

FIELD REPORT



Identification of Medicinal Plants in Sephu, Wangdue Phodrang in 2017: a field report



Ngawang Gyeltshen¹ , Lhapchu¹ , Nima Wangdi²

ABSTRACT

Bhutan is renowned for its rich biodiversity, providing a diverse habitat for a wide range of medicinal plants. It is estimated that approximately 7,000 species of vascular plants thrive in Bhutan, with most of them possessing medicinal properties. While regions like Haa, Paro, Gasa, and Bumthang have been explored for plant resources, the increasing demand from the growing population has highlighted the need to identify additional sources. Over the past decade, there has been an expansion of Traditional Medicine Units with concurrent increase in the number of patients availing Traditional Medicine services. This article reports on the field survey to explore the potential for extracting medicinal plants in the Sephu region of Wangdue Phodrang Dzongkhag. The survey team covered areas beginning from Wangchuck Centennial Park Office to Basha, Gyentsha, Thingta Tsho, Umta Tsho till Tampay La with an altitude ranging from 2500 to 4700 metres above sea level. Medicinal plant species were identified based on existing literature and records maintained with the Department of Forests and Parks, and Menjong Sorig Pharmaceutical. Expert consultations were sought to validate findings and verify the species identification and medicinal properties. During the exploration, 61 plant species with medicinal value were identified. Notably, the team discovered species such as *Chrysosplenium forrestii*, *Meconopsis peniculata*, *Swertia hookeri*, and *Delphinium brunonianum*, which are at risk of depletion in Lingzhi.

Keywords: Anticoagulant; Medicinal Plants, Tracheophyta; Traditional Medicine; Skin diseases

INTRODUCTION

Bhutan is endowed with 7000 species of vascular plants with many of them known to have medicinal values [1]. After the establishment of the Traditional Medicine hospital and teaching institute, there has been systematic documentation and collection of medicinal plants from both high- and low-altitude areas in Bhutan [2]. In the initial stages, high-alti-

tude medicinal herbs were collected from Lingzhi [1] which continues to provide the maximum number of raw materials to produce traditional medicines. Since persistent collection from one area increases the risk of exploitation undermining its sustainability, Menjong Sorig Pharmaceutical under Department of Traditional Medicine, Ministry of Health, later initiated collecting few medicinal plants from Haa, Paro, Gasa, and Bumthang regions [3]. However, even with this, the quantity of medicinal plants collected from these areas do not meet the demand of consumption [1].

Over the past several years, the number of Traditional Medicine Units have increased from 50 units in 2014 to 80 units in 2024 [4, 5]. The number of patients seen at the Traditional Medicine Units have increased from 180299 patients in 2014 to 221027

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in 2024 [4, 5]. The demand for traditional medicine services remains popular reflecting the need to manufacture and provide a reliable supply of medicines. Therefore, alternative areas to source raw materials for traditional medicines are explored through field visits to various areas across the country. The field visits and surveys enable researchers and teams alike to understand geographical information and gather data on various species in ecosystem. This field report describes the findings of the pilot survey of medicinal plants in Sephu region, Wangdue Phodrang district.

STUDY AREA

The survey of medicinal plants was conducted in Sephu region which is located within the Wangchuck Centennial National Park. The survey team covered areas beginning from Wangchuck Centennial Park Office to Basha, Gyentsha, Thingta Tsho, Umta Tsho till Tampay La with an altitude ranging from 2500 to 4700 metres above sea level (masl), [Figure 1](#). The study was conducted in September 2017, during the autumn season where the flowers, fruits, and seeds provided key information in the correct identification of the medicinal plants.

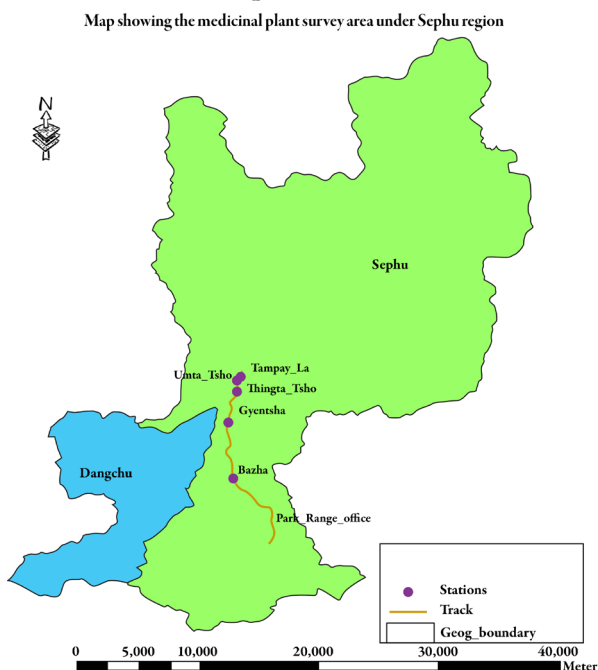


Figure 1. Areas surveyed for medicinal plants in Sephu region under Wangdue Phodrang district, Bhutan, September, 2017

