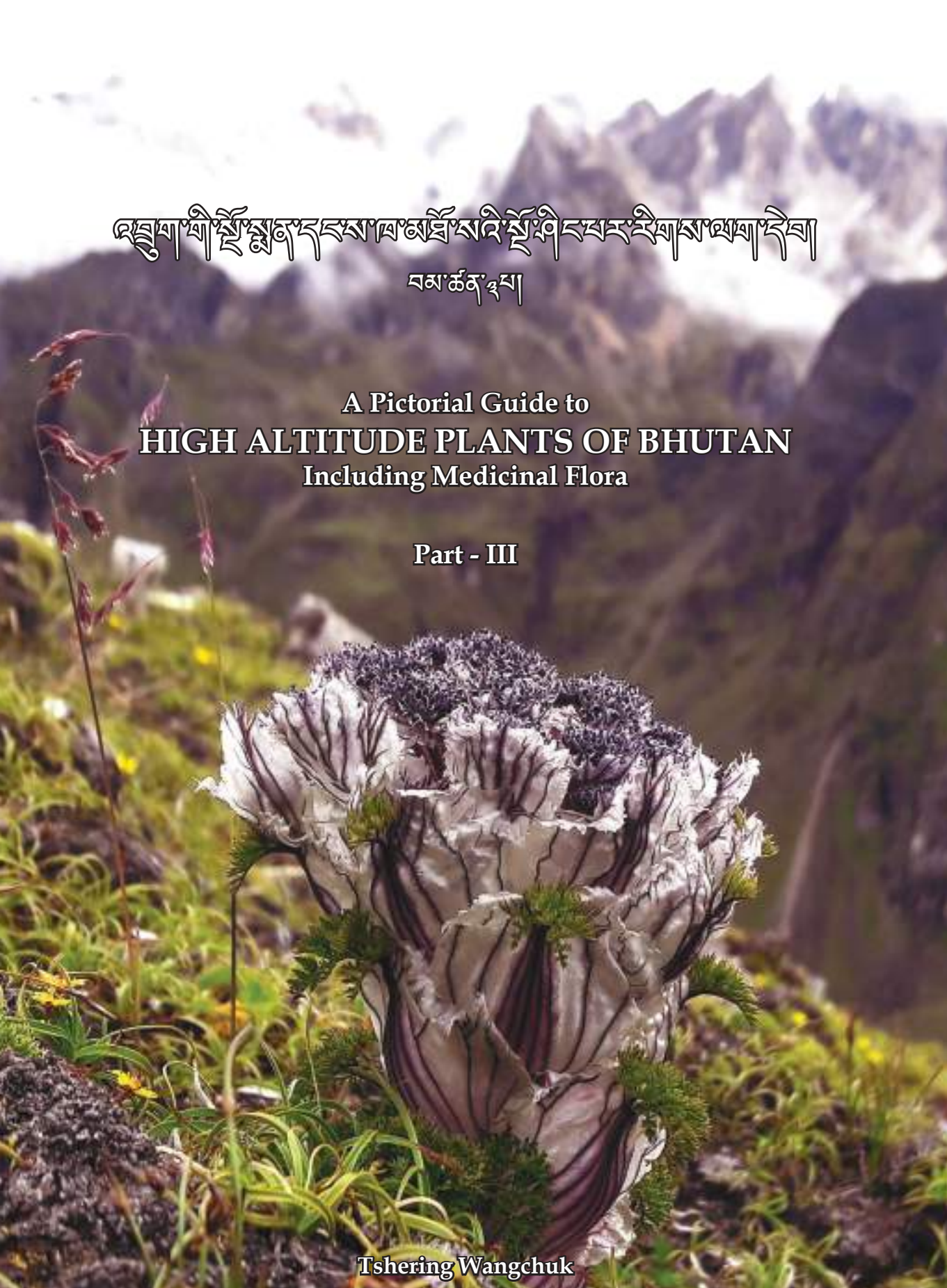


# འབྲུག་གི་སྤྱི་སྣག་དང་མ་ཚང་མཐོ་མའི་སྤྱི་ཤིང་པར་རིག་ལག་ཡིག་དེབ།

བམ་ཚན་༣པ།

## A Pictorial Guide to
# HIGH ALTITUDE PLANTS OF BHUTAN
## Including Medicinal Flora

**Part - III**

Tshering Wangchuk

འབྲུག་གི་སྤོ་སྣན་དང་ས་ཁ་མཐོ་སའི་སྤོ་ཤིང་པར་རིགས་ལག་དེབ།

བམ་ཚན་༣པ།

A Pictorial Guide to

# HIGH ALTITUDE PLANTS OF BHUTAN

Including Medicinal Floras

Part-III

Tshering Wangchuk





དུས་ནམ་ཅིག་གི་ཚེ་ངབཅས་རའི་རྒྱལ་ཁབ་ལུ་སྐྱབས་མ་བདེ་ཤ་རེ་འཐོན་ཏེ་ རོགས་ཕྱི་ཁའི་སྨན་ཚུ་ངབཅས་རའི་རྒྱལ་ཁབ་ནང་ལུ་བཏང་མ་བཏུབ་འདུ་ཤ་ཅིག་འབད་བ་ཅིན་ངབཅས་རའི་ནང་ཁའི་གསོ་བ་རིག་ཁའི་སྨན་གྱིས་འབྲུག་ཁའི་མི་སེར་གཅར་ལུ་ཞུབ་ཚུགས་འབད་དགོ། དེ་འབད་ནི་འདི་གིས་རྒྱལ་ཁབ་ནང་འཛོད་ལུ་ཡོད་ཁའི་སྨན་འདི་ཚུ་གི་དེ་ཐག་བདག་འཛིན་འབད་དེ་གོང་འཕེལ་བཏང་དགོས་ཁག་ཚེ།

**འབྲུག་གི་ཚོས་རྒྱལ་དཔལ་འཛིགས་མེད་སེང་གེ་དབང་ཕྱུག་མཆོག།**



## DEDICATION



This book is humbly dedicated to all those remarkable individuals who have walked the forests, mountains, valleys, and sacred landscapes of Bhutan with unwavering dedication to research, document, and conserve the extraordinary wealth of our flora and fauna.



འབྲུག་གི་སྨོ་སྨན་དང་ས་ཁ་མཐོ་སྨོ་ཤིང་པར་རིགས་ལག་དེབ། བམ་ཚན་༣པ། དཔྱིད་ཟླ་༡༡པ། ༢༠༢༢

A Pictorial Guide to High Altitude Plants of Bhutan-Including Medicinal Floras Part-III-December 2022

**Peer Reviewed by:**

1. Rinchen Yangzom, NBC, MoAF
2. Ngawang Gyeltshen, NCD, DoFPS, MoAF

**Publisher**

Sorig Research and Development Division
Department of Traditional Medicine Services, Ministry of Health, Thimphu, Bhutan
PO Box: 297 PABX: +975 2 338834 Fax No. 338837
www.health.gov.bt

© Sorig Research and Development Division, DoTMS, MoH, Thimphu.

**All rights reserved**

No part of this publication may be reproduced or transmitted in any form or by any means without prior permission from the publisher and the author.

**Approval and Validation**

Traditional Medicine Technical Advisory Committee, Department of Traditional Medicine Services, MoH, Thimphu, November 2022.

**Layout and Design**

Tshering Wangchuk, SR&DD, DoTMS, Ministry of Health, Thimphu.



**Comments and Feedback**

Kindly scan the QR code provided or contact the author @ +975 17464646
Email: tsheringw@health.gov.bt



**Disclaimer for Images Sourced from Online Platforms**

Some images included in this guideline have been obtained from publicly accessible online sources and are used solely for educational, scientific, and illustrative purposes to enhance understanding of the subject matter. The author does not claim ownership, authorship, or copyright of these images.

**Disclaimer for the Usage of Medicinal Plants**

The medicinal plants described in this guideline are intended solely for educational, research, and professional reference purposes. Readers should not independently collect, prepare, process, or use any medicinal plants for therapeutic purposes without the guidance of a qualified TM practitioner. The safe and effective use of medicinal plants requires accurate species identification, appropriate collection and processing, correct dosage, and careful consideration of the patient's condition. Many traditional formulations consist of multiple ingredients that work synergistically to enhance therapeutic efficacy and minimise potential adverse effects. The use of individual plants outside their traditional formulations may reduce effectiveness or pose health risks. Readers are therefore strongly advised against self-medication based on the information contained in this publication.

**ISBN 978-99936-712-8-2**

**Funding Support:** WHO-Country Office, Thimphu, Bhutan.



དཔལ་ལྡན་འབྲུག་གཞུང་།
གསོལ་བཅུག་ལྷན་ཁང་།
ཐིམ་ཕུ།

ROYAL GOVERNMENT OF BHUTAN
MINISTRY OF HEALTH
THIMPHU: BHUTAN
P.O. BOX: 726



བློན་པོ།
**MINISTER**

## FOREWORD

Since the formal integration of Traditional Medicine Services into Bhutan's National Healthcare System in 1968, Bhutan has demonstrated a steadfast commitment to preserving, promoting, and advancing its rich medical heritage as an integral component of the country's healthcare delivery system. Rooted in the profound principles of gSo-ba Rig-pa and guided by the national development philosophy of Gross National Happiness, TM has evolved into a scientifically informed, patient-centered, and culturally relevant healthcare system that complements modern medical services while safeguarding centuries-old knowledge and practices.

Over the past five decades, Traditional Medicine Services have achieved remarkable progress in expanding healthcare access, improving the quality of clinical services, strengthening pharmaceutical production, developing specialised human resources, enhancing infrastructure, promoting research and innovation, undertaking scientific validation of traditional therapies, and establishing robust institutional and regulatory frameworks.

Today, TM Services are delivered through a network of 84 TM Hospitals and Units strategically established across all twenty Dzongkhags, ensuring that safe, effective, accessible, and quality traditional healthcare services are available to communities throughout the country.

The continued expansion of TM services has, however, been accompanied by an increasing demand for medicinal resources. Bhutan's rich medicinal flora forms the cornerstone of the TM system. These invaluable natural resources are now facing mounting pressures from exploitation, habitat destruction, climate change, illegal collection and trading, and other anthropogenic influences. Such challenges threaten not only the survival of many medicinal plant species but also the long-term sustainability of the Traditional Medicine system that depends upon them.

Recognising the strategic importance of conserving these invaluable biological resources, the Department of Traditional Medicine Services has initiated a resource mapping programme to systematically document the diversity, distribution, density, and ecological characteristics of medicinal plant species. The programme seeks to establish a comprehensive national inventory of medicinal resources of Bhutan, which will provide an essential foundation for evidence-based conservation planning, sustainable

ROYAL GOVERNMENT OF BHUTAN
MINISTRY OF HEALTH
THIMPHU: BHUTAN
P.O. BOX: 726

collection, monitoring, and informed policy decisions that will safeguard these precious resources for future generations.

In this context, the publication of A Pictorial Guide to High-Altitude Plants of Bhutan is both timely and significant. This guide represents an important contribution towards the documentation of Bhutan's high-altitude plants, including medicinal flora. It will serve as a reference during resource mapping, biodiversity assessment, botanical surveys, conservation programmes, and research on high-altitude plants. By bringing together scientific classification and Sorig nomenclature, it will greatly facilitate the accurate identification of medicinal plant species.

Therefore, I would like to express my appreciation and commendation to Mr Tshering Wangchuk, Senior Programme Officer of the Sorig Research and Development Division, Department of Traditional Medicine Services, Ministry of Health, for his vision, dedication, and painstaking efforts in conceptualising and developing this invaluable publication. His commitment to documenting Bhutan's medicinal plant wealth reflects a deep sense of responsibility towards preserving our nation's natural heritage and strengthening the scientific foundation of the TM of Bhutan.

I am confident that this guideline will serve as an invaluable reference for researchers, forestry professionals, medicinal plant collectors, farmers, pharmaceutical personnel, Traditional Medicine practitioners, and all stakeholders engaged in the conservation and sustainable utilisation of Bhutan's medicinal plant resources. Through collective commitment and coordinated action, we can ensure the sustainable availability of high-quality medicinal raw materials while conserving Bhutan's exceptional biodiversity for future generations.

I hope that this publication will further strengthen the conservation, scientific management, and sustainable utilisation of Bhutan's medicinal plant resources, thereby supporting the continued growth and excellence of Traditional Medicine Services in Bhutan.

Dasho Dechen Wangmo
**HEALTH MINISTER**

# PREFACE

Bhutan, the cradle of medicinal plants, is nestled within the southern slopes of the Eastern Himalayas and represents one of the most biologically significant region in the world owing to its exceptional ecological integrity, extensive forest cover, diverse ecosystems, remarkable altitudinal gradients, and a comprehensive network of protected areas interconnected through biological corridors. Situated within the Himalayan Biodiversity Hotspot, Bhutan's unique geographical position, complex topography, and climatic variability have created a remarkable diversity of habitats and ecological niches that support an extraordinary assemblage of flora and fauna. These ecosystems harbour numerous endemic, rare, endangered, and globally threatened species, making Bhutan a priority region for biodiversity conservation, ecological research, and sustainable natural resource management.

Bhutan's ecological diversity is reflected in its wide range of vegetation zones, extending from subtropical broadleaf forests in the southern foothills to temperate mixed forests, conifer forests, alpine meadows, and high Himalayan scree ecosystems. This pronounced ecological gradient provides suitable habitats for thousands of plant species, many of which possess significant medicinal, ecological, cultural, and economic value. Among these biological resources, medicinal plants occupy a particularly important position as they form the foundation of Bhutan's Traditional Medicine system and support the livelihoods of many rural communities.

Today, Bhutan's rich medicinal plant diversity remains indispensable for the production of essential traditional medicines and the delivery of quality Traditional Medicine services through 84 TM healthcare facilities established across the country. At the same time, these valuable biological resources contribute significantly to biodiversity conservation, scientific research, rural livelihoods, and the country's socio-economic development. Increasing anthropogenic pressures, unsustainable collection practices, illegal extraction, and uncontrolled trade of high-value medicinal species have emerged as significant conservation concerns, and safeguarding this invaluable natural heritage has become both a national responsibility and a global conservation priority.

Although Bhutan's natural ecosystems remain relatively intact and well preserved compared with many regions of the world, comprehensive scientific information regarding the species diversity, population density, spatial distribution, ecology, phenology, regeneration status, and conservation status of medicinal resources remains incomplete. Over the years, numerous botanical surveys, floristic inventories, herbarium

collections, ethnobotanical studies, and research initiatives have been undertaken by the Department of Traditional Medicine Services, Department of Forest and Park Services; Menjong Sorig Pharmaceuticals, National Biodiversity Centre, Ugyen Wangchuck Institute for Forestry Research and Training, and other governmental and research institutions.

