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FIELD REPORT

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

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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-altitude 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.

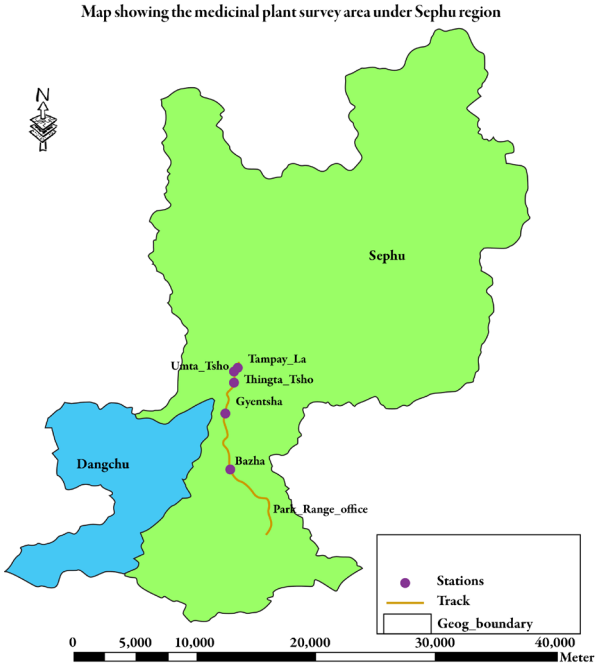

Figure 1. Areas surveyed for medicinal plants in Sephu region under Wangdue Phodrang district, Bhutan, September, 2017

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 ovallata, Saussurea gossipihora, Swertia hookeri, Pedicularis megalantha, Halenia elliptica, Saxifraga parnassifolia, Parnassia nubicola, Inula grandiflora, Pedicularis longiflora, Pedicularis sephonantha, and Meconopsis peniculata. Chrysoeplenium 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].

སྲུབ་ཀ།

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.

