to this dreaded ailment. With this sole objective in mind, the present compendium "Ethnic Indian Plants in Cure of Diabetes" has been conceived to bring at one place, technical information on the botanical names, synonyms, families, English, Sanskrit and regional names, distribution, part/s used, biological activities, and active constituents of all the known antidiabetic plants. This will go a long way in integrating the indigenous system of medicine with modern medicine. The information is supplemented with about twenty-four colour photographs of the plants, two figures and seven appendices, which enhance the value of the compilation significantly.

It is hoped, that, the information gathered herein will prove to be extremely useful to ethnobotany graduate and postgraduate students, researchers, pharmacists, medical practitioners, scientists and teachers throughout the globe.

The authors owe their deep sense of gratitude and indebtedness to Prof. L.R. Verma, Vice-Chancellor, Himachal Pradesh University, Shimla and President, Institute of Integrated Himalayan Studies, for guidance in the compilation of this book. Grateful thanks are due to our friends — Prof. Daleep Malhotra, Department of Psychology, Prof. D.C. Kalia and Dr. V.K. Mattu, Department of Biosciences and fellow botanists for according their full co-operation and well wishes during the preparation of this compendium. Also, we are delighted to acknowledge Mr. Sanjay Sharma, Mr. Dhiraj Rawat, Mr. Suresh, Ms. Anjna, Mr. Munish, Ms. Vandana, Ms. Monika and Mr. Balkrishan for their extensive help in various ways. Last, but not the least, we thank the members of our families, for their moral support and forbearance.

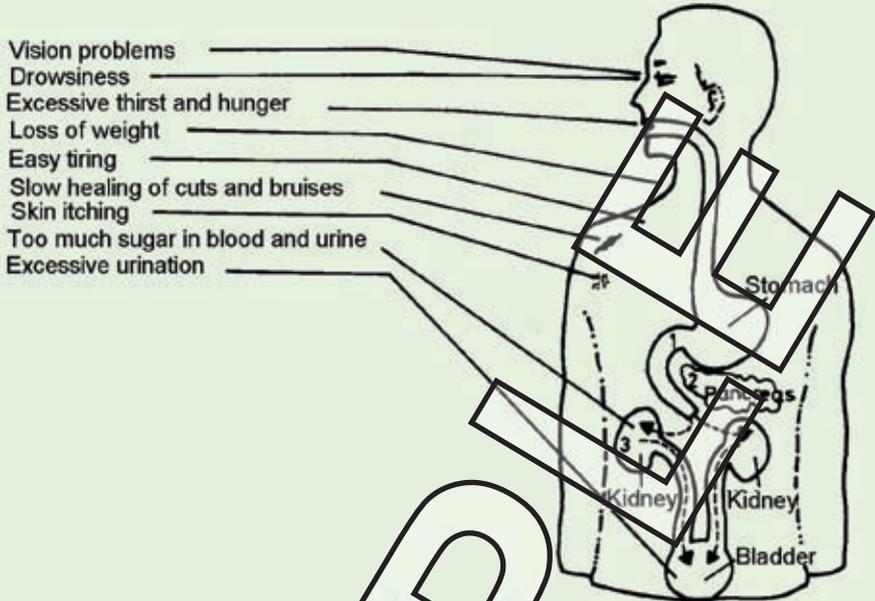
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S.K. Sood
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T.N. Lakhanpal