Nevertheless, much of the available information remains fragmented, locality-specific, and dispersed across different institutions, limiting its application for national-level resource assessment, conservation prioritisation, policy formulation, and sustainable management planning. Furthermore, a considerable proportion of Bhutan's medicinal flora remains inadequately documented, particularly within remote alpine and sub-alpine ecosystems where field investigations are constrained by rugged terrain, extreme climatic conditions, short growing seasons, and limited accessibility.

The challenges associated with medicinal resource documentation are further intensified by rapidly changing environmental conditions. Climate change, habitat transformation, invasive species, and increasing human pressures are expected to influence species distribution patterns, phenological cycles, population dynamics, and ecosystem interactions. Therefore, systematic documentation, continuous monitoring, and periodic reassessment of medicinal plant resources have become crucial to understand emerging threats and develop adaptive conservation strategies.

Recognising these challenges and the urgent need for scientific documentation, the Department of Traditional Medicine Services, Ministry of Health, initiated the nationwide Resource Mapping Programme to systematically document the diversity, distribution patterns, density, ecological characteristics, phenology, and conservation status of medicinal flora and fauna to establish a comprehensive inventory of Bhutan's medicinal resources.

The information generated through this initiative is expected to provide a critical scientific baseline for biodiversity conservation, sustainable harvesting, ecological monitoring, resource assessment, in-situ and ex-situ conservation, climate change adaptation, and evidence-based decision-making. Furthermore, it is also expected to support the development of strategies and guidelines for the sustainable management of medicinal plants.

As an integral initiative, A Pictorial Guide to High-Altitude Plants of Bhutan has been developed to support field-based Sorig and botanical identification during resource mapping and the documentation of high-altitude plant. The guide presents 1,857 species of high-altitude plants,

including 501 medicinal flora, representing 124 plant families occurring between 2,000 and 5,900 metres above sea level.

The species included in this guide have been arranged according to the internationally accepted Angiosperm Phylogeny Group classification system, thereby harmonising contemporary botanical taxonomy with the Sorig nomenclature. This guide will provide a standardised reference for accurate species identification, minimise taxonomic ambiguity, and promote consistency in documenting medicinal plants among the TM fraternity, botanists, researchers, conservationists, and resource managers. The guide is organised into three volumes:

- Part I comprises 640 species belonging to 45 families (Acanthaceae–Ephedraceae), including 172 medicinal plant species.
- Part II comprises 667 species belonging to 45 families (Equisetaceae–Plantaginaceae), including 176 medicinal plant species.
- Part III comprises 550 species belonging to 34 families (Plumbaginaceae–Zingiberaceae), including 153 medicinal plant species.

This guide incorporates selected non-angiosperm taxa of medicinal importance that are routinely used in Traditional Medicine. These include lichens such as *Lobaria oregano* and *Thamnolia vermicularis*; bryophytes including *Macromitrium sulcatum*; lycophytes such as *Selaginella pulvinata* and *Selaginella tamariscina*; mosses including *Dicranum fulvum*, *Dicranum fuscescens*, *Dicranum majus*, and *Dicranum viride*; as well as medicinal lichens belonging to the genera *Peltigera* and *Pilophorus*.

Special emphasis has been placed on documenting endemic medicinal plant species of Bhutan, including *Allium rhabdotum*, *Bistorta griersonii*, *Buddleja bhutanica*, *Ceropegia dorjei*, *Cotoneaster bumthangensis*, *Delphinium muscosum*, *Lobelia nubigena*, *Meconopsis bhutanica*, *Meconopsis superba*, *Primula chasmophila*, *Rhododendron bhutanense*, *Rhododendron kesangiae*, *Saxifraga thiantha*, *Silene birgittae*, and *Sorbus longii*. These taxa, many of which possess restricted geographic distributions and narrow ecological amplitudes, constitute an important component of Bhutan's botanical endemism and medicinal plant diversity. Their inclusion underscores the need for systematic documentation, ecological assessment, and long-term conservation, as endemic species are inherently more susceptible to habitat degradation, climate change, stochastic environmental events, and anthropogenic disturbances due to their limited distribution and often small population sizes.

This guide also highlights several high-value medicinal species that are subject to increasing harvesting pressure owing to their established

therapeutic importance, high commercial demand, and limited natural regeneration. These include *Aconitum laciniatum*, *Daphne bholua*, *Delphinium drepanocentrum*, *Gentiana urnula*, *Gymnadenia orchidis*, *Nardostachys jatamansi*, *Onosma hookeri*, *Ophiocordyceps sinensis*, *Panax pseudoginseng*, and *Picrorhiza scrophulariiflora*. Many of these taxa are ecologically vulnerable because of their restricted distribution, slow growth rates, specialised habitat requirements, and susceptibility to overexploitation. Their inclusion in this guide aims to enhance awareness of their conservation significance and provide baseline information to support resource monitoring, conservation assessment, sustainable harvesting protocols, and evidence-based management strategies.

Every effort has been made to incorporate the maximum possible number of high-altitude plant species based on available botanical literature, herbarium records, field surveys, taxonomic databases, ecological observations, and TM documentation. However, considering Bhutan's exceptional floristic richness and the continuous discovery of previously undocumented taxa, this guide should be regarded as an evolving scientific reference rather than an exhaustive inventory.

It is sincerely hoped that this pictorial guide will serve as an important scientific resource for strengthening medicinal resource mapping, taxonomic documentation, and biodiversity assessment in Bhutan and reducing taxonomic ambiguity. Furthermore, this publication is anticipated to contribute significantly to the expanding body of scientific knowledge on Bhutan's rich floral diversity by providing a consolidated reference for researchers, botanists, taxonomists, ecologists, conservation practitioners, Traditional Medicine professionals, and students.

The conservation of medicinal plants is fundamental not only to the continued sustainability of raditional Medicine system, but also to the preservation of the country's biodiversity, ecological integrity, cultural heritage, and ecosystem resilience. Through collective efforts, Bhutan's medicinal plant heritage can be conserved and sustainably managed to support the health, well-being, and ecological security of present and future generations.

## ABBREVIATIONS

| | |
|---|---|
| CPO | Chief Program Officer |
| DEO | District Education Officer |
| DISVI | Disarmo e Sviluppo (Non-profit Italian NGO) |
| DoTMS | Department of Traditional Medicine Services |
| FoTM | Faculty of Traditional Medicine |
| FYP | Five Year Plan |
| HAMP | High Altitude Medicinal Plants |
| JKSNR | Jigme Khesar Strict Nature Reserve |
| JSWNP | Jigme Singye Wangchuck National Park |
| KGUMSB | Khesar Gyalpo University of Medical Sciences of Bhutan |
| Masl | Meter above sea level |
| MoAF | Ministry of Agriculture and Forest |
| MoH | Ministry of Health |
| MP | Medicinal Plants |
| MR | Medicinal Resources |
| MSPCL | Menjongsorig Pharmaceutical Corporation Limited |
| MSPD | Medical Supply and Procurement Division |
| NBC | National Biodiversity Centre |
| NCD | Nature Conservation Division |
| NHCS | National Health Care System |
| NTMH | National Traditional Medicine Hospital |
| R&D | Research and Development |
| SR&DD | Sorig Research and Development Division |
| TK | Traditional Knowledge |
| TM | Traditional Medicine |
| TMR | Traditional Medicine Resources |
| TMS | Traditional Medicine Service |
| WCNP | Wangchuk Centennial National Park |
| WHO | World Health Organisation |

## ACKNOWLEDGEMENTS

The completion of this guideline is a humble reflection of the collective wisdom, dedication, and unwavering commitment of many individuals who have contributed to the conservation, documentation, and advancement of Traditional Medicine. This work stands on the shoulders of the remarkable efforts of earlier researchers, botanists, and countless plant enthusiasts who devoted their lives to exploring and documenting the diverse flora and fauna of Bhutan.

With extraordinary courage and perseverance, these pioneers traversed some of the most challenging landscapes of our country, from the harsh and rugged alpine mountains to the dense and impenetrable subtropical forests, often enduring difficult weather conditions, geographical barriers, and countless hardships. Their passion and sacrifices have gifted us with invaluable knowledge and laid the foundation for comprehensive works such as the Flora of Bhutan, which continues to serve as an important reference for generations. I offer my deepest respect and heartfelt appreciation to these unsung heroes whose dedication has preserved the natural treasures of our nation for the benefit of present and future generations.

I extend my humble gratitude to Her Excellency Dasho Dechen Wangmo, the Hon'ble Health Minister, for her invaluable support, encouragement, and approval that made this initiative possible. Her visionary leadership and words of wisdom have been a source of inspiration and motivation throughout this journey.

I also express my sincere appreciation to Dasho Pemba Wangchuk, Acting Secretary, Ministry of Health, for his continued guidance, leadership, and encouragement to pursue excellence and deliver work that reflects our shared commitment towards strengthening Bhutan's Traditional Medicine system.

I would like to express my profound gratitude to the following esteemed peer reviewers for their invaluable contributions, critical assessment, and insightful recommendations. Their expertise, thoughtful observations, and constructive feedback have significantly enhanced the scientific accuracy, technical quality, and overall value of this guideline. Beyond improving this publication, their contributions have enriched our collective learning and professional growth. I remain deeply grateful for their time, patience, and commitment.

1. Rinchen Yangzom, Principal Biodiversity Officer, NBC, MoAF
2. Ngawang Gyeltshen, Taxonomist, NCD, DoFPS, MoAF

I am also profoundly indebted to the following plant enthusiasts, TM professionals, researchers, and intellectuals who generously shared their knowledge, experience, and valuable insights at various stages of developing this guideline. Their dedication and willingness to contribute have been instrumental in shaping this work. Their passion for research and documenting medicinal plants serves as an inspiration to all of us.

1. Norbu Gyeltshen, Chief DEO, Mongar
2. Drungtsho Chencho Gyeltshen, Paro Hospital
3. Tashi Dorji, Senior Menpa, Wangdicholing Hospital, Bumthang
4. Lethro, Senior Menpa, Takmochu PHC, Lhuentse
5. Jambay Dorji, Research Officer, SR&DD, DoTMS, MoH
6. Yeshi Tshomo, Research Assistant, SR&DD, DoTMS, MoH

My sincere appreciation and heartfelt gratitude also go to all members of the Traditional Medicine Technical Advisory Committee for their valuable guidance, meticulous review, constructive feedback, and commitment to maintaining the highest standards of quality. Their collective wisdom and careful attention to detail have played a vital role in transforming this work into a comprehensive and reliable reference document for the Traditional Medicine fraternity.

I extend my deepest gratitude to the World Health Organisation Country Office, Thimphu, Bhutan, for its generous financial support and continued encouragement. Without this valuable assistance and partnership, the successful completion and publication of this guideline would not have been possible.

Finally, I would like to express my sincere appreciation to all future readers, practitioners, researchers, and well-wishers who engage with this guideline. Your continued interest, observations, and constructive suggestions will help us identify areas for improvement and ensure that this document remains relevant, accurate, and useful for generations to come. Every comment and contribution will be regarded as a valuable opportunity to further strengthen and enrich Bhutan's Traditional Medicine knowledge system.

With profound gratitude and respect, I acknowledge every individual who has contributed, directly or indirectly, to the realisation of this important work.

# INTRODUCTION



The conservation and sustainable utilisation of medicinal resources represent an ongoing journey that requires continuous scientific inquiry, responsible management, and collective commitment. Bhutan, recognised as one of the world's biodiversity hotspots, possesses an extraordinary wealth of medicinal plant diversity that has supported the country's traditional healthcare system for centuries. These natural resources are not merely biological entities; they represent a living heritage deeply intertwined with Bhutanese culture, indigenous knowledge systems, rural livelihoods, and the holistic health philosophy of the country.

The systematic documentation and scientific exploration of Bhutan's medicinal plant resources began with the first botanical expedition conducted under the DISVI Project from 1988 to 1993. The expedition covered the rich alpine ecosystems of Lingzhi, Phajoding, Dochula, and the surrounding regions of Trongsa Dzongkhag, marking a historic milestone in the advancement of medicinal plant research in Bhutan. This pioneering initiative represented the first significant step towards understanding, identifying, documenting, and conserving the country's valuable medicinal flora.

Beyond documenting the plant species, the expedition highlighted the ecological, cultural and socio-economic importance of medicinal resources and recognised their essential contribution to the livelihoods of rural communities. The availability of these resources has enabled the provision of quality TM services through the nationwide network of 84 TM facilities, currently serving communities across the country and contributing significantly to the promotion of holistic health and well-being.

Following the integration of Traditional Medicine services into Bhutan's National Health Care System on 28th June 1968, the demand for medicinal resources has continued to increase substantially. Approximately 150–950 medicinal species and resources are utilised in the preparation of essential traditional medicines, herbal formulations, health supplements, and other therapeutic products. These resources are persistently collected from ecologically sensitive and exploited regions such as Lingshi Drungkhag and Langthel Gewog.

However, decades of continuous collection, coupled with increasing demands for raw materials, climate variability, habitat disturbance, and expanding commercial interest, have placed significant pressure on Bhutan's medicinal plant ecosystems. Several high-altitude and low-altitude medicinal species are now facing increasing threats due to unsustainable harvesting practices, habitat degradation, and reduced

natural regeneration capacity. The slow growth cycle, restricted geographic distribution, and specific ecological requirements of many medicinal plants further increase their vulnerability to depletion.

The conservation challenge is further intensified by the extensive use of medicinal resources among local healers and commercial stakeholders. Records maintained by the Department of Traditional Medicine Services, Ministry of Health, indicate the presence of more than 2,060 local healers involved in traditional healing practices, while the National Biodiversity Centre, Ministry of Agriculture and Forests, has documented 789 traditional knowledge holders associated with the use of biological resources. Appropriate scientific management frameworks are required to ensure sustainable resource utilisation by these local healers.

Furthermore, increasing demand from private pharmaceutical companies, herbal product manufacturers, and other commercial users has contributed to intensified harvesting pressure, including over-collection, unsustainable extraction, and risks associated with illicit trade. These challenges are compounded by limited enforcement mechanisms, inadequate monitoring systems, and gaps in the implementation of conservation strategies, policies, and regulatory frameworks.

Although Bhutan has not yet experienced large-scale extinction of medicinal plant species, evidence of localised and population-level declines is increasingly apparent. Several species have demonstrated reduced regeneration, declining population density, and restricted distribution within their natural habitats. Such ecological changes serve as early warning indicators of potential future biodiversity loss if appropriate interventions are not implemented.

In view of these emerging challenges, the conservation, sustainable collection, cultivation, and scientific documentation of medicinal plants have become more critical than ever. Protecting Bhutan's medicinal plant heritage requires an integrated approach combining traditional ecological knowledge, modern scientific research, biodiversity conservation principles, sustainable resource management practices, and effective policy implementation.

This guideline therefore serves as an important step towards strengthening the scientific foundation for the documentation of medicinal plants. By promoting responsible collection practices, enhancing documentation, encouraging cultivation and regeneration initiatives, and fostering collaboration among researchers, policymakers, and local communities, Bhutan can safeguard its invaluable medicinal resources for present and future generations while continuing to support the health and well-being of humanity.