MEDICINAL PLANT SURVEY METHOD

A total of eight individuals (four *Drungtshos*, two *Menpas*, two foresters, and respective *Chiwog Tshogpas*) were involved in the study visits. All required clearances were sought from the Gewog Administration routed through District Administration and

Department of Forests and Park Services, Ministry of Energy and Natural Resources, Royal Government of Bhutan. Photographs of plants were taken with digital single-lens reflex camera, Canon EOS 7D with tripod and global positioning system device, Garmin eTrex30.

The identification of sites and appropriate collection seasons were based on guidelines formulated in 2006 mandating clean, pleasant, and fertile places with a balance of sun, wind, and water elements. Favourable collection sites included sacred places while places inhabited and frequented by humans and animals, dirty water footpaths near toilet facilities, in and around industrial areas, near cremation and cemetery grounds are discouraged from collection [6]. The collection of any medicinal plants is indicated to be done on auspicious days and times, while the collectors must maintain hygiene and chant specific mantras when initiating collection, and collect only the matured specimens [6].

Medicinal plant species were identified based on existing literature [7, 8, 9, 10] and records maintained with the Department of Forests and Parks, and Menjong Sorig Pharmaceutical. Expert consultations were sought to validate findings and verify the species identification and medicinal properties.

MEDICINAL PLANTS IDENTIFIED AND THEIR PROPERTIES

There were 61 medicinal plant species identified during this field visit. There were 13 medicinal plants found at altitudes 2500 – 3000 masl (Table 1), 11 at altitudes >3000 – 3500 masl (Table 2), 26 at altitudes >3500 – 4000 masl (Table 3), and 11 at altitudes >4000 masl (Table 4). The plants that were available in large quantities in Sephu region were *Myricaria rosea*, *Saussurea ovalata*, *Saussurea gossipiflora*, *Swertia hookeri*, *Pedicularis megalantha*, *Halenia elliptica*, *Saxifraga parnassifolia*, *Parnassia nubicola*, *Inula grandiflora*, *Pedicularis longiflora*, *Pedicularis sephonantha*, and *Meconopsis peniculata*. *Chrysoeplenum forrestii*, *Meconopsis peniculata*, *Swertia hookeri* and *Delphinium brunonianum*, which are now rarely found in Lingzhi, [Figure 2](#). Other plant species identified included *Rubia manjith*, *Dectylorhiza hatagirea*, and *Impatiens spp* [9, 11].

ལྷུང་ཀླ



Botanical Name *Anemone griffithii* Hook.f. & Thomson
Family Ranunculaceae
Habitat Streamside and clearings in cool broad-leaved, evergreen oak, blue pine and hemlock forests, and more rarely in alpine meadows.
Altitude 2986 masl
Part used Seeds
Medicinal properties Anti-coagulant, anti-dropsy, and increases body temperature.

མི་ཏོག་ལྷུག་མིག



Botanical Name *Aster flaccidus* Bunge.
Family Asteraceae
Habitat Open slopes, meadows, screens and among shrubberies
Altitude 3819 masl
Part used Flowers
Medicinal properties Useful for treating affliction by evil spirits

གཡམ་ལྱི་མ།



Botanical Name *Chrysosplenium forrestii* Diels
Family Saxifragaceae
Habitat Alpine slopes and stony ground
Altitude 4301 masl
Part used Aerial parts
Medicinal properties Allays bile diseases

བྱ་ཚོད་ལྷོ་མ།



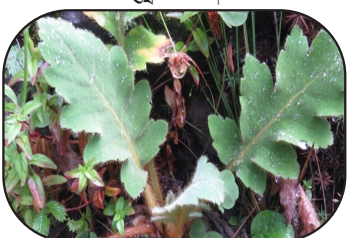
Botanical Name *Delphinium brunonianum* Royle
Family Ranunculaceae
Habitat Alpine screes and gravel slopes
Altitude 4261 masl
Part used Aerial parts
Medicinal properties Intoxicant. Allays common colds, skin diseases and bile disorders