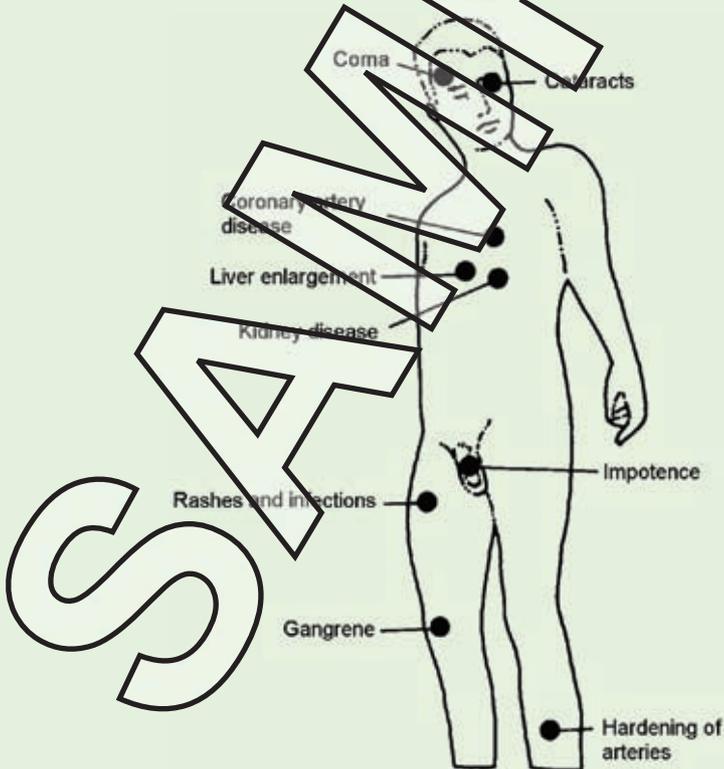
ABBREVIATIONS

OAc	= Acetoxy	Mal.	= Malayalam
alc.	= Alcoholic	Mar.	= Marathi
α	= Alpha	m	= Meter
alt.	= Altitude	MeOH	= Methanol
&	= And	μm	= Micrometer
aq.	= Aqueous	mg	= Milligram
Ass.	= Assam	ml	= Milliliter
B.	= Bengali	N	= Nitrogen
β	= Beta	N	= North/Northern
Bo.	= Bombay (Mumbai)	N.E.	= North-East
Ca	= Calcium	N.W.	= North-West
C	= Central	ω	= Omega
Cu	= Copper	O	= Oxygen
$^{\circ}\text{C}$	= Degree Celsius	%	= Per cent
Δ	= Delta	Ph.	= Phenyl
E.	= East/Eastern	P	= Phosphorus
Eng.	= English	+ve	= Positive
<i>et al.</i>	= et alia (and other authors)	Ψ	= Psi
etc.	= et cetera (so on)	P.	= Punjabi
EtOH	= Ethanol	Sans.	= Sanskrit
ext.	= Extract	Sec.	= Secondary
Fig.(s)	= Figure(s)	S	= South/Southern
γ	= Gamma	S.E.	= South-East
gm	= Gram	S.W.	= South-West
G.	= Gujarati	spp	= Species
H.P.	= Himachal Pradesh	sp	= Specie
Hin.	= Hindi	S	= Sulphur
hr	= Hour/s	Syn.	= Synonym
OH	= Hydroxy	Tam.	= Tamil
i.e.	= id est (that is)	Tel.	= Telugu
Kan.	= Kannada	U.P.	= Uttar Pradesh
Kash.	= Kashmiri	var.	= Variety
Kg	= Kilogram	Vit.	= Vitamin
M.P.	= Madhya Pradesh	W.	= West/Western
M.	= Meghalaya	WHO	= World Health Organisation
Mg	= Magnesium		

Figure 1A, B. Symptoms of Diabetes



1(A). Early Danger Signals of Diabetes



Symptoms affecting various organs at the later stage

1(B). Possible Later Development Adapted from : Fishbein (1976)