## TABLE OF CONTENTS


| Sl. no. | Topic | Page Number |
|---|---|---|
| 1 | Foreword | i-ii |
| 2 | Preface | iii-vi |
| 3 | Abbreviations | vii |
| 4 | Acknowledgement | viii-ix |
| 5 | Introduction | x-xi |
| 6 | Colour Plates | 1-275 |
| 7 | Annexure | 276-294 |
| 8 | Sorig Index | 295-297 |
| 9 | Scientific Index | 298-303 |
| 10 | References | 304-307 |






དེཁ་པ་དཔེ་ཐོག་ལྷས་པ་ལཁ་ལེན་དཀའ། མ་སྦྱངས་སྨན་རྒྱལ་ཐོགས་པས་ནད་པ་བསྲུག།
ཟང་ཟིང་དོན་གཉེར་སྨན་པའི་མིང་འཛིན་ལ། འདི་འདྲས་དོན་དུ་འགྱུར་སྐྱམ་འབད་པས་འགོད།



**PLUMBAGINACEAE** Leadwort Family



*Acantholimon hedinii* Ostenfel




*Ceratostigma griffithii* C.B. Clarke

**PLUMBAGINACEAE**



*Ceratostigma minus* Prain

**POACEAE** Grass Family



*Alopecurus aequalis* Sobol.

**POACEAE**



*Alopecurus pratensis* L.




*Auena sativa* L.

**POACEAE**



*Calamagrostis pseudophragmites* (Haller f.) Koeler.



*Cynodon dactylon* (L.) Pers.

**POACEAE**




*Eleusine coracana* L.



*Eleusine indica* (L.) Gaertn.

**POACEAE**



*Festuca cinerea* Vill.



*Himalayacalamus falconeri* (Munro) Keng f.

**POACEAE**



*Holcus lanatus* L.




*Hordeum vulgare* Linn.

**POACEAE**



*Imperata cylindrica* (L.) P.Beauv.



*Pennisetum flaccidum* Gri.

**POACEAE**




*Triticum aestivum* L.




*Triticum turgidum* subsp. *durum* Desf.

**POACEAE**



*Yushania hirsuta* (Munro) R.B.M.



*Yushania microphylla* (Munro) R.B.M.

**POACEAE**



*Arthraxon hispidus* (Thunb.) Makino



*Arthraxon prionodes* (Steud.) Dandy

**POLYGALACEAE** Milkworth Family



*Polygala arillata* D. Don.



*Polygala persicariifolia* DC.

**POLYGALACEAE**



*Polygala sibirica* L.



*Polygala tatarinowii* Regel.

## POLYGALACEAE



*Salomonia cantoniensis* Lour.



*Bistorta affinis* (D. Don) Gre.

**POLYGALACEAE**




*Bistorta amplexicaulis* (D. Don) Greene




*Bistorta emodi* (Meisn.) H.Hara.

## POLYGALACEAE



*Bistorta griffithii* (Hook.fil.) Grierson




*Bistorta griersonii* Yonek. & H.Ohashi



གསོ་རིག་མིང་ » སྐྱང་རམ། (མོན་བྱ། རམ་དཀར)

*Bistorta macrophylla* (D.Don) Sojak



གསོ་རིག་མིང་ » སྐྱང་རམ་མགོ་དམར།

*Bistorta milletii* H.Lév.

**POLYGALACEAE**



*Bistorta perpusilla* (Hook.fil.) Greene



*Bistorta suffulta* (Maxim.) Greene

**POLYGALACEAE**




*Bistorta vaccinifolia* (Meisner) Greene



*Bistorta vivipara* (L.) Delarbre

**POLYGALACEAE**




*Fagopyrum dibotrys* (D.Don.)Hara.



*Fallopia dumetorum* (L.) Holub.

**POLYGALACEAE**



*Koenigia campanulata* (Hook.f.) T.M. Schust.



*Koenigia delicatula* (Meisn.) H.Hara.

**POLYGALACEAE**




*Koenigia forrestii* (Diels) Mesicek & Soják




*Koenigia hookeri* (Meisn.) T.M Schust. & Reveal

**POLYGALACEAE**



*Koenigia islandica* Linn.



གཞོ་རིག་མིང་ » སྐ་ལོ། (སྐ་རྩ། ཐྲི་ལི་བ། ཀ་གྲ་མ། ཚུ་ཞོ།)

*Koenigia mollis* (D.Don.) T.M.Schust. & Reveal

**POLYGALACEAE**



*Koenigia nepalensis* D. Don.



*Koenigia polystachya* (Meisn.) T.M.Schust. & Reveal

**POLYGALACEAE**




*Oxyria digyna* (Linn.) Hill



*Oxyria sinensis* Hemsley

**POLYGONACEAE**



*Persicaria capitata* (D. Don) H. G.



*Persicaria chinensis* (L.) Nakai

**POLYGONACEAE**



*Persicaria humilis* (Meisn.) H.Hara.



*Persicaria nepalensis* (Meisn.) H. Gross

**POLYGONACEAE**



*Persicaria runcinata* D. Don. H. Gross



*Persicaria sagittata* L. H. Gross

**POLYGONACEAE**




*Polygonum hookoiri* Moisn




*Polygonum sinomontanum* Sam.

**POLYGONACEAE**




*Rheum acuminatum* J. D. Hooker & Thomson



*Rheum austral* D. Don.

**POLYGALACEAE**




*Rheum nobile* Hook. fil. & Thoms.




*Rheum pumilum* Maxim

**POLYGALACEAE**




*Rumex acetosella* L.




*Rumex cispus* L.

**POLYGONACEAE**




*Rumex nepalensis* Spreng.



*Rumex patentia* subsp. *tibeticus* (K. H. Rechi.) K. H. Rechi.

**POLYPODIACEAE** Common Fern Family




*Drynaria sinica* Diels

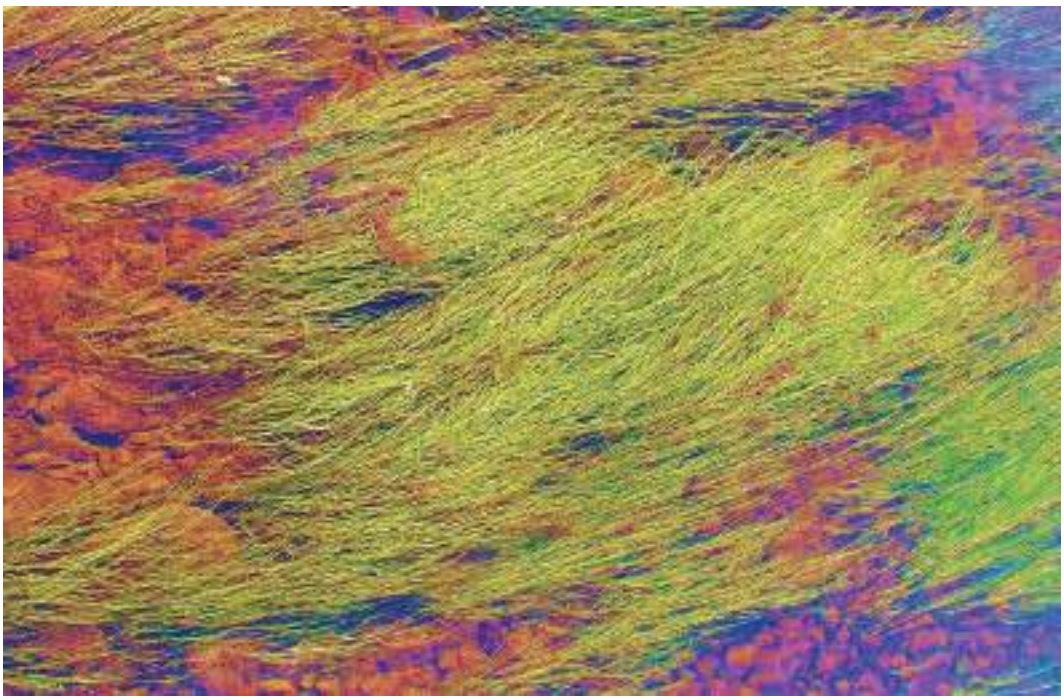



*Lepisorus loriformis* (Mett.)

**POTAMOGETONACEAE** Pondweed Family



*Potamogeton berchtoldii* Fieber



*Potamogeton filiformis* Pers.

**PRIMULACEAE** Primrose Family



*Androsace adenocephala* Hand.-Mazz.



*Androsace alchemilloides* Franch



*Androsace bisulca* Bureau & Franchet



*Androsace bisulca* var. *aurata* (Petitm.) Y.C.Yang & R.F.Huang

**PRIMULACEAE**



*Androsace bisulca* var. *brahmaputrae* Handel-Mazzetti



*Androsace bulleyana* Forrest

**PRIMULACEAE**




*Androsace delavayi* Franchet, J. Bot. (Morot).



*Androsace geraniifolia* Watt

**PRIMULACEAE**




*Androsace hemisphaerica* Ludlow




*Androsace henryi* Oliver

**PRIMULACEAE**



*Androsace hookeriana* Klatt



*Androsace limprichtii* Pax & K. Hoffmann

**PRIMULACEAE**




*Androsace maxima* var. *tibetica* Hand Mzaa



*Androsace mariae* Kanitz, Wiss. Erg.

**PRIMULACEAE**



*Androsace minor* (Hand.-Mazz.) C.M.Hu & Y.C.Yang



*Androsace mollis* Hand.-Mazz

**PRIMULACEAE**



*Androsace selago* Watt



*Androsace sempervivoides* Duby.

**PRIMULACEAE**



*Androsace strigillosa* Franch



*Androsace sublanata* Hand.-Mazz

**PRIMULACEAE**



*Androsace tapete* Maxim.



*Androsace yargongensis* Petitm.

**PRIMULACEAE**



*Androsace zambalensis* (Petitm) Han.-Maz.



*Bryocarpum himalaicum* J. D. Hooker & Thomson

**PRIMULACEAE**



*Primula advena* W.W.Sm.



*Primula agleniana* I. B. Balfour & Forrest

**PRIMULACEAE**



*Primula alpicola* (W.W. Sm.) Stapf



*Primula amethystina* Franch

**PRIMULACEAE**



*Primula amethystina* subsp. *brevifolia* (Forrest) W. W. Smith & Forrest



*Primula atrodentata* W.W. Sm.

**PRIMULACEAE**



*Primula bellidifolia* Hook.f.



*Primula bhutanica* H. R. Fletcher.

**PRIMULACEAE**



*Primula bracteata* Franchet



*Primula bracteosa* Craib.

**PRIMULACEAE**




*Primula calderiana* I. B. Balf. & R.E. Cooper



*Primula capitata* Hooker

**PRIMULACEAE**



*Primula caveana* W.W. Sm.



*Primula cawdoriana* Kingdon-Ward

**PRIMULACEAE**




*Primula chasmophila* Hutchinson



*Primula chionantha* ssp. *sinoplantaginea* (I. B. Balf.) A. J. Richards

**PRIMULACEAE**



*Primula chionantha* subsp. *sinopurpurea* (I. B. B.) A. J. R



*Primula chumbiensis* W.W. Sm.

**PRIMULACEAE**



*Primula chungensis* L.



*Primula cockburniana* Hemsl.

**PRIMULACEAE**



*Primula concinna* Watt.



*Primula deflexa* Duthie

**PRIMULACEAE**




*Primula denticulata* Sm.



*Primula dickieana* Watt, J. Linn.

**PRIMULACEAE**



*Primula dryadifolia* Franche



*Primula drynifolia* ssp. *congestiflora* Franche

**PRIMULACEAE**



*Primula eburnea* I. B. Balf. & R.E. Cooper.



*Primula elongata* G.Watt.

**PRIMULACEAE**




*Primula fasciculata* Balf. f.et Ward



*Primula filipes* G.Watt.

**PRIMULACEAE**



*Primula florida* Balf.f. & Forrest



*Primula gambeliana* Watt.

**PRIMULACEAE**



*Primula geraniifolia* J.D. Hook. fil.



*Primula glabra* Klatt

**PRIMULACEAE**



*Primula gracilipes* Craib



གསོ་རིག་མིང་ » ཕང་དྲིལ་སྨུག་ཆེན། (ཕང་དྲིལ་སྨུག་སོ་ཆེན་བ)

*Primula griffithii* (Watt) Pax

**PRIMULACEAE**



*Primula handeliana* W.W. Sm. & Forrest



*Primula hookeri* G.Watt.

**PRIMULACEAE**



*Primula hopeana* Balf.f. & R.E.Cooper



*Primula jigmediana* W.W.Sm.

**PRIMULACEAE**




*Primula kingii* G. Watt.



*Primula kisoana* Miq.

**PRIMULACEAE**



*Primula klattii* N.P.Balakr.



*Primula listeri* Hook.f.

**PRIMULACEAE**



*Primula macrophylla* D. Don.



*Primula megalocarpa* H.Hara

**PRIMULACEAE**



*Primula mollis* Hook.




*Primula munroi* Lindl.

**PRIMULACEAE**



*Primula muscoides* Hooker f.



*Primula nanobella* Balf.f. & Forrest

**PRIMULACEAE**



*Primula nutans* Georgi.



*Primula obliqua* W.W. Sm.

**PRIMULACEAE**



*Primula orbicularis* Hemsley



*Primula palmata* Handel-Mazzetti

**PRIMULACEAE**



*Primula prenantha* Balf.f. & W.W.Sm.




*Primula primulina* (Spreng.) H. Hara

**PRIMULACEAE**



*Primula pulchella* Franchet



*Primula reticulate* Wall.

**PRIMULACEAE**



*Primula sapphirina* Hook. fil. & Thomson



*Primula secundiflora* Franch

**PRIMULACEAE**




*Primula sikkimensis* Hook.



*Primula smithiana* Craib.

**PRIMULACEAE**



*Primula soldanelloides* Watt.



*Primula spicata* Franchet

**PRIMULACEAE**



*Primula stirtoniana* G.Watt.



*Primula strumosa* Balf.fil. & R.E.Cooper.

**PRIMULACEAE**



*Primula tangutica* Duthie



*Primula tanneri* King

**PRIMULACEAE**




*Primula tenella* J. D. Hooker



*Primula tenuiloba* (Watt) Pax.

**PRIMULACEAE**



*Primula tibetica* Watt



*Primula tsariensis* W.W.Sm.

**PRIMULACEAE**




*Primula umbratilis* I. B Balf. & Cooper



*Primula vaginata* Watt.

**PRIMULACEAE**



*Primula waddellii* I. B. Balf. & W.W. Sm.



*Primula walshii* Craib

**PRIMULACEAE**



*Primula wattii* Watt.



*Primula xanthopa* Balf.f. & R.E.Cooper

**PRIMULACEAE**



*Primula yunnanensis* Franchet



*Primula zambalensis* Petitm

**PTERIDACEAE** Maidenhair fern Family




*Adiantum raddianum* C.Presl

**RANUNCULACEAE** Buttercup Family




*Aconitum anthora* L.