མེ་ཏོག་ལུག་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

གཡའ་ཀྱི་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་རྒོད་སྤོས།

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

ལུག་རུ་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

ཨུཏྤལ་སེར་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

Botanical Name	*Swertia hookeri* 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**
མོ་མང།	*Rumex crispus* L.	2626	27°34'3.91"N 90°19'1.74"E
ལུགས་ཏིག	*Halenia elliptica* D. Don	2986	27°35'17.08"N 90°18'58.92"E
མིང་ཅན་མེར་པོ།	*Inula grandiflora* Willd	2673	27°37'29.28"N 90°17'11.19"E
སྨན་ཤ།	*Rhododendron arborium*	2985	27°35'16.96"N 90°18'58.91"E
སྲབ་ཀཱ།	*Anemone griffithii* Hook.f. & Thomson	2986	27°35'17.02"N 90°18'58.80"E
ལི་ག་དུར།	*Geranium procurrens* Yeo P. F. Yea	2995	27°35'20.83"N 90°18'58.60"E
སྤྱ་དཀར	*Heracleum obtusifolium* DC.	2630	27°34'6.60"N 90°18'57.11"E
འཁན་ན།	*Artemisia* sp.	2651	27°34'7.33"N 90°18'56.91"E
ཐ་རམ།	*Plantago depressa* Willdenow	2780	27°34'8.38"N 90°18'58.53"E
རེས་མ་ཡོ།	*Iris kemaonensis* D. Don ex Royle	2767	27°34'8.72"N 90°18'55.13"E
ནད་མ་གཡུ་པོ།	*Cynoglossum wallichii* (G. Don)	2765	27°34'4.71"N 90°19'4.22"E
འབྲི་རྩ་མ་འཛོན།	*Fragaria nubicola* Hook.f.	2688	27°34'6.48"N 90°18'55.72"E
མེང་གེ་སྨར་མོ།	*Potentilla* 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**
གེ་མེར་ཏིག	*Saxifraga parnassifolia* D. Don	3473	27°38'39.79N 90°16'47.96E
ལུག་རུ་སྐྲ་པོ།	*Pedicularis* sp.	3074	27°35'38.12N 90°18'53.58E
བཙོད།	*Rubia manjith* Roxb	3026	27°35'31.49N 90°18'58.80E
ཇི་ཙུ་སྨར་ག	*Impatiens laxiflora* Edgeworth	3024	27°35'32.05N 90°18'58.87E
ཐག་སྦོས།	*Lepisorus contortus* (Christ) Ching	3025	27°35'42.99N 90°18'51.59E
སྐུ་ལོ།	*Aconogonon tortuosum* (D.Don)	3073	27°35'42.99N 90°18'51.59E
སྤོ་སྦྱི།	*Thalictrum chelidonii* DC	3024	27°35'30.21N 90°18'58.32E
མེ་ཏོག་གེར་ཆེན།	*Senecio diversifolius* Wallich ex. DC.	3051	27°35'38.12N 90°18'53.58E
རེས་ལུགས་ར།	*Stellera chamaejasme*	3016	27°35'25.44N 90°19'0.04"E
འཛིན་ཐྲི་སྐྲ་པོ།	*Salvia castanea* Dieb	3498	27°38'47.97N 90°16'44.48E
འདེ་གྲང།	*Pedicularis gracillis* 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**
ཨུཏྤལ་ཞེར་པོ།	*Meconopsis paniculata* (D. Don) Prain	3539	27°39'1.11"N 90°16'44.48"E
རྒྱ་དུས་མཆོག	*Swertia hookeri* C. B. Clarke	3930	27°42'50.34"N 90°17'12.72"E
གཟའ་དུག་མགོ་དཀྲུ།	*Saussurea obvallata*	3820	27°41'33.54"N 90°16'53.97"E
འོམ་བུ།	*Myricaria rosea* W. W. Smith	3534	27°38'58.59"N 90°16'43.40"E
ལུག་རྩ་དམར་པོ	*Pedicularis megalantha*	3815	27°41'32.23"N 90°16'52.85"E
དཀར་ཏིག	*Parnassia nubicola*	3525	27°38'54.87"N 90°16'43.54"E
ལུག་རྩེ་རིང་པོ།	*Pedicularis longiflora* (Klotzsch) Tsoong	3818	27°41'32.23"N 90°16'52.85"E
ཡུ་མོ་མདའ་ཟུ་འཇིན	*Meconopsis bella*	3944	27°42'13.09"N 90°17'9.05"E
ཁུར་མོང།	*Taraxacum eriopodum* Hook.f.	3556	27°39'2.43"N 90°16'45.38"E
ཤུག་པ།	*Juniperus squamata* Buch.-Ham. ex D.Don	3516	27°38'51.94"N 90°16'44.59"E
ར་མཉེ།	*Polygonatum verticillatum* L	3533	27°38'58.57"N 90°16'43.30"E
རྩྭ།	*Pleurospermum amabile* Craib	3525	27°38'58.59"N 90°16'43.40"E
སེ་ཆོད།	*Rosa macrophylla* Lindley	3520	27°38'53.79"N 90°16'43.93"E
ལུག་མིག	*Aster flaccidus* Bunge.	3819	27°41'23.17"N 90°16'52.55"E
སྐྱེར་པ་དཀར་པོ	*Berbaris aristata* DC	3516	27°38'51.94"N 90°16'44.59"E
འོལ་མོ་སེ།	*Podophyllum hexandrum* Royle	3547	27°39'2.98"N 90°16'46.01"E
སྦྱང་ཚོང	*Cirsium verutum.*	3508	27°38'49.54"N 90°16'44.84"E
རྩ་ཐུ།	*Rheum australe*	3819	27°41'33.54"N 90°16'53.81"E
ཇང་ཀུན།	*Sinolimprichtia alpine*	3823	27°41'34.64"N 90°16'53.36"E
ཚོར་སྟོན།	*Meconopsis horridula* Hook. f. & Thoms	3822	27°41'35.70"N 90°16'53.93"E
ཞུམ་རྩ།	*Oxyria digyna* (L.) Hill	3821	27°41'33.73"N 90°16'54.00"E
རྩ་ཚ་ཀྲོང།	*Arenaria kansuensis*	3817	27°41'34.64"N 90°16'53.36"E
ར་སྲག	*Silene setisperma*	3817	27°41'34.72"N 90°16'53.20"E
སྤོ་བ་ཤ་ཀ	*Corydalis crispa* Prain	3812	27°41'30.91"N 90°16'52.03"E
ཚ་སྐྱི་ཁ།	*Lilium nanum* 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**
གཡའ་ཀྱི་མ།	*Chrysosplenium forrestii* Diels	4301	27° 42'40.70"N 90°17'19.99"E
བྱ་རོག་སྤོས	*Delphinium brunonianium* Royle	4261	27°42'40.25"N 90°17'19.63"E
བྱ་རོག་སྨུག་པ།	*Saussurea gossipihora* ww(D. Don)	4518	27°43'13.46"N 90°17'29.61"E
དབང་ལག	*Dectylorhiza hatagirea* D. Don.	4094	27°42'21.03"N 90°17'20.63"E
ཀྱི་ཤུ་རྔ་པོ།	*Swertia cuneata* D. Don Altitude	4290	27°42'37.98"N 90°17'18.28"E
རོང་ལེན	*Noepicrarhiza scrophulariiflora* (Pennell)	4720	27°43'6.10"N 90°17'16.58"E
ཆུ་ཀཱ་མེ་ཏོག	*Rheum nobile*	4265	27°42'50.34"N 90°17'12.72"E
ཟངས་ཏིག	*Saxifragra moorcroftiana* (Seringe) Sternberg	4272	27°42'39.04"N 90°17'19.56"E
སྤོ་ཏི་ཟིལ་པ།	*Corydalis calliantha* Long	4094	27°42'21.03"N 90°17'20.63"E
སྨན་རྒྱན་སྟོན་པོ།	*Gentiana algida* Pallas	4197	27°42'34.03"N 90°17'16.29"E
སྤྲོང་ཐོག་པ།	*Erisimum bhutanicum* 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 Ranunculaveace. Its seeds are used as anticoagulant, anti-droopsy, and it increase body temperature. The flowers of *Aster diplostephioides* (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 specieslike *Chrysoeplenium 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

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