Figure 2A, B. Anti-Diabetic Plants

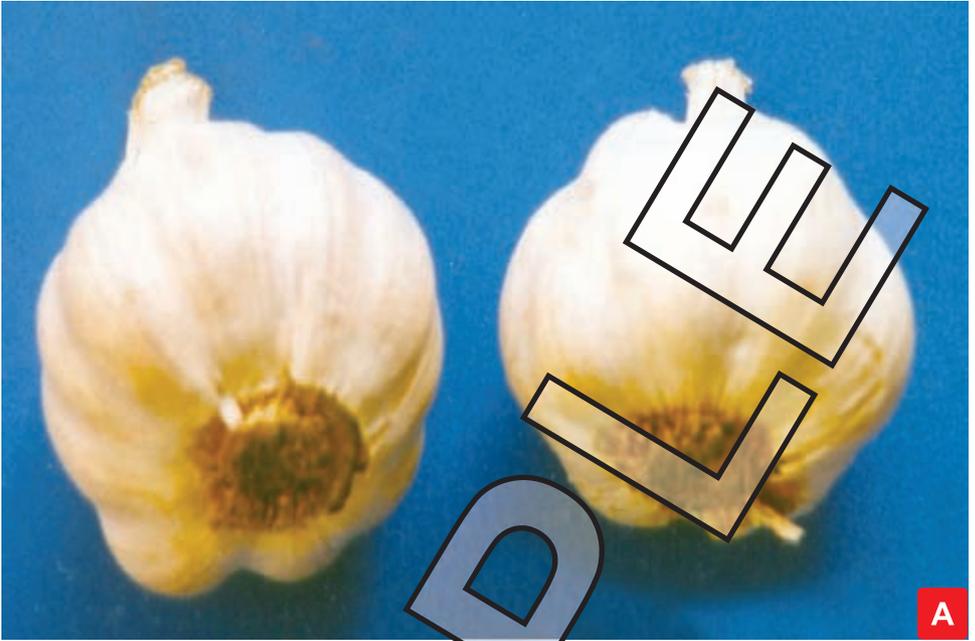


Fig. 2(A) Bulbs of *Allium sativum* Linn.

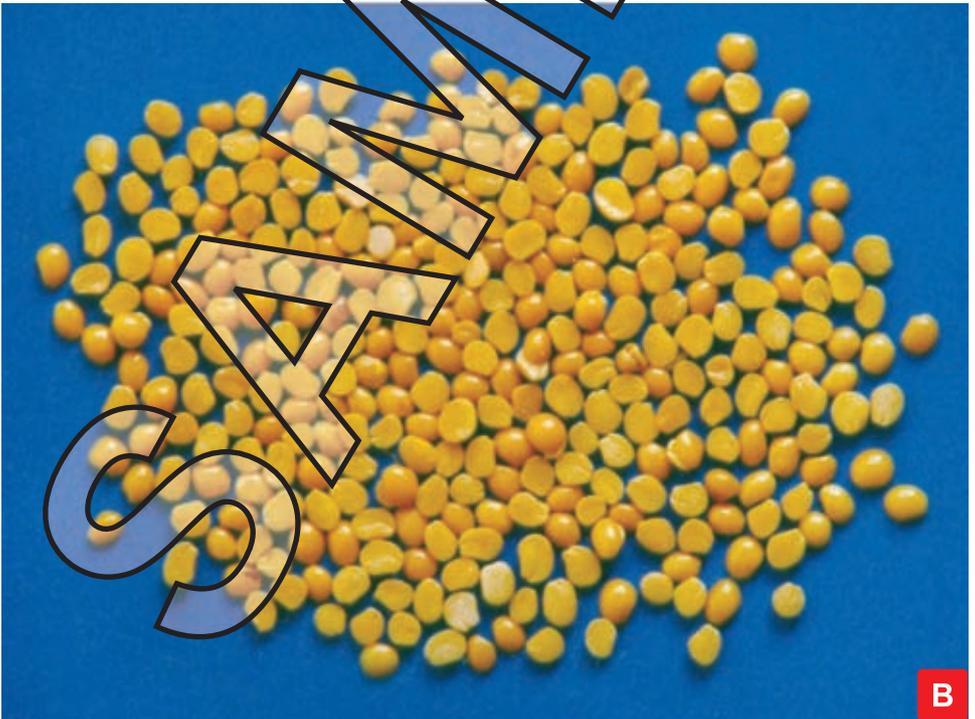


Fig. 2(B) *Cajanus cajan* (Linn.) Mill sp.

Figure 3A-C. Anti-Diabetic Plants



Fig. 3(A). *Calotropis procera* (Ait.)
Ait. f. Subsp. *hemitoma* (Wight)
Alt – (Whole plant)