*Aconitum balfourii* Stapf



*Aconitum degenii* Gáyer.

**RANUNCULACEAE**



*Aconitum deinorrhizum* Stapf.




*Aconitum ferox* Wall. Stapf.




*Aconitum fletcheranum* G. Taylor




*Aconitum gammiei* Stapf.

**RANUNCULACEAE**



*Aconitum gymnandrum* Maxim




*Aconitum hemsleyanum* E. Pritz.

**RANUNCULACEAE**



གསོ་རིག་མིང་ » བོང་དཀར་པོ། (རྫྭ་དི་ཆེ་ཤི་ནི)

*Aconitum heterophyllum* Royle



*Aconitum hicksii* Lauener.

**RANUNCULACEAE**



*Aconitum hookeri* Stapf.




*Aconitum laciniatum* (Bruhl) Stapf.



*Aconitum lethale* Griffith.




*Aconitum naviculare* (Bruhl) Stapf

**RANUNCULACEAE**




*Aconitum nagarum* Stapf.




*Aconitum orochryseum* Stapf



*Aconitum palmatum* D.Don.



*Aconitum pendulum* Busch

**RANUNCULACEAE**



*Aconitum scaposum* Franchet



*Aconitum spicatum* (Bruhl) Stapf

**RANUNCULACEAE**



*Aconitum variegatum* L.



*Aconitum violaceum* Jacq.

**RANUNCULACEAE**




*Actaea acuminata* Wall.



*Adonis brevistyla* Franch.

**RANUNCULACEAE**




*Adonis davidii* Franchet



*Anemonastrum flaccidum* (Fr.Schmidt) Mosy.

**RANUNCULACEAE**



*Anemonastrum flaccidum* (Fr.Schmidt) Mosyakin



*Anemone griffithii* Hook. f. & Thomson

**RANUNCULACEAE**



*Anemone nemorosa* L.



*Anemone obtusiloba* D. Don

**RANUNCULACEAE**




*Anemone polyanthes* D. Don




*Anemone rivularis* Buch.-Ham. DC.

**RANUNCULACEAE**



*Anemone rupestris* Wall.



*Anemone rupicola* Cambes.

**RANUNCULACEAE**



*Anemone smithiana* Laue. & Pani.



*Anemone trullifolia* Hand.-Mazz



*Anemone trullifolia* var. *linearis* (Bruhl) Hand.-Mazz



*Anemone vitifolia* DC. Nakai

**RANUNCULACEAE**



*Aquilegia vulgaris* L.



*Asteropyrum peltatum* (Franchet) J. R. Drumm. & Hut

**RANUNCULACEAE**



*Callianthemum pimpinelloides* (D.Don) Hook.f. & Thomson.




*Caltha scaposa* Hovok.f. & Thomson

**RANUNCULACEAE**



*Clematis acutangula* Hook.f. & Thomson



*Clematis buchananiana* DC.

**RANUNCULACEAE**



གསོ་རིག་མིང་ » དབྱི་མོང་ཁ་བོ།  (དབྱི་ཚུང།  སྨོན་པོ་རྟ་ཕྱག)

*Clematis montana* DC.



*Clematis smilacifolia* Wall.

**RANUNCULACEAE**




*Clematis tongluensis* (Brühl) Tamura



*Clematis zemuensis* W.W.Sm.



*Delphinium altissimum* Wall.



*Delphinium bhutanicum* Munz.

**RANUNCULACEAE**



གསོ་རིག་མིང་ » བྱ་རོད་སྤོས། (བདུད་རྩི་ཆིག་ཐུབ། སྲིན་བྱའི་མགོ་ཅན། ཀླ་རྩིའི་དྲི་ཅན།)

*Delphinium brunonianum* Royle



གསོ་རིག་མིང་ » ཉི་མྱ་སྣ། (གཡུ་ལུང་པ། སྤོན་པོ་དར་ཡ་ཀན། ཨ་ལོ་ཤང་གཅིག)

*Delphinium caeruleum* Jacquem.




*Delphinium carolinianum* Walter



*Delphinium cooperi* Munz.

**RANUNCULACEAE**



གསོ་རིག་མིང་ » བྱ་ཤད། (ལོ་བཅན་འཐིངས་པོ། ཏི་སྒུ་སྣ། རྩ་ལོ་ཤད་གཅིག།)

*Delphinium drepanocentrum* (Bruhl) Munz



*Delphinium glaciale* J. D. Hooker & Thomson

**RANUNCULACEAE**



*Delphinium grandiflorum* L.




*Delphinium muscosum* Excell & Hillc.

**RANUNCULACEAE**




*Delphinium nepalense* Kitam. & Tamura




*Delphinium viscosum* Hook. f. & Thoms.

**RANUNCULACEAE**



*Eriocapitella hupehensis* (É.Lemoine) Christenh. & Byng



*Oxygraphis endlicheri* (Walpers) Bennet & Su. Chan.

**RANUNCULACEAE**



*Oxygraphis glacialis* (DC.) Bunge.




*Oxygraphis polypetala* (D.Don) Hook.f. & Thoms.



*Ranunculus adoneus* A. Gray



*Ranunculus adoxifolius* Handel-Mazz.

## RANUNCULACEAE



*Ranunculus brotherusii* Freyn



*Ranunculus brotherusii* var. *dasycarpus* (Maxim.) Hand. Mazz.

**RANUNCULACEAE**



གསོ་རིག་མིང་ » ལྷེ་ཚ། (རླུ་ཚ། ཁ་ཚ་མེ་ཏོག། མེ་ཏོག་ལྷེ་ཚ། ལོ་མ་སྦུལ་ཝ་ལག་པ།)

*Ranunculus brotherusii* var. *pulchellus* Freyn, R. affinis Brown



*Ranunculus cantoniensis* DC.

**RANUNCULACEAE**



*Ranunculus chinensis* Bunge



*Ranunculus diffusus* f. mollis Wall.



གསོ་རིག་མིང་ » སྒྲ་ཚ། (ལོང་བུ་ལན་ཚ། མེ་ཏོག་ལ་གསེར་འདབ་ལྟ་པ། མེ་ཏོག་སྒྲ་ཚ།)

*Ranunculus japonicas* Thunb.



*Ranunculus laetus* Hook.f. & Thoms

**RANUNCULACEAE**



གསོ་རིག་མིང་ » ཚུ་རུག་ལྦལ་ལག། (སྦལ་པ་ལག་པ། རྒྱས་མཐུད།)

*Ranunculus pulchellus* C. A. Meyer



*Ranunculus tricuspis* Maxim



*Ranunculus silerifolius* H. Lév.



*Ranunculus trichophyllus* Chaix

**RANUNCULACEAE**



*Ranunculus tricuspis* Maxim.



*Souliea vaginata* (Maxim.) Franch

**RANUNCULACEAE**




*Thalictrum chelidonii* DC.



*Thalictrum cultratum* Wall.

**RANUNCULACEAE**



*Thalictrum delavayi* Franch.




*Thalictrum elegans* Wall.



*Thalictrum foetidum* Lin.



*Thalictrum foliolosum* DC.

**RANUNCULACEAE**



*Thalictrum isopyroides* C. A. Meyer



*Thalictrum javanicum* Blume



*Thalictrum leuconotum* Franch.



*Thalictrum saniculiforme* DC.

**RANUNCULACEAE**




*Thalictrum virgatum* Hook. f. & Thomson



*Trollius farreri* Stapf



*Trollius pumilus* Beth.



*Trollius sikkimensis* (Brühl) Dorosz.

**RANUNCULACEAE**



*Trollius vaginatus* Hand.-Mazz.

**RHAMNACEAE** Buckthorn Family



*Berchemia edgeworthii* Lawson

**RHAMNACEAE**



*Rhamnus virgatus* Roxb.

**ROSACEAE** Rose Family



*Agrimonia pilosa* Ledeb.

**ROSACEAE**



*Aruncus dioicus* (Walter) Fernald




*Chaenomeles speciosa* (Sweet) Nakai

**ROSACEAE**



*Cotoneaster bacillaris* Lindl.



*Cotoneaster bullatus* Bois.

## ROSACEAE




*Cotoneaster bumthangensis* J.Fryer & B.Hylmo



*Cotoneaster franchetii* Bois

**ROSACEAE**



*Cotoneaster frigidus* Wall. ex Lindl.




*Cotoneaster microphyllus* Lindl.

**ROSACEAE**




*Cotoneaster multiflorus* Bunge var. *atropurpureus* Yu



*Cotoneaster nitidus* Jacques

**ROSACEAE**



*Cotoneaster prostratus* Baker



*Cotoneaster racemiflorus* (Desf.) K. Koch

**ROSACEAE**



*Cotoneaster rotundifolius* Wall.



*Cotoneaster rubens* W. W. Sm.

**ROSACEAE**




*Cotoneaster sherriffii* Klotz



*Cotoneaster simonsii* L.

**ROSACEAE**



*Cotoneaster thimphuensis* J. Frey & B. Hylmo



*Dasiphora arbuscula* (D.Don) Soják

**ROSACEAE**



*Docynia indica* (Wall.) Decne.



*Fragaria daltoniana* Gay.

**ROSACEAE**




*Fragaria nubicola* Hook. f. lacaita



*Fragaria viridis* Weston

**ROSACEAE**



*Geum elatum* Wall.



*Geum macrosepalum* Ludlow

**ROSACEAE**



*Geum sikkimense* Prain



*Malus baccata* (L.) Borkh

**ROSACEAE**




*Malus pumil* Mill.



*Malus sikkimensis* (Wenzig) Koehne

**ROSACEAE**



*Neillia rubiflora* D. Don



*Neillia sinensis* Oliver

**ROSACEAE**



*Neillia thyrsiflora* D. Don




*Potentilla anserine* L.

**ROSACEAE**




*Potentilla arbuscula* D.Don



*Potentilla bhutanica* Ludlow

**ROSACEAE**




*Potentilla coriandrifolia* D. Don



*Potentilla erecta* (L.) Raeusch.

**ROSACEAE**




*Potentilla eriocarpa* Wall.




*Potentilla fulgens* Wall.

**ROSACEAE**




*Potentilla glabra* Loddiges




*Potentilla gracilis* Hook.

**ROSACEAE**



*Potentilla griffithii* Hook.f.



*Potentilla leuconota* D.Don



*Potentilla lineata* Trev.



*Potentilla megalantha* Takeda

**ROSACEAE**



*Potentilla microphylla* D. Don



*Potentilla peduncularis* D. Don



*Potentilla polyphylla* Leh.



*Potentilla purpurea* (Royle) Hook.f.

**ROSACEAE**



*Potentilla reptans* L.



*Potentilla saundersiana* Royle



*Poterium filiforme* Hook.f.



*Poterium sanguisorba* L.

**ROSACEAE**




*Prinsepia utilis* Royle



*Prunus carmesina* H. Hara

**ROSACEAE**



*Prunus cornuta* Steud



*Prunus himalayana* J.Wen

**ROSACEAE**



*Prunus nepalensis* (Ser.) Steud



*Prunus persica* (L.) Batsch

**ROSACEAE**



*Prunus rufa* Hook. f.



*Pyrus communis* L.

**ROSACEAE**



*Pyrus pashia* D. Don.



*Rosa banksiae* W. T. Aiton

**ROSACEAE**



*Rosa brunonii* Lindl.




*Rosa macrophylla* Lindl.

**ROSACEAE**



*Rosa omeiensis* Rolfe




*Rosa roxburghii* Tratt.

**ROSACEAE**




*Rosa sericea* Lindl.




*Rosa tibetica* T.T.Yu & T.C. ku.

**ROSACEAE**



*Rubus acuminatus* Sm.



*Rubus alexeterius* Focke

**ROSACEAE**




*Rubus biflorus* Smith




*Rubus calycinus* D. Don

**ROSACEAE**



*Rubus cooperi* D.G.Long



*Rubus ellipticus* Sm.

**ROSACEAE**



*Rubus fockeanus* Kurz.



*Rubus foliolosus D*.Don

**ROSACEAE**



*Rubus hoffmeisterianus* Kunth & C. D.




*Rubus idaeus* L.



*Rubus indotibetanus* Koidz.



*Rubus inopertus* (Focke) Focke

**ROSACEAE**



*Rubus lineatus* Reinw.



*Rubus macilentus* Jacquem

**ROSACEAE**



*Rubus mesogaeus* Focke



*Rubus nepalensis* (Hook.f.) Kuntze

**ROSACEAE**




*Rubus niveus* Thumb



*Rubus paniculatus* Smith

**ROSACEAE**



*Rubus pectinaroides* H. Hara.



*Rubus pedunculosus* D. Don

**ROSACEAE**



*Rubus pungens* Camb.




*Rubus sengorensis* Grierson & D.G.Long.




*Rubus subornatus* var. *melanadenus* Focke



*Rubus treutleri* Hook.f.

**ROSACEAE**




*Sanguisorba minor* Scop.



*Sibbaldia cuneata* Kuntze

**ROSACEAE**



*Sibbaldia micropetala* (D. Don) Handel-Mazz.



*Sibbaldia parviflora* Willd.

**ROSACEAE**



*Sibbaldia perpusilloides* (W. W. Smith) Handel-Mazz.



*Sibbaldia procumbens* L.



*Sorbus hedlundii* (Hook. f.) Hedl.




*Sorbus karchungii* Rushforth

**ROSACEAE**




*Sorbus longii* Rushforth



*Sorbus microphylla* (Hook.fil.) Wenz.

**ROSACEAE**



*Sorbus thibetica* (Cardot) Handel-Mazz.



*Spenceria ramalana* Trimen

**ROSACEAE**



*Spiraea arcuata* J. D. Hook.




*Spiraea bella* Sims.

**ROSACEAE**




*Spiraea canescens* D. Don.



*Spiraea cantoniensis* Lour

**ROSACEAE**



*Spiraea micrantha* Hook. f.

**RUBIACEAE** Madder Family



*Agrostemma verticillatum* Wall.

**RUBIACEAE**




*Galium aparine* L.



*Galium craticulatum* R.R.Mill.

**RUBIACEAE**



*Leptodermis kumaonensis* R. Parker



*Leptodermis lanceolata* Wall.

**RUBIACEAE**



*Loptodermis stapfiana* H.J.P.Winkl.



*Mussaenda roxburghii* Hook.f.

**RUBIACEAE**




*Rubia cordifolia* L.



*Rubia hispidicaulis* D.G.Long



*Rubia manjith* Flem.



*Boenninghausenia albiflora* (Hooker) Reich.

**RUBIACEAE**



*Skimmia laureola* (DC.) Decne.



*Zanthoxylum acanthopodium* DC.

**RUTACEAE**




*Zanthoxylum aramatum* DC.




*Zanthoxylum bungeanum* Maxim.

**RUTACEAE**



*Zanthoxylum oxyphyllum* Edge.

**SALICACEAE** Willow Family



*Populus ciliata* Royle



*Populus rotundifolia* Griff.



