

Research article

Medicinal plant database of the Republic of Buryatia (Russia)

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Abstract: The medicinal flora of the Republic of Buryatia includes 556 species of vascular plants, with Asteraceae, Rosaceae and Ranunculaceae as the leading families. Plants of forest and steppe floristic complexes dominate, reflecting the region's position within the light-coniferous taiga and forest-steppe zones. The predominance of wide-ranging species (57%) and herbaceous perennials (64.5%) is typical of boreal floras and indicates that the medicinal flora consists mainly of ecologically plastic taxa adapted to a harsh continental climate. The majority of medicinal plants (91%) are used exclusively in traditional oriental medicine and lack pharmacopoeial status, revealing a significant knowledge gap and underscoring the urgent need for comprehensive phytochemical, pharmacological and toxicological studies. Twenty-five species are rare and under considerable threat, mainly due to over-harvesting for commercial and traditional use. The absence of monitoring and up-to-date data on their distribution and abundance impedes the development of effective conservation measures. A relational database using Microsoft Access has been developed to store, systematise and analyse data on the medicinal flora of Buryatia. The database includes taxonomic information, ecological preferences, distribution data, resource potential assessments, conservation status, and traditional uses for each species. It supports querying and filtering by multiple criteria, enabling researchers to extract customised datasets for floristic, phytochemical and pharmacological studies. The database is designed for long-term maintenance and expansion, serving as a foundation for conservation planning, sustainable resource management and educational purposes.

Keywords: database, medicinal plant, Republic of Buryatia

Introduction

For centuries, medicinal plants have formed the basis of traditional medicine and remain relevant in modern clinical practice, despite significant advances in the development of synthetic drugs (Hamilton, 2004; Allen & Hatfield, 2004; Chen et al., 2016 Süntar, 2020). Global demand for plant-based medicinal products is steadily growing: according to WHO forecasts, the share of herbal medicines in the global pharmaceutical market could reach 60% in the coming decades (WHO, 2025). In European countries and the United States, about 78% of prescription drugs are of natural origin, while in developing

countries, up to 80% of the population rely entirely on plant-based remedies for primary healthcare (Shafi et al., 2021; WHO, 2026). The popularity of herbal medicines is attributed to their advantages: a complex and mild action, a reduced risk of side effects and resistance development, as well as the synergistic effects of their constituent bioactive compounds.

In 2025, the World Health Assembly adopted the World Health Organization (WHO) Global Traditional Medicine Strategy for 2025–2034 and its implementation into national healthcare systems. The implementation of this strategy requires standardised, high-quality plant raw materials, which stimulates the development of industrial cultivation of medicinal

plants. In a number of countries (the USA, Japan, South Korea, China, India, as well as European Union member states), this practice has already become widespread (Kamil, 2012; Chen et al., 2016). National programs have been established to introduce wild medicinal species into cultivation, agrotechnical regulations and standardisation systems (Good agricultural and collection practices (GACP), Good manufacturing practices (GMP)) have been developed, which ensures stable quality of raw materials and their compliance with international requirements (WHO, 2026). Plantation cultivation volumes in these countries increase annually, driven both by growing domestic consumption of herbal medicines and by an export orientation.

In Russia, the main source of medicinal plant raw materials remains the harvesting of wild species (Leonova & Miklyaeva, 2021; Gryazkin et al., 2025). This is primarily due to the extensive natural reserves of medicinal plants across most of the country, which for a long time made industrial cultivation economically unnecessary.

However, the exploitation of wild plant species in Russian regions is often combined with insufficient knowledge of their resource potential: complete and up-to-date data on the taxonomic composition of the medicinal flora are still lacking in most regions; many herbarium collections are not digitised and are inaccessible to the wider scientific community; and resource assessments are fragmentary and lack a unified methodological framework. There is also no systematic monitoring of the state of medicinal plant coenopopulations, which makes it impossible to estimate permissible harvesting volumes or to identify signs of overexploitation in a timely manner.

Thus, there is a clear need to create regional databases that provide detailed scientific information about the botanical characteristics of medicinal plants and their active substances. Such databases have been developed in the Tomsk region (Postnikova, 2021), the Perm region (Kalikina et al., 2022), the Belgorod region (Netrebenko et al., 2010), and the Ural region (Vasfilova et al., 2014). The accumulated information from these databases is valuable for the future development of a comprehensive national database that will reflect the full phytoresource potential of Russia.