ལྷུག་རྩ་དམར་པོ།



Botanical Name *Pedicularis megalantha* D. Don
Family Scrophulariaceae
Habitat Clearings in Abies and scrub, shrubberies, grassy alpine hillsides, and common in wet land.
Altitude 3815 masl
Part used Aerial parts
Medicinal properties Antidote and cures intestinal disorders

ལྷུང་པ་མེ་པོ།



Botanical Name *Meconopsis paniculata* (D. Don) Prain
Family Papaveraceae
Habitat Grassy and rocky alpine hills, among Juniper/ Rhododendron scrub and Fir forests, open slopes, and grazing grounds.
Altitude 3539 masl
Part used Flowers
Medicinal properties Used for fever related to lung and liver disorders. Promotes digestion and alleviates phlegm disorders



ལྷོ་ལྷོ་མཚོ་གླིང་གི་

Botanical Name	<i>Swertia hookeri</i> C.B. Clarke
Family	Gentianaceae
Habitat	Grows primarily in the subalpine or subarctic biome.
Altitude	3930 masl
Part used	Root
Medicinal properties	Cure wounds, joints, nerves, and colic disorders

Figure 2. Selected pictographs of medicinal plants identified in Sephu region, Wangdue Phodrang district, September, 2017

Table 1. Medicinal plants identified at an altitude between 2500 – 3000 metres above sea level, Sephu region, Wangdue Phodrang, September, 2017

Sowa Rigpa name	Botanical Name	Altitude (masl)	GPS coordinates
ཤོ་མང་།	<i>Rumex crispus</i> L.	2626	27°34'3.91"N 90°19'1.74"E
ལྷག་ལྷིག་།	<i>Halenia elliptica</i> D. Don	2986	27°35'17.08"N 90°18'58.92"E
མིང་ཅན་མེང་པོ།	<i>Inula grandiflora</i> Willd	2673	27°37'29.28"N 90°17'11.19"E
རྩྭ་གམ།	<i>Rhododendron arborium</i>	2985	27°35'16.96"N 90°18'58.91"E
ལྷ་གཤམ།	<i>Anemone griffithii</i> Hook.f. & Thomson	2986	27°35'17.02"N 90°18'58.80"E
མི་ག་དུང་།	<i>Geranium procurrans</i> Yeo P. F. Yea	2995	27°35'20.83"N 90°18'58.60"E
ལྷ་དཀར་།	<i>Heracleum obtusifolium</i> DC.	2630	27°34'6.60"N 90°18'57.11"E
འཁམ་ནག་།	<i>Artemisia</i> sp.	2651	27°34'7.33"N 90°18'56.91"E
མ་རམ།	<i>Plantago depressa</i> Willdenow	2780	27°34'8.38"N 90°18'58.53"E
རྩེ་མ་ལོ།	<i>Iris kemaonensis</i> D. Don ex Royle	2767	27°34'8.72"N 90°18'55.13"E
ནད་མ་གཡུ་ལོ།	<i>Cynoglossum wallichii</i> (G. Don)	2765	27°34'4.71"N 90°19'4.22"E
འཛིན་རྩེ་ལོ།	<i>Fragaria nubicola</i> Hook.f.	2688	27°34'6.48"N 90°18'55.72"E
མེང་ལོ་སྐྱར་ལོ།	<i>Potentilla</i> sp.	2630	27°34'3.11"N 90°19'3.16"E

Table 2. Medicinal plants identified at an altitude between >3000 – 3500 metres above sea level, Sephu region, Wangdue Phodrang, September, 2017