*Populus tremuloides* Michx.

**SALICACEAE**




*Salix alba* L.



*Salix babylonica* L.

**SALICACEAE**



*Salix bhutanensis* Flod.




*Salix calyculata* Andersson

**SALICACEAE**



*Salix caprea* L.



*Salix daltoniana* Andersson, J. Linn.

**SALICACEAE**



*Salix excelsa* S.G.Gmel.



*Salix lindleyana* Ander.

## SALICACEAE



*Salix longiflora* Andersson, J. Linn.



*Salix myrtillacea* Ander.

**SALICACEAE**



*Salix obscura* Ander.



གསོ་རིག་མིང་ » གླང་མ་ཤིང་དཀར་སོ། (གླང་མ། གླང་དཀར)

*Salix sclerophyll* Andress

## SALICACEAE



*Salix serpyllum* Ander.



*Salix sikkimensis* Ander.

**SALICACEAE**



*Salix wallichiana* Ander.

**SANTALACEAE** Sandalwoods Family



*Thesium emodi* Hendrych

**SANTALACEAE**




*Viscum nepalense* Spreng.

**SAXIFRAGACEAE** Saxifrage Family



*Bergenia ciliata* (Haw.)Sternb



*Bergenia ligulata* (Wall.) Engl.




*Bergenia purpurascens* (Hook fil. et. Thoms.) Engl

**SAXIFRAGACEAE**




*Bergenia stracheyi* Alba



*Chrysosplenium carnosum* J. D. Hooker & Thomson



*Chrysosplenium davidianum* Maxi.




*Chrysosplenium forrestii* Diels

## SAXIFRAGACEAE



*Chrysosplenium nepalense* D. Don



*Chrysosplenium tenellum* Hook. f. & Thoms

**SAXIFRAGACEAE**



*Micranthes pallida* Losinsk.



*Saxifraga andersonii* Engler & Irmscher

**SAXIFRAGACEAE**



*Saxifraga asarifolia* Sternb



*Saxifraga aspera* L.

**SAXIFRAGACEAE**




*Saxifraga bergenioides* C. Marquand



*Saxifraga brachypoda* D.Don.

## SAXIFRAGACEAE




*Saxifraga brunonis* Seringe



*Saxifraga bryoides* L.

**SAXIFRAGACEAE**



*Saxifraga diversifolia* Wall.




*Saxifraga elliptica* Engler & Irmscher

## SAXIFRAGACEAE



*Saxifraga engleriana* Harry Sm.



*Saxifraga erinacea* Harry Sm.



*Saxifraga filicaulis* Wall. Losinsk.



*Saxifraga georgei* J. Anthony

## SAXIFRAGACEAE



*Saxifraga granulifera* Harry Sm.




*Saxifraga harry-smithii* B.M. Wadhwa

**SAXIFRAGACEAE**



གསོ་རིག་མིང་ » ཟངས་ཏིག་རྒྱལས་པོ་གསེར་མདོག་མ། (ཟངས་ཏིག་ཆུང་བ)

*Saxifraga hispidula* D.Don



*Saxifraga jacquemontiana* Decne.

**SAXIFRAGACEAE**



*Saxifraga kingiana* Engler & Irmscher



*Saxifraga lhasana* H. m.

**SAXIFRAGACEAE**



*Saxifraga lychnitis* Hook. f. & Thomson




*Saxifraga melanocentra* Franchet.

**SAXIFRAGACEAE**




*Saxifraga moorcroftiana* Sternb.



*Saxifraga montana* H.

**SAXIFRAGACEAE**



*Saxifraga mucronulata* Royle




*Saxifraga nigroglandulifera* N.P.Balakr

**SAXIFRAGACEAE**



*Saxifraga oppositifolia* Linn.




*Saxifraga pallida* Ser.



*Saxifraga paniculata* Mill.




*Saxifraga parnassifolia* D. Don

**SAXIFRAGACEAE**



*Saxifraga pilifera* Hook.f. & Thomson



*Saxifraga pulvinaria* Harry Sm.

**SAXIFRAGACEAE**




*Saxifraga saginoides* Hook. f. & Thomson



*Saxifraga saxorum* Harry. Sm.

## SAXIFRAGACEAE




*Saxifraga sherriffii* Harry Sm.



*Saxifraga stella-aurea* Hook. f. & Thomson

**SAXIFRAGACEAE**



*Saxifraga stenophylla* Royle



*Saxifraga stolitzkae* Engl. & Irmsch.

**SAXIFRAGACEAE**




*Saxifraga strigosa* Wall.



*Saxifraga tangutica* Engl.

**SAXIFRAGACEAE**




*Saxifraga thiantha* Harry Sm.



*Saxifraga umbellulata* var. *pectinata* (C. Marq. & A. S.) J. T. Pan

**SAXIFRAGACEAE**



*Saxifraga unguiculata* Engler



*Saxifraga wahlenbergii* Ball.

**SAXIFRAGACEAE**




*Saxifraga wardii* W.W. Sm.



*Tiarella polyphylla* D.Don.

**SAURURACEAE** Lizard tail Family



*Houttuynia cordata* Thunb.

**SCHISANDRACEAE** Star-vine Family



*Illicium griffithii* Hook.f. & Thomson.

**SCHISANDRACEAE**




*Schisandra grandiflora* (Wall.) Hook. f. & Thomson

**SCROPHULARIACEAE** Figwort Family




*Buddleja asiatica* Loureiro

## SCROPHULARIACEAE




*Buddleja bhutanica* T.Yamaz.




*Buddleja colvilei* Hook. fil. et Thomson

**SCROPHULARIACEAE**



*Buddleja crispa* Bentham




*Buddleja davidii* Franch.

## SCROPHULARIACEAE



*Buddleja paniculata* Wall.



*Digitalis purpurea* L.

**SCROPHULARIACEAE**




*Euphrasia melanosticta* R.R. Mill



*Euphrasia nemorosa* (Pers.) Wall.

## SCROPHULARIACEAE



*Euphrasia officinalis* L.




*Hemiphragma heterophyllum* Wall.

**SCROPHULARIACEAE**



*Oreosolen wattii* Hook. f.



གསོ་རིག་མིང་ » ལྷུམ་གསེར་ཟེ། (གཡུག་གསེར་གྱི་ཟེ་མ། གསེར་ཟེ་དམན་པ།)

*Verbascum thapsus* L.

**SELAGINELLACEAE** Spike-moss Family



*Selaginella involvens* (Sw.) Spring




*Selaginella pulyinata* (Hook Grev.) Maxim

**SELAGINELLACEAE**




*Selaginella tamariscina* (P.Beaur.) Sring

**SMILACACEAE** Catbrier Family



*Smilax aspera* L.

**SMILACACEAE**



*Smilax elegans* Kunth



*Smilax ferox* Kunth

**SOLANACEAE** Nightshade or Potato Family



*Anisodus acutangulus* C.Y.Wu & C.Chen



*Anisodus luridus* Link

**SOLANACEAE**




*Anisodus tanguticus* (Maxim.) Pascher




*Datura stramonium* Linn.

**SOLANACEAE**




*Nicandra physalodes* (L.) Gaertn



*Solanum laxum* Spreng

**SOLANACEAE**



*Solanum nigrum* L.



*Solanum tuberosum* L.

**SOLANACEAE**



*Solanum viarum* Dunal

**SYMPLOCACEAE** Sweet leaf Family



*Symplocos glomerata* C. B. Cl.

**TAMARICACEAE** Tamarisk Family



*Myricaria elegans* Royle



གསོ་རིག་མིང་ » འཙ་བྲ། (ཆུ་ཤིང་འཙ་བྲ། སྨོ་ཤིང་། མི་རྟད་བཙད་འཇོམས།)

*Myricaria rosea* W. W. Smith

**TAMARICACEAE**




*Myricaria squamosal* Desv.

**THEACEAE** Tea or Camellia Family



*Eurya acuminata* DC.

**THYMELAEACEAE** Mezereum Family




*Daphne bholua* Buch.-Ham. ex D. Don.




*Daphne ludlowii* D.G. Long & S.J. Rae



*Daphne retusa* Hemsl.



*Daphne sureil* W. W. Smith & Cave

**THYMELAEACEAE**




*Daphne tangutica* Maxim.




*Edgeworthia gardneri* Meisner

**TOFIELDIACEAE** False Asphodel Family



*Tofieldia forrestii* B&F

**TROPAEOLACEAE** Nasturtium Family



*Tropaeolum majus* L.

**TYPHACEAE** Cattail Family




*Typha elephantina* Roxb.

**UMBELLIFERAE** Celery, Carrot or Parsley Family



*Apium graveolens* L.

**URTICACEAE** Nettle Family



*Elatostema acuminatum* (Poiret) Brongniart




*Elatostema lineolatum* Wight

**URTICACEAE**




*Girardinia diversifolia* (Link) Friis



*Pilea symmeria* Wedd.

**URTICACEAE**




*Urtica dioica* L.




*Urtica tibetica* W.T. Wang.

**URTICACEAE**



*Urtica mairei* H. Lév.

**USTILAGINACEAE** Smut fungi Family




*Ustilago nuda* (Jens.) Rostr.

**VALERIANACEAE** Valerian Family




*Valeriana hardwickii* Wall.

**VIOLACEAE** Violet Family



*Viola betonicifolia* Smith

**VIOLACEAE**




*Viola bhutanica* H.Hara.




*Viola biflora* L.



*Viola hamiltoniana* D.Don



*Viola hookeri* Hook. f. & Thomson.

**VIOLACEAE**



*Viola kunawurensis* Royle



*Viola pilosa* Blume

**VIOLACEAE**



*Viola rockii* H.St.John



*Viola tricolor* L.

**ZINGIBERACEAE** Ginger Family



*Cautleya spicata* (Sm.) Baker



*Hedychium coccineum* Buch.-Ham. ex Sm

**ZINGIBERACEAE**



*Hedychium densiflorum* Wall.



*Hedychium gardnerianum* Ker Gawler

## ZINGIBERACEAE



*Hedychium spicatum* Smith



*Roscoea alpine* Royle

**ZINGIBERACEAE**



*Roscoea auriculata* K.Schum



*Roscoea forrestii* Cowley

## ZINGIBERACEAE



*Roscoea praecox* K. Schumann



*Roscoea purpurea* Sm.

**ZINGIBERACEAE**



*Roscoea tibetica* Batalin



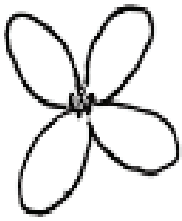
*Zingiber chrysanthum* Roscoe

## ANNEXURE

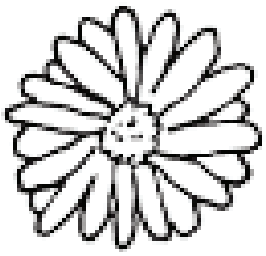
### Shapes of the flower



Campanulate



Cruciform



Head



Papilionaceous



Funnel-form



Spurred



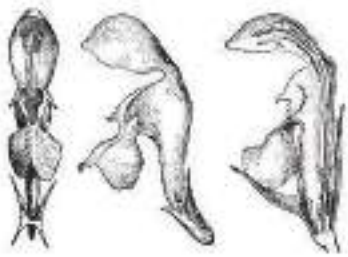
Stellate



Trumpet



Tubular



Labiate



Urceolate



Coronate



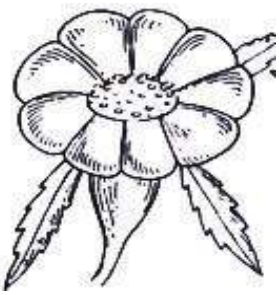
Rotate



Salver-form



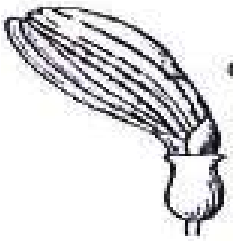
Caryophyllaceous



Rosaceous

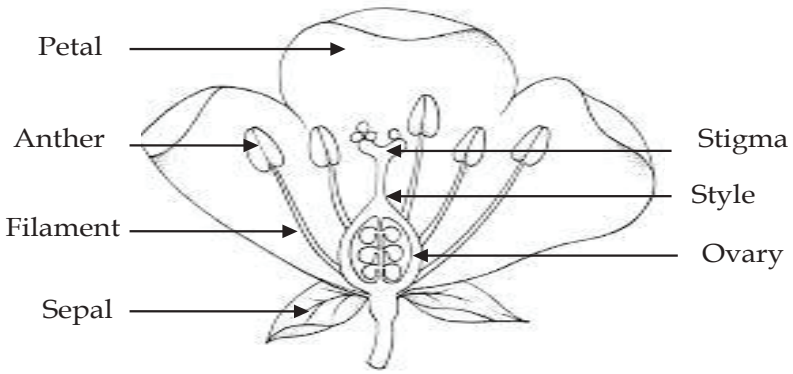


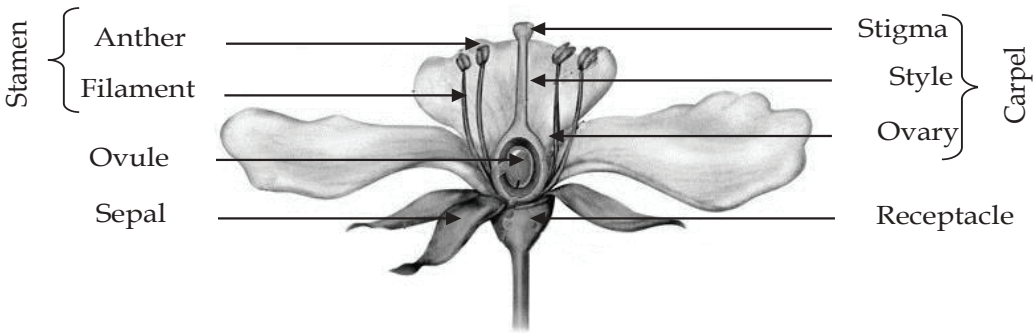
Personate



Ligulate

**Characteristics of the flower**




**Classification of flower based on position of Ovary**



**Hypogynous**
(Ovary Superior)

**Perigynous**
(Ovary Half-inferior)

**Epigynous**
(Ovary Inferior)

**Type of Leaf**



Simple



Ternately Compound



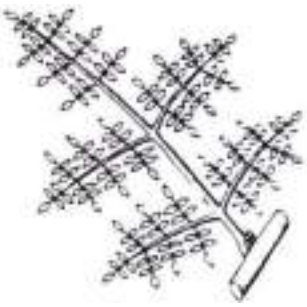
Palmately/Digitately Compound



Pinnately Compound



Bipinnately Compound



Tripinnately Compound

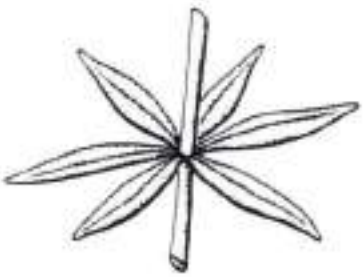
**Leaf Arrangement**



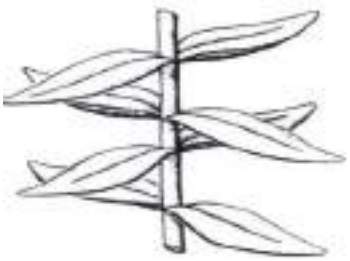
Alternate



Opposite



Whorled



Opposite and Decussate(leaves rotated at 90 degree at adjacent nodes)