Nevertheless, for many regions characterised by high floristic diversity, such work has not yet been carried out. The Republic of Buryatia is one such region. Located at the interface of two different natural

zones – the East Siberian mountain-taiga and the Central Asian steppe – it possesses rich biological diversity. Over 2,100 species of vascular plants grow on its territory, many of which have proven pharmacological activity and are used in both official and traditional medicine (Telyatyev, 1985; Batorova et al., 2013). Of particular value to the flora of region is the presence of relict plants that have survived from past geological epochs and occur in local habitats – refugia. A significant proportion of these plants are listed in the Red Data Book of the Republic of Buryatia (Anenkhonov, 2023) and the Red Data Book of the Russian Federation (Geltman, 2024). Some of them not only shape the unique character of the region flora but also possess valuable medicinal properties, which determines their use in folk and Tibetan medicine. At the same time, their chemical composition and resource potential remain poorly studied.

Furthermore, the Republic of Buryatia is one of the largest centers of traditional Eastern medicine in Russia – it is the only constituent entity of the Russian Federation where traditional medicine is certified and has official status. For half a century, systematic research on Tibetan medical sources has been conducted in the region: the Buryat Scientific Center, the Institute of Mongolian, Buddhist and Tibetan Studies of the Siberian Branch of the Russian Academy of Sciences, based on the “Atlas of Tibetan Medicine” (Parfionovich, 1994; Basarov, 2025), have developed more than 70 medical patents for dietary supplements, which include classical Tibetan formulations with substitutes of local plant raw materials (Batorova et al., 2013).

However, notwithstanding the abundance of natural resources and the long-standing traditions of their application in both folk and conventional medicine, along with ongoing investigations into the chemical composition of selected species (Mizina et al., 2024), comprehensive data on the taxonomic composition of medicinal plants in the region, their resource potential, and permissible collection limits remain unavailable. This knowledge gap significantly hampers the development of a sustainable system for the regional supply of pharmaceutical plant raw materials and underscores the need for integrated scientific studies.

Consequently, the aim of this study was to inventory the medicinal flora of the Republic of Buryatia and to develop a database for the systematisation of the collected information.

Material and methods

The Republic of Buryatia is located in the southern part of Eastern Siberia, in the centre of the Eurasian continent. It covers an area of 351,334 km². The region is characterised by a mountainous-basin relief, with absolute elevations ranging from 456 m above sea level (Lake Baikal) to 3,491 m above sea level (mountain Munkhu-Sardyk, Bolshoy Sayan Range).

The orographic basis of this territory is formed by two large, geomorphologically distinct areas: the High Mountain Belt (Sayan-Baikal Highlands, above 1,200 m a.s.l.) and the Transbaikalian mid-mountains and plateaus (Selenga mid-mountains, 800–1,200 m a.s.l.) (Sochava, 1967). These ranges are separated by intermountain depressions of the Baikal type (Barguzinskaya, Verkhneangarskaya) and the Transbaikalian type (Gusinoozerskaya, Ivolginsko-Udinskaya, and others), which differ in their symmetry, structure, and the thickness of sedimentary deposits (Florensov, 1960).

The region has a sharply continental climate, with long, cold winters and short, warm summers. The average January temperature -22°C and average July temperature +19°C. The growing season lasts between 90–155 days. The average annual precipitation is 250 mm (Sochava, 1967).

Due to the complex terrain, there is a significant variety of microclimates, which creates a mosaic of landscapes. Around 83% of the territory is covered by coniferous forests, while steppe and forest-steppe complexes, with salt marshes and sand, are common in the southern areas. Tundra vegetation is found in the highlands above 1,600 m a.s.l., and shrubby thickets, meadows, and marshes can be found in all altitudinal zones. This high landscape diversity accounts for the significant richness of the republic's flora (Anenkhonov, 2001).