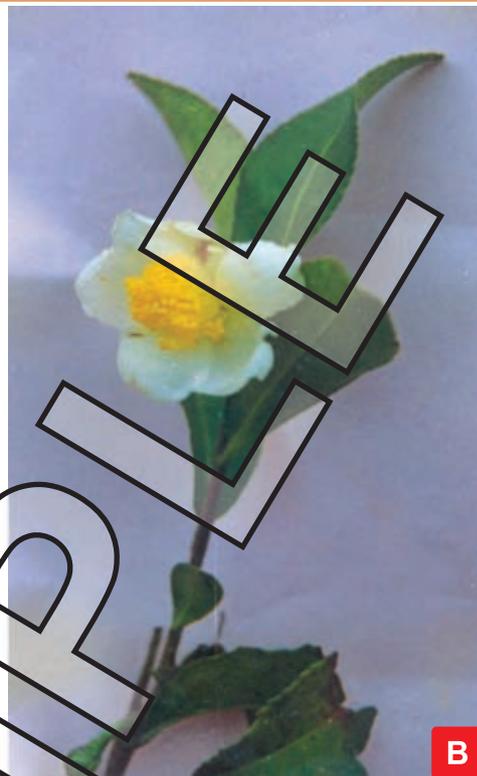


Fig. 3(B) A flowering branch of *Camellia sinensis* (Linn.) Kuntze.



Fig. 3(C) *Carica papaya* Linn.

Figure 4A-C. Anti-Diabetic Plants



Fig. 4(A) *Cassia fistula* Linn.



Fig. 4(B) *Calanthe roseus* G. Don.



Fig. 4(C) *Citrus maxima* (Burm.) Merr.

Figure 5A-D. Anti-Diabetic Plants



Fig. 5(A) *Coriandrum sativum* Linn.

Fig. 5(B) *Eucalyptus globulus* Labill.



Fig. 5(C) Portions of stem of *Glycyrrhiza glabra* Linn.



Fig. 5(D) A capitulum of *Helianthus annuus* Linn.

Figure 6A-D. Anti-Diabetic Plants



Fig. 6(A) Buds and flower of *Hibiscus rosa-sinensis* Linn.

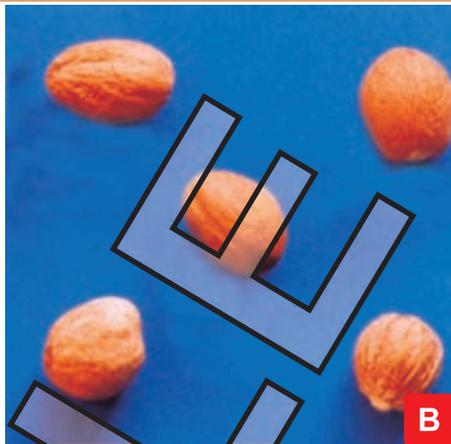


Fig. 6(B) Nuts of *Myristica fragrans* Houtt.



Fig. 6(C) *Ocimum sanctum* Linn.



Fig. 6(D) Buds and flowers of *Pisum sativum* Linn.

Figure 7A-D. Anti-Diabetic Plants



Fig. 7(A) A flowering branch of *Prunus amygdalus* Bains.



Fig. 7(B) A portion of branch containing fruit of *Psidium guajava* Linn.



Fig. 7(C) *Ricinus communis* Linn.

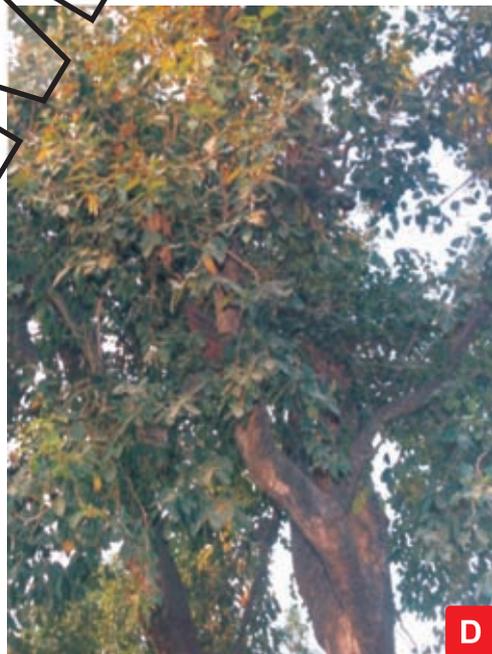


Fig. 7(D) *Syzygium cuminii* (Linn.) Skeels.