Opposite and Decussate



Alternate and Distichous



Fascicied

**Shape of the Leaf**



Acicular



Cordate



Deltoid



Elliptic



Lanceolate



Linear



Lyrate



Obcordate



Oblong



Obovate



Orbicular



Ovate



Palmate



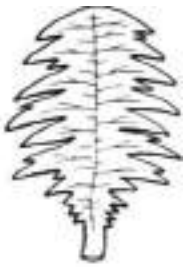
Pectinate



Pinnatified



Reniform



Runicinate



Spatulate

**Leaf Apex**



Acuminate



Acute



Apiculate



Aristate



Emarginate



Mucronate



Obtuse



Retuse



Rounded



Tidentate



Truncate

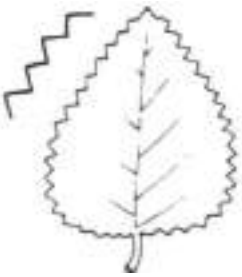
## Leaf Margin



Ciliate



Crenate



Dentate



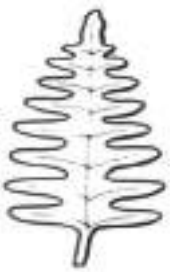
Denticulate



Entire



Erose



Lobed



Revolute



Serrate



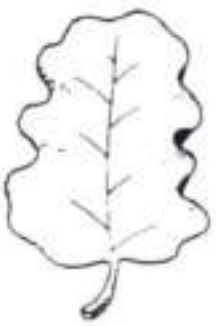
Serrulate



Doubly serrate



Sinuate



Undulate

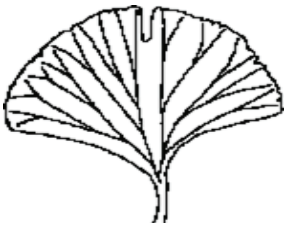
## Leaf Venation



Arcuate



Cross-Venulate



Dichotomous



Longitudinal



Palmate



Parallel



Pinnate

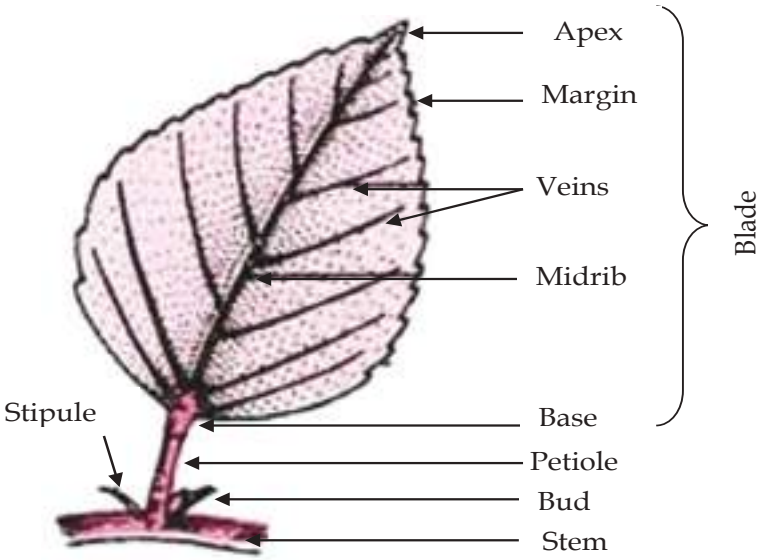


Reticulate



Rotate

**Parts of a Leaf**




**Classification of leaf and petal based on their count**



**Trimerous** Leaves/petal multiple of 3

**Tetramerous** Leaves/petal multiple of 4

**Pentamerous** Leaves/petal multiple of 5

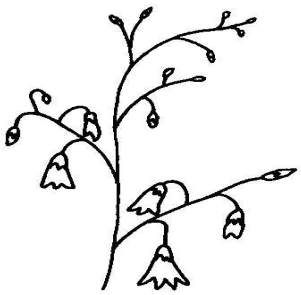
**Inflorescence Type**



Spike



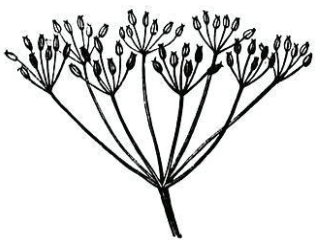
Receme



Panicle



Corymb



Umbel

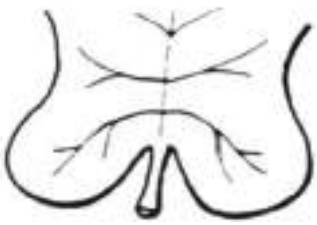


Helicoid cyme

## Leaf Base



Attenuate



Auriculate



Connate Perfoliate



Cordate



Cuneate



Decurrent



Hastate



Oblique



Obtuse



Peltate



Perfoliate



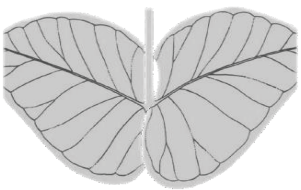
Sagittate



Sheathing



Truncate

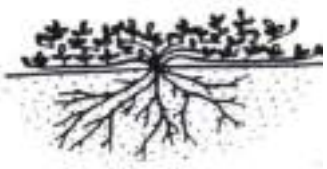


Sessile

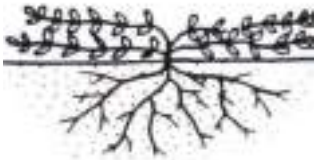
**Above the Ground Stem System**



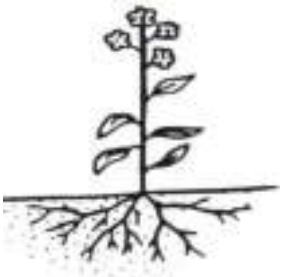
Ascendent



Decumbent



Procumbent



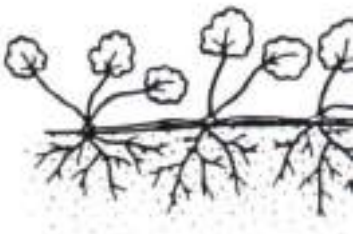
Erect and Caulescent



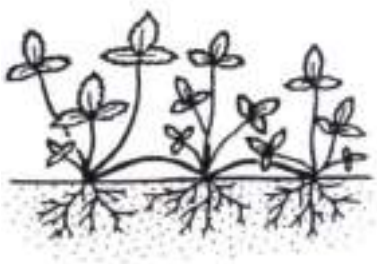
Erect and Acaulescent



Thorn



Repent

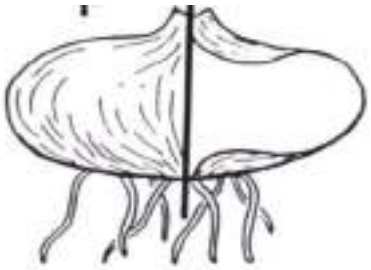


Stolon

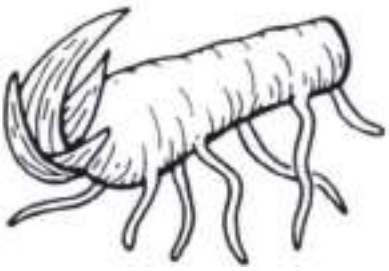
**Underground Stem System**



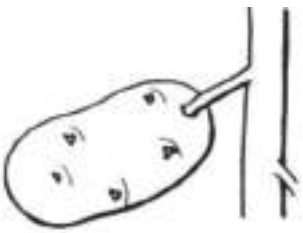
Bulb



Corm

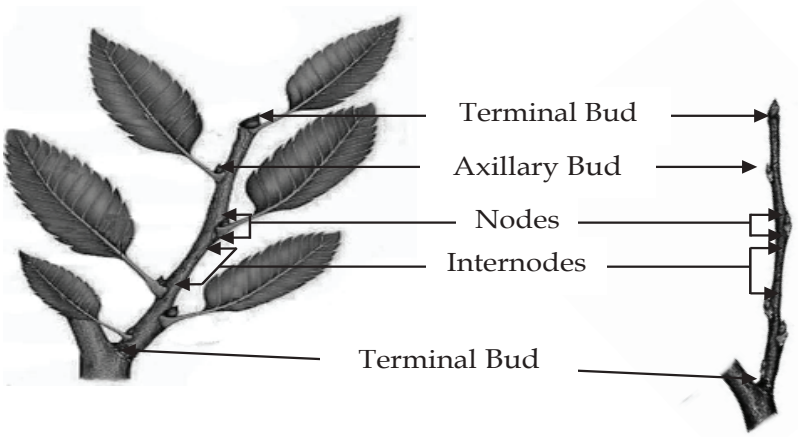


Rhizome

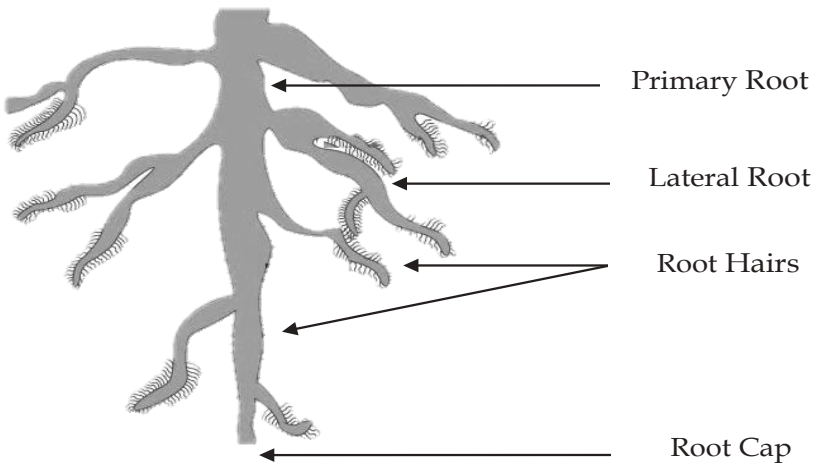


Tuber

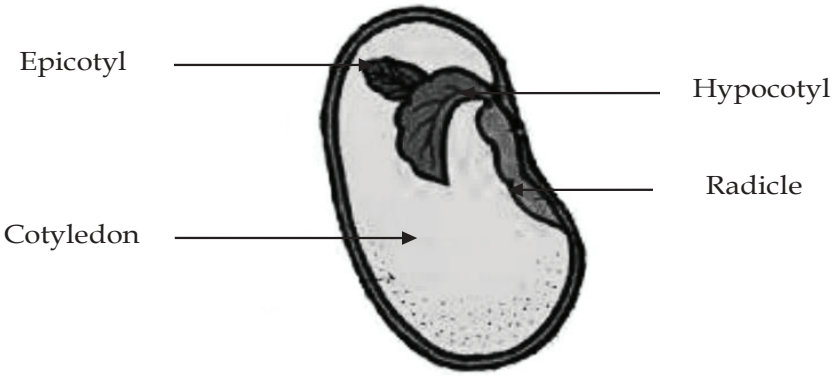
**Stem - Arrangement**

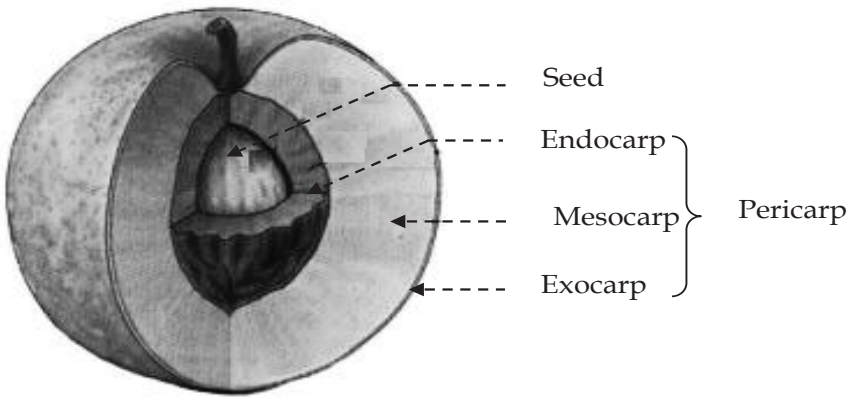



**Parts of Root**



**Seed - Anatomy**



## Sorig INDEX


ཀཆུ་ཀ་རི་དཀར་པོ། ༡༨༠
ཀཆུ་ཀ་རི། ༡༣༦
ཀུ་ཤུ། ༡༥༧
ཀུང་ལྡང་སྐྱེད་མ། ༢༠༦
ཀ་དུར་མཆོག། ༦༡༦
ཀ་དུར། ༦༡༡
ཀ་ཐ་སྨུག་པོ། ༡༣༤
ཀ་ཐི། ༡༨༦
ཀཉེ་ཤིང་། ༦༡༠
ཀཡའ་ཀྱི་མ། ༦༡༦
ཀཡེར་ཆུང་། ༡ཀཀ
ཀཡེར་མ། ༡ཀཀ
ཀཤེར་ཀཡའ་ཀྱི་མ། ༦༦༥
ཀཤེར་ཏིཀ། ༦༦ཀ
ཀུར་ཏིཀ། ༦༦༣
ཁོ་མ་ཀཆུང་ནག། ༡༥༥
ཁོ་མ། ༡༥༦
ཁོ་ལོ་ས་འཛིན། ༡༥༣
ཁོ། ཀ
ཁྲ་རྩིའི་དྲི་ཅན་དམན་པ། ༡༡༨
ཁྲངས་ཤིང་དཀར་པོ། ༦༠༣
ཁྲངས་ཤིང་ནག་པོ། ༦༠༦
ཁོ་སྨན་ཆིག་ཐུབ། ༤༦
ཆང་རྩི་ཁ་སྨྲ་མེ་ཏོག། ༦ཅ༠
ཆུ་ཁངར་མེ་ཏོག། ༦༧
ཆུ་མ་རྩི་གཡུང་བ། ༦ཀ
ཆུ་མ་རྩི། ༦༧
ཆུ་རྩྭ་ཐུལ་ལག། ༡༦༤
ཆུ་རྩོ་དམར་པོ། ༦༥
ཆུ་རྩོ། ༦༠
ཆུ་ཤོ། ༦༦
ཆུ་སྐྱོགས། ༤༦
ཉི་མུ་སྟ། ༡༡ཅ
ཉིག་ཏ་ཕྱེ་སེར། ༦༦ཅ
ཉིག་ཏ་སེར་མཁོ་གྲ་ལོ་ཅན། ༦༦ཀ
ཉིག་ཏ་སྨུག་པོ། ༦༡ཀ
ཐངས་ཁྲོམ་དཀར་པོ། ༦ཅ༧
ཐངས་ཁྲོམ་ནག་པོ། ༦ཅ༠
དཀར་ཤིང་། ༦ཅ༤
དབྱི་མོང་དཀར་པོ། ༡༡༦
དབྱི་མོང་ཁྲ་པོ། ༡༡༡
དམ་རྩྭ། ༦ཅ༡
རྡ་དུ་ར། ༦ཅ༠
ནས། ཀ
པ་པ་རི་ཟ། ༦༦༡
ཕྱག་རྡོར་རྟག་དྲྭ། ༦༦ང
བཅོད། ༡ཀཅ
བོང་ད་དཀར་པོ། ཀཅ
བོང་ད་དམར་པོ། ཀ༦
བོང་ད་ནག་པོ། ཀ་
བོང་ངཕྱག་རོན་མཁོ། ཀང
བོང་ད་སེར་པོ། ང་
བོང་དམར་ཏོག་མ། ཀཅ
བྱ་པོ་རྩི་རྩི། ༡ཅ༡
བྱ་ཀོང་། ༡༡ཅ