The sources used to compile the list of medicinal plants of the Republic of Buryatia included data from the State Pharmacopoeia of the Russian Federation, XIV edition (Ministry of Health of the Russian Federation, 2018), as well as reference books on traditional Tibetan medicine (Batorova et al., 2013) and folk medicine (Telyatev, 1985). All scientific plant names were verified and brought into conformity with the accepted nomenclature of the World Flora Online (WFO; <https://www.worldfloraonline.org>). Information on species distribution was obtained from the identification

guide to the plants of Buryatia (Anenkhonov, 2001), herbarium collections of the Institute of General and Experimental Biology, SB RAS (Ulan-Ude) and Buryat State University (Ulan-Ude), as well as open internet resources: <https://www.plantarium.ru> and <https://www.inaturalist.org>.

To create the database “Wild Medicinal Plants of the Republic of Buryatia”, the relational DBMS Microsoft Access (MS Office 2010 or later) was used. The choice of this platform is justified by its compliance with the relational model, which is optimal for structuring complex interrelated data, as well as by its sufficient functionality for solving the defined tasks, including sorting, filtering and executing queries. The database is provided as a RAR archive containing the file “Medicinal Plants of Buryatia.accdb” and a “Photos” directory with plant images in JPG format. The database file contains a complete set of objects: tables with source data, queries for data processing, forms for data entry and editing, and reports for presenting results.

The names of chemical compounds and active substances from plants were standardised according to the International Nonproprietary Names (INN) system of the World Health Organization (WHO, 2023). For substances without an established INN, the nomenclature of the International Union of Pure and Applied Chemistry (IUPAC) was used.

The pharmacological action of plants and their components was classified using the WHO Anatomical Therapeutic Chemical (ATC) classification system, including its extension for herbal medicines – Herbal ATC (HATC). This ensures a uniform scientific framework for describing therapeutic groups and mechanisms of action. Disease indications were linked using the International Classification of Diseases, 11th Revision (ICD-11) (WHO, 2024).

Results and discussion

The flora of the Republic of Buryatia, comprising over 2,160 plant species (Anenkhonov, 2001), includes a wide range of useful species utilised by the local population for medicinal, food, and technical purposes, as well as a forage base for livestock.

The analysis of literature sources and herbarium materials showed that the medicinal flora of the Republic of Buryatia includes 556 species of vascular

Table 1. Taxonomic composition of medicinal plants in the flora of the Republic of Buryatia.

Divisions and classes	Number of families	Number of genera	Number of species
Lycopodiophyta	2	3	6
Equisetophyta	1	1	8
Polypodiophyta	9	10	14
Pinophyta	3	6	12
Magnoliophyta total	82	283	516
of which:			
Magnoliopsida	62	240	452
Liliopsida	20	40	64
Total	97	300	556

Table 2. Spectrum of leading families of medicinal plants in the flora of the Republic of Buryatia.

Families	Rank	Number of species
Asteraceae	1	69
Rosaceae	2–3	42
Ranunculaceae	2–3	42
Fabaceae	4	37
Polygonaceae	5	23
Lamiaceae	6–7	21
Scrophulariaceae	6–7	21
Ericaceae	8	17
Brassicaceae	9–10	16
Apiaceae	9–10	16
Total amount of species	—	556

plants belonging to 300 genera, 97 families, 7 classes and 5 divisions (Table 1). Angiosperms constitute the basis of the medicinal flora (93% of the total number of species).

In terms of the number of species (Table 2), the Asteraceae family ranks first (69 species from 32 genera), followed by Rosaceae (42 species from 19 genera) and Ranunculaceae (42 species from 16 genera). This distribution corresponds to the general patterns of the boreal flora (Artemov, 2024).

The most diverse genera include *Artemisia* (13 species); *Potentilla* (12 species); *Ranunculus* (9 species); *Astragalus* (8 species); *Oxytropis* (8 species); *Thalictrum* (7 species); and *Pedicularis* (6 species). Most genera (60%) consist of only one species.

Such a significant diversity of the genera *Artemisia*, *Astragalus* and *Oxytropis* is due not only to their high phytotherapeutic value – *Artemisia* species are known for their antimicrobial, anti-inflammatory, and anthelmintic effects (Bora & Sharma, 2011; Trendafilova et al., 2018), while *Astragalus* species have gained increasing attention as immunomodulatory and adaptogenic agents (Fu et al., 2014; Li et al., 2014) – but also to the widespread occurrence of steppe landscapes in the region. This highlights the significant contribution of the arid element to the composition of the flora. In turn, representatives of the genera *Potentilla*, *Ranunculus*, *Thalictrum* and *Pedicularis* are typical components of forest-steppe, forest and meadow communities.