Sowa Rigpa name	Botanical Name	Altitude (masl)	GPS coordinates
གམེང་རྩྭ་།	<i>Saxifraga parnassifolia</i> D. Don	3473	27°38'39.79N 90°16'47.96E
ལྷག་རྩྭ་སྐྱུག་པོ།	<i>Pedicularis</i> sp.	3074	27°35'38.12N 90°18'53.58E
འཕྲོད་།	<i>Rubia manjith</i> Roxb	3026	27°35'31.49N 90°18'58.80E
ཕྱི་ལྷ་སྐྱར་ག་།	<i>Impatiens laxiflora</i> Edgeworth	3024	27°35'32.05N 90°18'58.87E
བྲག་སྐྱོ་མ།	<i>Lepisorus contortus</i> (Christ) Ching	3025	27°35'42.99N 90°18'51.59E
ལྷ་ལོ།	<i>Aconogonon tortuosum</i> (D. Don)	3073	27°35'42.99N 90°18'51.59E
མཚོ་ལྷོ་ལོ།	<i>Thalictrum chelidonii</i> DC	3024	27°35'30.21N 90°18'58.32E
མེ་ཏོག་གམེང་ལོ།	<i>Senecio diversifolius</i> Wallich ex. DC.	3051	27°35'38.12N 90°18'53.58E
རེས་ལྷག་མེ་ལ།	<i>Stellera chamaejasme</i>	3016	27°35'25.44N 90°19'0.04"E
འཛིན་རྩེ་སྐྱུག་པོ།	<i>Salvia castanea</i> Dieb	3498	27°38'47.97N 90°16'44.48E
འཛིན་ལྷ།	<i>Pedicularis gracillis</i> Hook. F.	3492	27°38'46.38N 90°16'44.11E

Table 3. Medicinal plants identified at an altitude between >3500 – 4000 metres above sea level, Sephu region, Wangdue Phodrang, September, 2017

Sowa Rigpa name	Botanical Name	Altitude (masl)	GPS coordinates
ལུང་ལྷ་མོ་ལོ་གྲོ་མོ།	<i>Meconopsis paniculata</i> (D. Don) Prain	3539	27°39'1.11"N 90°16'44.48"E
ལྷ་ལྷ་མོ་ལོ་གྲོ་མོ།	<i>Swertia hookeri</i> C. B. Clarke	3930	27°42'50.34"N 90°17'12.72"E
གཟུང་ལྷ་མོ་ལོ་གྲོ་མོ།	<i>Saussurea obvallata</i>	3820	27°41'33.54"N 90°16'53.97"E
ལོ་གྲོ་མོ།	<i>Myricaria rosea</i> W. W. Smith	3534	27°38'58.59"N 90°16'43.40"E
ལྷ་ལྷ་མོ་ལོ་གྲོ་མོ།	<i>Pedicularis megalantha</i>	3815	27°41'32.23"N 90°16'52.85"E
དུལ་ལྷ་མོ།	<i>Parnassia nubicola</i>	3525	27°38'54.87"N 90°16'43.54"E
ལྷ་ལྷ་མོ་ལོ་གྲོ་མོ།	<i>Pedicularis longiflora</i> (Klotzsch) Tsoong	3818	27°41'32.23"N 90°16'52.85"E
ལུང་ལྷ་མོ་ལོ་གྲོ་མོ།	<i>Meconopsis bella</i>	3944	27°42'13.09"N 90°17'9.05"E
ལུང་ལྷ་མོ།	<i>Taraxacum eriopodum</i> Hook.f.	3556	27°39'2.43"N 90°16'45.38"E
ལྷ་ལྷ་མོ།	<i>Juniperus squamata</i> Buch.-Ham. ex D.Don	3516	27°38'51.94"N 90°16'44.59"E
རམ་ལྷ་མོ།	<i>Polygonatum verticillatum</i> L	3533	27°38'58.57"N 90°16'43.30"E
ལྷ་ལྷ་མོ།	<i>Pleurospermum amabile</i> Craib	3525	27°38'58.59"N 90°16'43.40"E
ལོ་གྲོ་མོ།	<i>Rosa macrophylla</i> Lindley	3520	27°38'53.79"N 90°16'43.93"E
ལྷ་ལྷ་མོ།	<i>Aster flaccidus</i> Bunge.	3819	27°41'23.17"N 90°16'52.55"E
ལྷ་ལྷ་མོ་ལོ་གྲོ་མོ།	<i>Berbaris aristata</i> DC	3516	27°38'51.94"N 90°16'44.59"E
ལོ་གྲོ་མོ།	<i>Podophyllum hexandrum</i> Royle	3547	27°39'2.98"N 90°16'46.01"E
ལྷ་ལྷ་མོ།	<i>Cirsium verutum.</i>	3508	27°38'49.54"N 90°16'44.84"E
ལྷ་ལྷ་མོ།	<i>Rheum australe</i>	3819	27°41'33.54"N 90°16'53.81"E
དུལ་ལྷ་མོ།	<i>Sinolimprichtia alpine</i>	3823	27°41'34.64"N 90°16'53.36"E
ལོ་གྲོ་མོ།	<i>Meconopsis horridula</i> Hook. f. & Thoms	3822	27°41'35.70"N 90°16'53.93"E
ལྷ་ལྷ་མོ།	<i>Oxyria digyna</i> (L.) Hill	3821	27°41'33.73"N 90°16'54.00"E
ལྷ་ལྷ་མོ།	<i>Arenaria kansuensis</i>	3817	27°41'34.64"N 90°16'53.36"E
རམ་ལྷ་མོ།	<i>Silene setisperma</i>	3817	27°41'34.72"N 90°16'53.20"E
ལྷ་ལྷ་མོ།	<i>Corydalis crispera</i> Prain	3812	27°41'30.91"N 90°16'52.03"E
ལྷ་ལྷ་མོ།	<i>Lilium nanum</i> Klotzsch	3813	27°41'38.75"N 90°16'54.69"E