བྱ་ཤང་དཀར་པོ། ༡༡༤
བྱ་ཤང་ལོ་མ་ཐུ་བ། ༡༡༧
བྱ་ཤང་སེར་པོ། ༡༡༢
བྱ་ཆོད་ཐྲོས། ༡༡༩
བྱང་ལྷགས་བོང་དཀར། ༨༡
བག་ཐྲོས། ༣༩
མ་བཏབ་བ་ཏོ། ༢༠
ཚར་འབྲུམ་དཀར་པོ། ༡༩༢
ཚར་འབྲུམ། ༡༩༤
ཚར་ལེབ། ༡༩༠
ཞེམ་ཐིག་ལེ་དཀར་པོ། ༢༩༣
ཟངས་ཏིག་རྒྱལས་པོ་གསེར་མདོག་མ། ༢༢༣
ཟངས་ཏིག། ༢༢༨
ཟངས་ཆི་དཀར་པོ། ༡༨༣
ཟངས་སྐྱེད། ༢༡༢
ཟེའུ་འབྲུ་སེར་འདུ། ༡༠༡
ཟླ་ཕྱི་ཙ་ཡ། ༢༨༣
ཟླ་འབྲུམ། ༢༨༣
ཟླ་ཆོད། ༢༨༢
འཁྲི་ཤིང་འབྲུ་འཕེད། ༢༣༨
འབི་ཏ་ས་འཛིན། ༡༩༢
འབྲུ་ཁྲ། ༥
འབྲུག་ཤིང་ཁ། ༡༨༩
འཛིན་པ། ༨༠
འོམ་བུ་ཆུང་བ། ༢༥༥
འོམ་བུ། ༢༥༩
ར་མ་བུ་གཡུང་བ། ༢༨
ར་མ་བུ་དམར་པོ། ༡༨
རི་བོང་བཅའ་ཡོས། ༣༨
རྒྱ་གོ། ༨
རྒྱ་ཅི་ཆོད་པ། ༡༠༠
རྒྱ་ཡོ། ༣༢
རྒྱ་སྤོས་དཀར་པོ། ༢༨༥
རྐ་ལག་རྒྱབ་ངོ། ༢༡༨
རྐ་མིག་དཀར་པོ། ༢༨༨
རྐ་མིག་ཆེ་བ། ༡༠༨
རྐ་མིག་འཁོར་ཡུག་མེ་ཏོག། ༡༢༠
རྐ་མིག། ༢༨༨
རྩ་དྲུང་ཁ། ༡༥
རྩ་རྩ་བྱ། ༢༢
ལོ་བཅན་ཆུང་བ། ༨༡
ལྷེ་ཚ། ༡༢༣
ལྷམ་གསེར་ཆེ། ༢ཅ༥
ཤད་བྷེལ་དཀར་པོ། ༧༡
ཤད་བྷེལ་དམར་པོ། ༨༢
ཤད་བྷེལ་སེར་པོ། ༧༢
ཤད་བྷེལ་སྤོ་སྐྱ། ༥༥
ཤད་བྷེལ་སྤོན་པོ་ཆུང་བ། ༧༥
ཤད་བྷེལ་སྤོན་པོ། ༥༨
ཤད་བྷེལ་སྨུག་ཆེན། ༨༥
ཤད་བྷེལ་སྨུག་པོ། ༥༣
ཤིང་སྐྱ་རུ་མ། ༡
ཤུ་དག་དཀར་པོ། ༢༨༠
ཤོ་མང་། ༣༣
ཤོག་ཤིང་ཙར་ནག། ༢༥༢
ས་འཛིན་འབས་སྤུང་། ༡ཅ༣
ས་ཇི་ཀ། ༢༨ཅ
སུག་པ་དག་ཅེད། ༡༢ཅ
སེ་བ་དྲི་ལྡན། ༡ཅ༡
སེ་བའི་མེ་ཏོག། ༡ཅ༡

སེ་ཡབ། ༡༣༤
སེ་ཆོད་ཐོ། ༡༨༥
སེ་ཆོད་ཨོ། ༡༧༠
སེའུ་སྒར་མ། ༡༥༨
སྐ་ཉིག་དཀར་པོ། ༩༠
སྐ་ཉིག་ནག་པོ། ༩༢
སྐ་ཚ། ༡༢༥
སྟོ་ཆང་ཅི། ༢༩༡
སྟོ་ཆུ་སྲིན་སྟེར་མོ། ༢༩༧
སྟོ་སྟོད་ཧ། ༡༢༢
སྟོ་སྦྲིན་དཀར་པོ་ཆུང་བ། ༡༣༠
སྟོ་སྦྲིན་དཀར་པོ་ཆེ་བ། ༡༣༩
སྟོ་སྦྲིན། ༡༢༥
སྟག་ལོ་དམར་པོ། ༢༢
སྟག་ལོ་མཆོག། ༢༢
སྟག་ལོ། ༢༣
སྟུམ་བུ་རེ་རལ། ༣༩
སྤང་རམ་ཁུ། ༡༥
སྤང་རམ་མགོ་དམར། ༡༧
སྤང་རམ་ཆོད་པ། ༡༤
སྤང་རམ། ༡༧
སྤེན་ཆུང་མཐོ་གང་། ༡༥༨
སྤེན་མ་དཀར་པོ། ༡༥༧
སྤེན་མ་ནག་པོ། ༡༥༩
སྤུན་གཟིགས་རྟག་ངྷ། ༢༢༤
སྤྲལ་པ་ལག་པ། ༢༩༨
སྤྱག་ཤད་ཆུང་བ། ༡༥༠
སྤྱག་ཤད། ༡༥༡
སྤྱིན་ཤིང་སྨ་མ་དཀར་པོ། ༢༤༨
སྤྱིན་ཤིང་སྨ་མ་སེར་པོ། ༢༤༨
སྤྱིན་ཤིང་སྨ་མ། ༢༤༢
སྤྱབ་ཀ། ༡༠༩
སྤྱབ་དཀར། ༡༠༩
སྤེ་དུ། ༣
ཞ་སྦྱི་ར། ༢༩༩

## Scientific INDEX


*Acantholimon hedinii 1*
*Aconitum anthora 88*
*balfourii 89*
*degenii 89*
*deinorrhizum 90*
*ferox 90*
*fletcheranum 91*
*gammiei 91*
*gymnandrum 92*
*hemsleyanum 92*
*heterophyllum 93*
*hicksii 93*
*hookeri 94*
*laciniatum 94*
*lethale 95*
*naviculare 95*
*nagarum 96*
*orochryseum 96*
*palmatum 97*
*pendulum 97*
*scaposum 98*
*spicatum 98*
*variegatum 99*
*violaceum 99*
*Actaea acuminate 100*
*Adiantum raddianum 88*
*Adonis brevistyla 100*
*davidii 101*
*Agrimonia pilosa 137*
*Agrostemma verticillatum 192*
*Alopecurus aequalis 2*
*pratensis 3*
*Androsace adenocephala 36*
*alchemilloides 36*
*bisulca 37*
*bisulca* var. *aurata 37*
*bisulca* var. *brahmaputrae 38*
*bulleyana 38*
*delavayi 39*
*geraniifolia 39*
*hemisphaerica 40*
*henryi 40*
*hookeriana 41*
*limprichtii 41*
*mariae 42*
*maxima* var. *tibetica 42*
*minor 43*
*mollis 43*
*selago 44*
*sempervivoides 44*
*strigillosa 45*
*sublanata 45*
*tapete 46*
*yargongensis 46*
*zambalensis 47*
*Anemonastrum flaccidum 101*
*flaccidum 102*
*Anemone griffithii 102*
*nemorosa 103*
*obtusiloba 103*
*polyanthes 104*
*rivularis 104*
*rupestris 105*
*rupicola 105*
*smithiana 106*
*trullifolia 106*
*trullifolia* var. *linearis 107*
*vitifolia 107*
*Anisodus acutangulus 249*
*luridus 249*
*tanguticus 250*
*Apium graveolens 260*
*Aquilegia vulgaris 108*
*Arthraxon hispidus 11*
*prionodes 11*
*Aruncus dioicus 138*
*Asteropyrum peltatum 108*
*Auena sativa 3*
*Berchemia edgeworthii 136*
*Bergenia ciliate 210*
*ligulata 211*
*purpurascens 211*
*stracheyi 212*
*Bistorta affinis 14*
*amplexicaulis 15*
*emodi 15*
*griersonii 16*
*griffithii 16*

*macrophylla 17*
*milletii 17*
*perpusilla 18*
*suffulta 18*
*vaccinifolia 19*
*vivipara 19*
*Boenninghausenia albiflora 197*
*Bryocarpum himalaicum 47*
*Buddleja asiatica 239*
*bhutanica 240*
*colvilei 240*
*crispa 241*
*davidii 241*
*paniculata 242*
*Calamagrostis pseudophragmites 4*
*Callianthemum pimpinelloides 109*
*Caltha scaposa 109*
*Cautleya spicata 270*
*Ceratostigma griffithii 1*
*minus 2*
*Chaenomeles speciosa 138*
*Chrysosplenium carnosum 212*
*davidianum 213*
*forrestii 213*
*nepalense 214*
*tenellum 214*
*Clematis acutangula 110*
*buchananiana 110*
*montana 111*
*smilacifolia 111*
*tongluensis 112*
*zemuensis 112*
*Cotoneaster bacillaris 139*
*bullatus 139*
*bumthangensis 140*
*franchetii 140*
*frigidus 141*
*microphyllus 141*
*multiflorus 142*
*nitidus 142*
*prostrates 143*
*racemiflorus 143*
*rotundifolius 144*
*rubens 144*
*sherriffii 145*
*simonsii 145*
*thimphuensis 146*
*Cynodon dactylon 4*
*Daphne bholua 256*
*ludlowii 256*
*retusa 257*
*sureil 257*
*tangutica 258*
*Dasiphora arbuscula 146*
*Datura stramonium 250*
*Delphinium altissimum 113*
*bhutanicum 113*
*brunonianum 114*
*caeruleum 114*
*carolinianum 115*
*cooperi 115*
*drepanocentrum 116*
*glaciale 116*
*grandiflorum 117*
*muscosum 117*
*nepalense 118*
*viscosum 118*
*Digitalis purpurea 242*
*Docynia indica 147*
*Drynaria sinica 34*
*Edgeworthia gardneri 258*
*Elatostema acuminatum 261*
*lineolatum 261*
*Eleusine coracana 5*
*indica 5*
*Eriocapitella hupehensis 119*
*Euphrasia melanosticta 243*
*nemorosa 243*
*officinalis 244*
*Eurya acuminate 255*
*Fagopyrum dibotrys 20*
*Fallopia dumetorum 20*
*Festuca cinerea 6*
*Fragaria daltoniana 147*
*nubicola 148*
*viridis 148*
*Galium aparine 193*
*craticulatum 193*
*Geum elatum 149*
*macrosepalum 149*
*sikkimense 150*
*Girardinia diversifolia 262*
*Hedychium coccineum 270*
*densiflorum 271*

*gardnerianum 271*
*spicatum 272*
*Hemiphragma heterophyllum 244*
*Himalayacalamus falconeri 6*
*Holcus lanatus 7*
*Hordeum vulgare 7*
*Houttuynia cordata 238*
*Illicium griffithii 238*
*Imperata cylindrical 8*
*Koenigia campanulata 21*
*delicatula 21*
*forrestii 22*
*hookeri 22*
*islandica 23*
*mollis 23*
*nepalensis 24*
*polystachya 24*
*Lepisorus loriformis 34*
*Leptodermis kumaonensis 194*
*lanceolata 194*
*stapfiana 195*
*Malus baccata 150*
*pumil 151*
*sikkimensis 151*
*Micranthes pallida 215*
*Mussaenda roxburghii 195*
*Myricaria elegans 254*
*rosea 254*
*squamosa 255*
*Neillia rubiflora 152*
*sinensis 152*
*thyrsiflora 153*
*Nicandra physalodes 251*
*Oreosolen wattii 245*
*Oxygraphis endlicheri 119*
*glacialis 120*
*polypetala 120*
*Oxyria digyna 25*
*sinensis 25*
*Pennisetum flaccidum 8*
*Persicaria capitata 26*
*chinensis 26*
*humilis 27*
*nepalensis 27*
*runcinata 28*
*sagittata 28*
*Pilea symmeria 262*
*Polygala arillata 12*
*persicariifolia 12*
*sibirica 13*
*tatarinowii 13*
*Polygonum hookoiri 29*
*sinomontanum 29*
*Populus ciliate 200*
*rotundifolia 201*
*tremuloides 201*
*Potamogeton berchtoldii 35*
*filiformis 35*
*Potentilla anserine 153*
*arbuscula 154*
*bhutanica 154*
*coriandrifolia 155*
*erecta 155*
*eriocarpa 156*
*fulgens 156*
*glabra 157*
*gracilis 157*
*griffithii 158*
*leuconota 158*
*lineate 159*
*megalantha 159*
*microphylla 160*
*peduncularis 160*
*polyphylla 161*
*purpurea 161*
*reptans 162*
*saundersiana 162*
*Poterium filiforme 163*
*sanguisorba 163*
*Primula advena 48*
*agleniana 48*
*alpicola 49*
*amethystine 49*
*amethystina* subsp. *brevifolia 50*
*atrodentata 50*
*bellidifolia 51*
*bhutanica 51*
*bracteata 52*
*bracteosa 52*
*calderiana 53*
*capitata 53*
*caveana 54*
*cawdoriana 54*
*chasmophila 55*