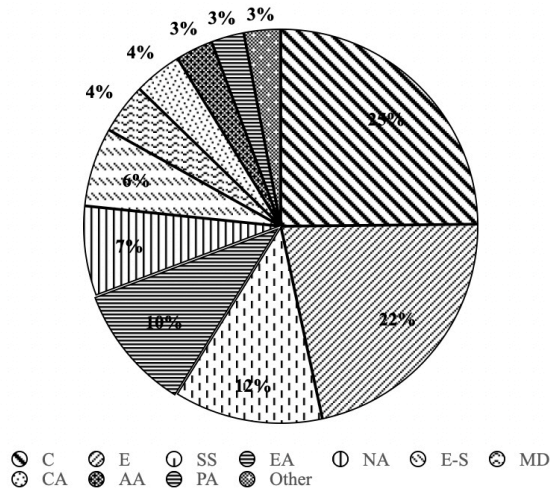


Fig. 1. The distribution of medicinal plant species according to areal type in the Republic of Buryatia. Areal type: C – Circumpolar, E – Eurasian, SS – South Siberian, EA – East Asian, NA – North Asian, E-S – Euro-Siberian, MD – Manchurian-Daurian, CA – Central Asian, AA – Americanoasiatic, PA – Pan-Asian.

Ecological and geographical analysis of the medicinal plant flora of the Republic of Buryatia revealed a predominance of species with wide ranges extending beyond Asia, which account for 57% of the total number of taxa (Fig. 1). Among these, Circumpolar, Eurasian, Euro-Siberian and American-Asian groups dominate. The proportion of species of Asian origin is 41%, with a clear predominance of South Siberian, East Asian and North Asian range types. The proportion of endemic species with narrow local ranges is insignificant (2%), which confirms the general trend towards the predominance of ecologically plastic, widely distributed taxa in the composition of the medicinal flora.

Most medicinal plants in the region belong to the forest floristic complex (32%), dominated by light-coniferous forest species (22%). This reflects the zonal conditions: Buryatia's location within the light-coniferous taiga zone (Smagin, 1980) has made this vegetation type a key resource for phytotherapy. The second largest group is the steppe (mainly forest-steppe) complex (29%), more than twice as large as the high-mountain complex. This ratio highlights the importance of forest-steppes as contact zones that serve as sources of biodiversity and medicinal resources, where species from different ecological groups co-occur.

In the biomorphological spectrum, there is an absolute dominance of herbaceous life forms, which number 438 species and constitute 78.5% of the total species composition of the medicinal flora. Among herbaceous plants, perennial species predominate (64.5%), which is characteristic of boreal floras, where the ability to withstand long periods of unfavourable conditions is a crucial adaptive advantage. As noted by L.I. Malyshev (1965), perennial life forms dominate in high-latitude floras, as underground storage organs (rhizomes, bulbs, taproots) provide effective overwintering strategies.

Of the 556 medicinal plant species documented in the Republic of Buryatia, only 49 (less than 9%) possess pharmacopoeial status – that is, they are officially approved for therapeutic use – whereas the vast majority are used exclusively in traditional Oriental medicine. This disparity highlights a significant gap between officially recognised herbal remedies and the rich ethnopharmacological knowledge accumulated by local communities. The limited number of pharmacopoeial species restricts the integration of traditional medicinal plants into evidence-based healthcare systems and the pharmaceutical industry, underscoring the need for comprehensive phytochemical, pharmacological, and toxicological studies of the region's medicinal flora.

The Red Book of the Republic of Buryatia includes 25 species of medicinal vascular plants (Anenkhonov, 2023). Among them, four species – *Cypripedium calceolus* L., *Cypripedium macranthum* Sw., *Orchis militaris* L., and *Rhodiola rosea* L. – are also listed in the Red Book of the Russian Federation (Geltman, 2024), indicating their particular vulnerability and the need for enhanced conservation measures at both regional and federal levels. For the vast majority of protected species, up-to-date data on their distribution are lacking, and monitoring is not carried out. As a result, their coenopopulations continue to experience excessive anthropogenic pressure due to commercial demand for plant material and the ornamental qualities of some species, which leads to a steady decline in their numbers.