Figure 8A-D. Anti-Diabetic Plants

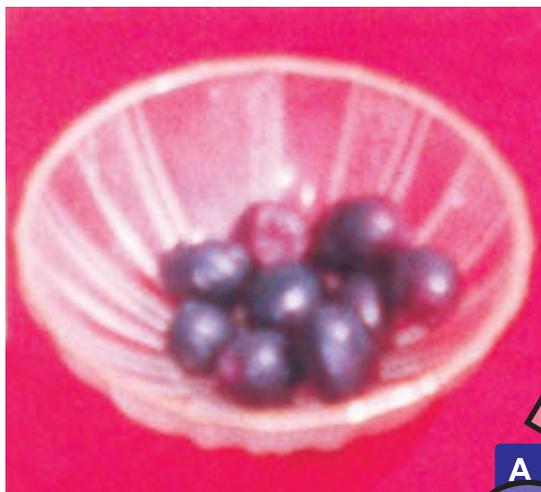


Fig. 8(A) Fruits of *Syzygium cumini* (Linn.) Skeels.

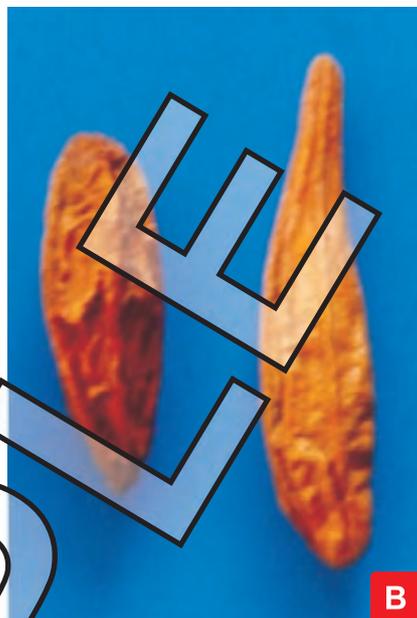


Fig. 8(B) Fruits of *Terminalia chebula* Retz.

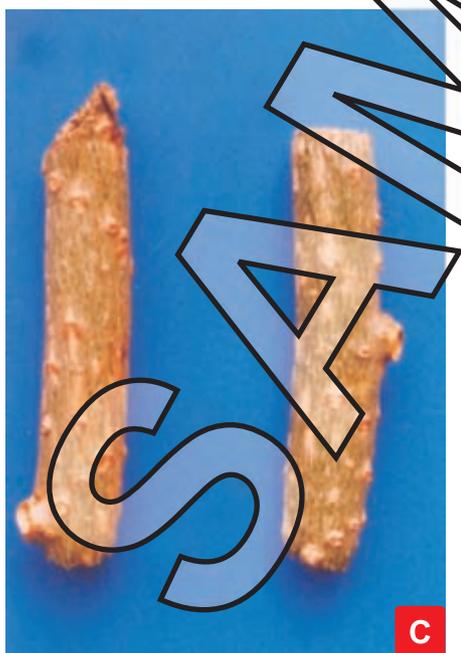


Fig. 8(C) Portions of stem of *Tinospora cordifolia* (Willd.) Miers. ex Hook. f. & Thoms.

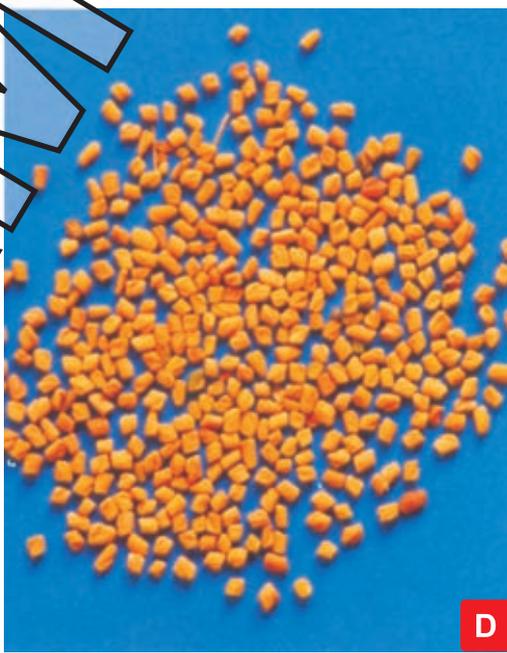


Fig. 8(D) Seeds of *Trigonella foenum-graecum* Linn.

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