*chionantha* ssp.
*sinoplantaginea 55*
*chionantha* subsp. *sinopurpurea 56*
*chumbiensis 56*
*chungensis 57*
*cockburniana 57*
*concinna 58*
*deflexa 58*
*denticulate 59*
*dickieana 59*
*dryadifolia 60*
*drynifolia* ssp. *congestiflora 60*
*eburnean 61*
*elongate 61*
*fasciculate 62*
*filipes 62*
*florida 63*
*gambeliana 63*
*geraniifolia 64*
*glabra 64*
*gracilipes 65*
*griffithii 65*
*handeliana 66*
*hookeri 66*
*hopeana 67*
*jigmediana 67*
*kingie 68*
*kisoana 68*
*klattii 69*
*listeri 69*
*macrophylla 70*
*megalocarpa 70*
*mollis 71*
*munroi 71*
*muscoides 72*
*nanobella 72*
*nutans 73*
*oblique 73*
*orbicularis 74*
*palmata 74*
*prenantha 75*
*primulina 75*
*pulchella 76*
*reticulate 76*
*sapphirina 77*
*secundiflora 77*
*sikkimensis 78*
*smithiana 78*
*soldanelloides 79*
*spicata 79*
*stirtoniana 80*
*strumosa 80*
*tangutica 81*
*tanneri 81*
*tenella 82*
*tenuiloba 82*
*tibetica 83*
*tsariensis 83*
*umbratilis 84*
*vaginata 84*
*waddellii 85*
*walshii 85*
*wattii 86*
*xanthopa 86*
*yunnanensis 87*
*zambalensis 87*
*Prinsepia utilis 164*
*Prunus carmesina 164*
*cornuta 165*
*himalayana 165*
*nepalensis 166*
*persica 166*
*rufa 167*
*Pyrus communis 167*
*pashia 168*
*Ranunculus adoneus 121*
*adoxifolius 121*
*brotherusii 122*
*brotherusii* var. *dasycarpus 122*
*brotherusii* var. *pulchellus 123*
*cantoniensis 123*
*chinensis 124*
*diffuses 124*
*japonicas 125*
*laetus 125*
*pulchellus 126*
*silerifolius 127*
*trichophyllus 127*
*tricuspis 126*
*tricuspis 128*
*Rhamnus virgatus 137*
*Rheum acuminatum 30*
*austral 30*
*nobile 31*

*pumilum 31*
*Rosa banksiae 168*
*brunonii 169*
*macrophylla 169*
*omeiensis 170*
*roxburghii 170*
*sericea 171*
*tibetica 171*
*Roscoea alpine 272*
*auriculata 273*
*forrestii 273*
*praecox 274*
*purpureab 274*
*tibetica 275*
*Rubia cordifolia 196*
*hispidicaulis 196*
*manjith 197*
*Rubus acuminatus 172*
*alexeterius 172*
*biflorus 173*
*calycinus 173*
*cooperi 174*
*ellipticus 174*
*fockeanus 175*
*foliolosus 175*
*hoffmeisterianus 176*
*idaeus 176*
*indotibetanus 177*
*inopertus 177*
*lineatus 178*
*macilentus 178*
*mesogaeus 179*
*nepalensis 179*
*niveus 180*
*paniculatus 180*
*pectinaroides 181*
*pedunculosus 181*
*pungens 182*
*sengorensis 182*
*subornatus* var. *melanadenus 183*
*treutleri 183*
*Rumex acetosella 32*
*cispus 32*
*nepalensis 33*
*patentia* subsp. *tibeticus 33*
*Salix alba 202*
*babylonica 202*
*bhutanensis 203*
*calyculata 203*
*caprea 204*
*daltoniana 204*
*excelsa 205*
*lindleyana 205*
*longiflora 206*
*myrtillacea 206*
*obscura 207*
*sclerophyll 207*
*serpyllum 208*
*sikkimensis 208*
*wallichiana 209*
*Salomonia cantoniensis 14*
*Sanguisorba minor 184*
*Saxifraga andersonii 215*
*asarifolia 216*
*aspera 216*
*bergenioides 217*
*brachypoda 217*
*brunonis 218*
*bryoides 218*
*diversifolia 219*
*elliptica 219*
*engleriana 220*
*erinacea 220*
*filicaulis 221*
*georgei 221*
*granulifera 222*
*harry-smithii 222*
*hispidula 223*
*jacquemontiana 223*
*kingiana 224*
*lhasana 224*
*lychnitis 225*
*melanocentra 225*
*montana 226*
*moorcroftiana 226*
*mucronulata 227*
*nigroglandulifera 227*
*oppositifolia 228*
*pallid 228*
*paniculata 229*
*parnassifolia 229*
*pilifera 230*
*pulvinaria 230*
*saginoides 231*

*saxorum 231*
*sherriffii 232*
*stella-aurea 232*
*stenophylla 233*
*stolitzkae 233*
*strigosa 234*
*tangutica 234*
*thiantha 235*
*umbellulata* var. *pectinata 253*
*unguiculata 236*
*wahlenbergii 236*
*wardii 237*
*Schisandra grandiflora 239*
*Selaginella involvens 246*
*pulyinata 246*
*tamariscina 247*
*Sibbaldia cuneata 184*
*micropetala 185*
*parviflora 185*
*perpusilloides 186*
*procumbens 186*
*Skimmia laureola 198*
*Smilax aspera 247*
*elegans 248*
*ferox 248*
*Solanum laxum 251*
*nigrum 252*
*tuberosum 252*
*viarum 253*
*Sorbus hedlundii 187*
*karchungii 187*
*longii 188*
*microphylla 188*
*thibetica 189*
*Souliea vaginata 128*
*Spenceria ramalana 189*
*Spiraea arcuata 190*
*bella 190*
*canescens 191*
*cantoniensis 191*
*micrantha 192*
*Symplocos glomerata 253*
*Thalictrum chelidonii 129*
*cultratum 129*
*delavayi 130*
*elegans 130*
*foetidum 131*
*foliolosum 131*
*isopyroides 132*
*javanicum 132*
*leuconotum 133*
*saniculiforme 133*
*virgatum 134*
*Thesium emodi 209*
*Tiarella polyphylla 237*
*Tofieldia forrestii 259*
*Triticum aestivum 9*
*turgidum* subsp. *durum 9*
*Trollius farreri 134*
*pumilus 135*
*sikkimensis 135*
*vaginatus 136*
*Tropaeolum majus 259*
*Typha elephantine 260*
*Urtica dioica 263*
*mairei 264*
*tibetica 263*
*Ustilago nuda 264*
*Valeriana hardwickii 265*
*Verbascum thapsus 245*
*Viola betonicifolia 265*
*bhutanica 266*
*biflora 266*
*hamiltoniana 267*
*hookeri 267*
*kunawurensis 268*
*pilosa 268*
*rockii 269*
*tricolor 269*
*Viscum nepalense 210*
*Yushania hirsute 10*
*microphylla 10*
*Zanthoxylum acanthopodium 198*
*aramatum 199*
*bungeanum 199*
*oxyphyllum 200*
*Zingiber chrysanthum 275*

## REFERENCES


Botany Boy
2013 Wildflower tour of Sichuan Province, China: photo gallery I
Wildflower tour of Sichuan Province, China: photo gallery II
Wildflower tour of Sichuan Province, China: photo gallery III
2014 Wildflower tour of Sichuan Province, China: photo gallery IV

Bhutan Biodiversity Portal, https://biodiversity.bt/

Faculty of Traditional Medicine
2019 Materia Medica on High Altitude Medicinal Plants of Bhutan, FoTM, KGUMSB, Thimphu Bhutan.

Flora of Sichuan and Chongqing, China

e-Flora of China, http://www.efloras.org/

e-Flora of India, https://efloraofindia.com/

Grierson, A.J.C. and Long, D.G
1991 Flora of Bhutan, Royal Botanic Garden, Edinburgh, Illustrations by Mary Bates and Glenn Rodrigues.

ITMS, Health Division.
1999 Medicinal Flora of Bhutan, Institute if Traditional Medicine Services, Health Division, Ministry of Health and Education, Thimphu.

Kalsang, Dr. Tsultrim (MD).
2016 Cultivation and Conservation of Endangered Medicinal Plants, (Tibetan Medicinal Plants for Health), Men-Tsee-Khang (Tibetan Medical and Astrology Institute of H.H. The Dalai Lama), Materia Medica Department, Gangchen, Dharamsala 176215, H.P. India.

MenTsheeKhang.
1995 Thrumpay Dremae Shel Gi Melong, ChapDoe Saa Khuel MenTsheeKhang Gee Drik, MenRig PayTriuem Khang.

Ministry of Agriculture.
2008 Guideline for Identification & Collection of Medicinal Plants in Bhutan, Thimphu.

Ministry of Agriculture and Forest.
2019 Biodiversity Statistics of Bhutan 2017, A Preliminary Baseline, Ministry of Agriculture and Forest, Serbithang, Thimphu.

Mukia P.K. Karma Peldon, Sonam. Choden, Thinley. Lhamo, Yangchen. Dendup, Kuenzang and Dorji, Tsherang
June 2022 Pictorial Guide to Non-Wood Forest Products of Bhutan, SFED, DoFPS, MoAF, Thimphu and UWICER, Bumthang.

Namgyel, Thinley and Tenzin, Karma
2009 A Photo guide to Flowers of Bhutan, WWF-Bhutan, Thimphu. National Biodiversity Center.

National Biodiversity Center.
2017 A Pictorial Guide to the Trees and Shrubs of the Royal Botanical Garden, Serbithang, volume - II

Norbu, Dr. Tsering.
2015 Encyclopedia of Myriad Herbs-Medicinal Herbs in Tibetan Medical Tradition, Translated by Dr. Thinley Choephel, Volume – I, Materia Medica Department, Tibetan Medical and Astro Institute of H.H. The Dalai Lama, Gangchen, Dharamshala, H.P. India 176215.

Norbu, Dr. Tsering.
2016 Encyclopedia of Myriad Herbs-Medicinal Herbs in Tibetan Medical Tradition, Translated by Dr. Tenzin Zompa and Dr. Tshering Samdup, Volume – II, Materia Medica Department, Men-Tsee-Khang, Tibetan Medical and Astro Institute of H.H. The Dalai Lama, Gangchen Kyishong, Dharamshala, H.P. India 176215.

Norbu, *Menrampa* Tshering.
2013 *BaedLuk gSoba-Rigpa KayNgoed Menzay NgoenBu KuenTub*, Volume –I, Men-Tse-Khang, Tibetan Medical Astro Institute, Dharamsala, H.P.-176215, India

Norbu, *Menrampa* Tshering.
2013 *BaedLuk gSoba-Rigpa KayNgoed Menzay NgoenBu KuenTub*, Volume –II, Men-Tse-Khang, Tibetan Medical Astro Institute, Dharamsala, H.P.-176215, India

Plants of steppes and semideserts of Eastern Ladakh

Polunin, Oleg and Stainton, Adad
1997 Flowers of the Himalaya, Oxford University Press, YMCA Library Building, Jai Singh Road, New Delhi 110001.

Polunin, Oleg and Stainton, Adam
1987 Concise Flowers of the Himalaya, drawing by Ann Farrer, Oxford University Press.

Plants Endemic to Bhutan Himalaya
2015 National Biodiversity Center, Ministry of Agriculture and Forest, Serbithang, Thimphu.

PRU, ITMS.
2009 Monograph on Medicinal Plants of Bhutan, Volume – I and II, Pharmaceutical and Research Unit, Institute of Traditional Medicine Services, Thimphu.

Phuntsho, Tenzin.
1908 Dremaed Shen Gong, Zhaho Zhen BoedMen Khang.

Samdrup, Tshering.
2012 MaYul BoedJong LayGenPai Himilayi JuydBoedYul LoJong KhugJGee BoedLuk Menzay GarTsham SelJed Zhu Soo.

Stainton, Adam.
1984 Flowers of the Himalaya – A supplement 'A work of art and valuable field guide, Oxford University Press.

Traditional Medicine Formulary of Bhutan.
2007 Second Edition. Menjongsorig Pharmaceuticals, Institute of Traditional Medicine Services, Ministry of Health, Thimphu.

Tsarong, Tsewang J.
(1994). Tibetan Medicinal Plants, Tibetan Medical Publications, Penrhyn House, W. Rickshaw Road, Kalimpong, WB, India.

Tshering, Dendup. Dendup, Tashi. Peldon, Sonam & Tshering, Tshethup
2022 Medicinal Plants Used by Local Healers for Traditional Healing in Bhutan, UWICER, Lamaigonpa, Bumthang and Social Forestry and Extension Division, DoFPS, MoAF, Thimphu

Wangyel, Sonam. Dorjee, Kesang. Wangdi, Jangchu & Wangdi, Thinley
2018 A Pictorial Guide to Rhododendron of Sakteng Wildlife Sanctuary, Department of Forest and Park Services, MoAF, Trashigang; Bhutan.

Wangchuk, Rinchen, Namgyel, Ugyen and Wangdi, Phuntsho.
2016 A Pictorial Field Guide – Flora of Phrumsengla National Park, Phrumsengla National Park, Department of Forest and Park Services, Ministry of Agriculture and Forest, Ura, Bumthang.

Yangzom, Rinchen.
2018 A pictorial guide to alpine plants of Bhutan Himalaya, National Biodiversity Center, Ministry of Agriculture and Forest, RGoB, Serbithang, Thimphu.

Tharchen, Lhendup.
2013 Protected Areas and Biodiversity of Bhutan, CDC Printers Pvt. Ltd. Kolkata, India.

Wangchuk Centennial Park.
2014 Medicinal Plants of Wangchuk Centennial Park, Department of Forest and Park Services, Dekiling, Bumthang.

Wangchuk, Phurpa, Samten and Dendup, Ugyen.
2009 High Altitude Medicinal Plants of Bhutan, an Illustrated Guide for Practical Use. Pharmaceutical and Research Unit, Institute of Traditional Medicine Services, Ministry of Health, Thimphu, Bhutan.

Wangchuk, Phurpa and Samten.
2009 Low Altitude Medicinal Plants of Bhutan, an Illustrated Guide for Practical Use. Pharmaceutical and Research Unit, Institute of Traditional Medicine Services, Ministry of Health, Thimphu, Bhutan.

Wangchuk, Tshering.
2020 A Pictorial Guide to High Altitude Medicinal Flora of Bhutan – A Concise guide to identification, First Edition, Sorig Research and Development Division, Department of Traditional Medicine Services, Ministry of Health, Thimphu, Bhutan.

Wangchuk, Tshering and Dorji, Jambay.
2018 A Field Guide to Medicinal Plant Survey and Mapping – Method to Identification, First edition, Menzerigpa and Zhibjuk Division, Department of Traditional Medicine Services, Ministry of Health, Thimphu, Bhutan.

Wikispecies-Free species directory-Note relating to taxonomic classification and species deterrence.

Yangzom R, Dorji K, Dorji R, Dorji T, Wangmo C and Gyeltshen C.
2018 A Pictorial Guide to Major Invasive Plants Species of Bhutan, National Biodiversity Center, Ministry of Agriculture and Forest, Serbithang, Thimphu.



World Health Organization
Bhutan

ISBN 978-99936-712-9-9