A particularly telling example is *Rhododendron adamsii*. Despite being listed in regional Red Data Books, its uncontrolled harvesting has continued for decades in the Tunkinsky, Kabansky and Okinsky districts of Buryatia. Its widespread use in traditional Tibetan and folk medicine as a tonic, adaptogen,

cardiotonic and anti-inflammatory agent greatly increases the pressure on its natural populations. A critical aggravating factor is the almost complete absence of reliable data on the resource potential, reproduction patterns and actual distribution of the species, which makes it impossible to objectively assess the extent of its depletion and to develop effective conservation measures.

Similar threats affect *Glycyrrhiza uralensis*, *Rhodiola rosea*, *Dryopteris filix-mas*, as well as recently exploited species such as *Saposhnikovia divaricata*. According to the IUCN Red List, approximately 28% of assessed plant species are threatened by over-harvesting for medicinal and ornamental purposes (Hayward, 2011), and the lack of up-to-date data on population status has been identified as a major barrier to effective conservation (Schippmann et al., 2006; Chand et al., 2025).

To systematise and store data on the medicinal plants of the region, we developed a relational database using Microsoft Access. This platform allows us to create an information system with a user-friendly graphical interface for data entry, querying, and reporting.

The database contains detailed information on 556 species of wild medicinal plants of the Republic of Buryatia used in both scientific and traditional medicine. Each plant record comprises two main blocks – botanical and pharmacological – and includes 31 data fields covering the following:

- taxonomic characteristics and morphological description;
- geographical distribution detailed by administrative districts and ecotope types;
- ecological parameters (range type, altitudinal and zonal affiliation, ecological group, life form);
- conservation status according to the 4th edition of the Red Book of the Republic of Buryatia (2023);
- pharmacological properties (medical systems applied, chemical composition, therapeutic action, dominant groups of biologically active compounds);
- practical aspects of use (type of plant material, harvesting time);
- resource assessment and recommendations for sustainable use;
- bibliographic references to scientific sources;
- photographic illustration of the plant.

Figures 2 and 3 provides an overview of the content organisation, highlighting the main sections of the database. This structure enables users to quickly obtain comprehensive information on each species, including its ecological preferences, resource potential, vulnerability status, and practical applications. The database is intended for researchers, environmental authorities, and interested private users alike. This multistakeholder orientation reflects the growing demand for accessible, structured information on medicinal plants, which has been noted in reviews of global ethnobotanical databases (Hidayat, 2023).

The database search system allows users to construct queries of any complexity, combining taxonomic, ecological, geographical, pharmacological, conservation, and resource-related criteria. This enables researchers to tailor searches to specific objectives – from selecting a species based on a single attribute to multi-criteria analysis accounting for several conditions simultaneously. Figure 4 illustrates the search algorithm for plants whose main active constituents are alkaloids: the left panel shows the parameter selection interface, while the right panel presents the query result (44 species). Figure 5 demonstrates a similar algorithm for plants containing phenolic compounds and belonging to the light-coniferous zone-altitudinal group: the left panel shows the selection options, and the right panel displays the result (21 species).

To facilitate work with the information on medicinal plants stored in the database, the system provides for the generation of structured reports based on user-defined parameters. Reports can be exported in formats suitable for further analysis (e.g., spreadsheet files, text documents), ensuring seamless integration with external scientific and applied systems (Fig. 6).

The relational structure of the database is expected to enable complex queries across all tables and fields. Unlike typical online databases of medicinal plants, the proposed system emphasises the integration of multimedia content with analytical and reference data.