Table 4. Medicinal plants identified at an altitude between >4000 metres above sea level, Sephu region, Wangdue Phodrang, September, 2017

Sowa Rigpa name	Botanical Name	Altitude (masl)	GPS coordinates
གཟུང་ལྷ་མོ།	<i>Chrysosplenium forrestii</i> Diels	4301	27° 42'40.70"N 90°17'19.99"E
ལྷ་ལྷ་མོ།	<i>Delphinium brunonianum</i> Royle	4261	27°42'40.25"N 90°17'19.63"E
ལྷ་ལྷ་མོ།	<i>Saussurea gossiphora</i> ww(D. Don)	4518	27°43'13.46"N 90°17'29.61"E
དུལ་ལྷ་མོ།	<i>Dectylorhiza hatagirea</i> D. Don.	4094	27°42'21.03"N 90°17'20.63"E
ལྷ་ལྷ་མོ།	<i>Swertia cuneata</i> D. Don Altitude	4290	27°42'37.98"N 90°17'18.28"E
ལྷ་ལྷ་མོ།	<i>Noepicrarhiza scrophulariiflora</i> (Pennell)	4720	27°43'6.10"N 90°17'16.58"E
ལྷ་ལྷ་མོ།	<i>Rheum nobile</i>	4265	27°42'50.34"N 90°17'12.72"E
ལྷ་ལྷ་མོ།	<i>Saxifraga moorcroftiana</i> (Seringe) Sternberg	4272	27°42'39.04"N 90°17'19.56"E
ལྷ་ལྷ་མོ།	<i>Corydalis calliantha</i> Long	4094	27°42'21.03"N 90°17'20.63"E
ལྷ་ལྷ་མོ།	<i>Gentiana algida</i> Pallas	4197	27°42'34.03"N 90°17'16.29"E
ལྷ་ལྷ་མོ།	<i>Erisimum bhutanicum</i> W.W. Smith	4341	27°42'34.12"N 90°17'16.41"E

DISCUSSION

Medicinal plants, their properties, and uses in Traditional Medicine are described in 2nd volume of Tantra. Among the plants identified in this survey, *Anemone griffithii* belongs to Ranunculaceae. Its seeds are used as anticoagulant, anti-droopy, and it increase body temperature. The flowers of *Aster diplostehioides* (DC) Clarke are used to treat affliction by evil spirits. *Chrysosplenium forrestii* Diels is used to allay bile diseases. *Delphinium brunonianum* Royle has an intoxicant property and allays common cold, skin diseases and bile disorders. *Pedicularis megalantha* D. Don acts as an antidote for poisonous afflictions and cures intestinal disorders [1, 9].

There were several challenges during this study. The survey was conducted during monsoon season where rainfall hindered access to several potential sites that could have harboured medicinal plants. For plant identifications that are based on their flowers, it is recommended to conduct plant surveys during peak blooming season. For effective fieldwork, a water-proof rain jacket, boots, and appropriate covers for field equipment are recommended.

CONCLUSION

This survey identified 61 medicinal plants in Sephu region. Some of the plant species like *Chrysosplenium forrestii*, *Swertia hookeri*, *Meconopsis peniculata*, and *Delphinium brunonianum* that are found in rare quantities in Lingzhi were also identified in Sephu.

Declarations

Ethics approval and consent to participate.

All required clearances were sought from the Gewog Administration routed through District Administration and Department of Forests and Park Services, Ministry of Energy and Natural Resources, Royal Government of Bhutan.

Consent for publication

Not applicable

Competing interests

The authors declare no competing interests.

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Availability of data materials

All public sources of data have been cited in this article.

Author contributions

Conceptualization, investigation, resources, writing – original draft, writing – review, and editing: NG, L, NW

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