A comparison of the developed database with other regional information resources on medicinal plants revealed its key advantages. Existing regional database are limited to taxonomic and morphological information, along with descriptions of practical plant uses. Many of them are essentially digitised herbarium collections or electronic versions of printed reference works, where the ecological characteristics of

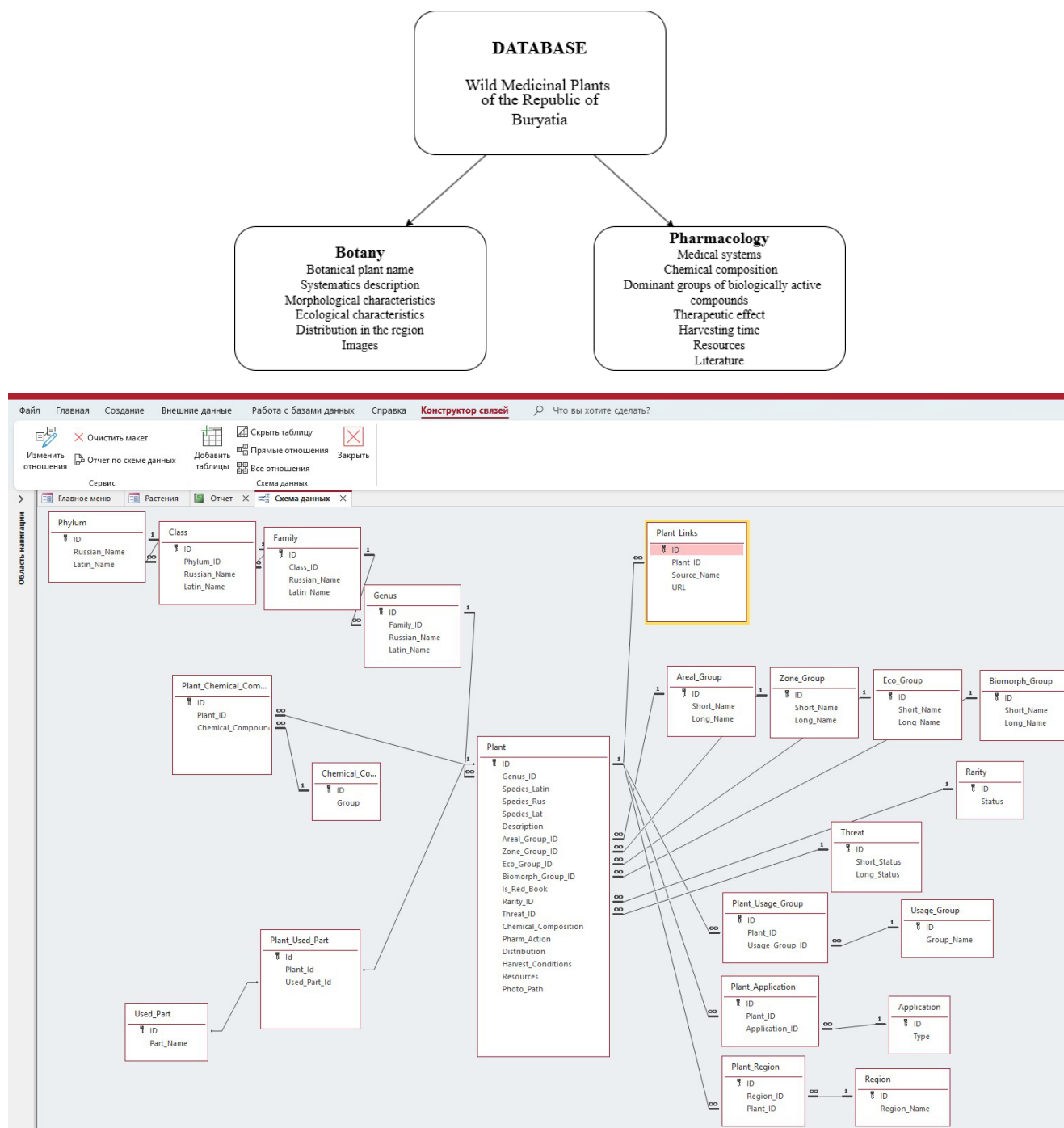


Fig. 2. Simplified organisation diagram of the database.

species are either absent or presented in a fragmented and unstructured manner. Our database is among the few that systematises ecological information and includes it as a full-fledged search criterion.

Moreover, unlike some analogues that support only simple searches by one or two parameters (e.g., plant name, disease), our database allows users to

construct queries of any complexity, combining taxonomic, ecological, geographical, pharmacological, conservation, and resource-related criteria. This enables researchers to address a wide range of tasks – from selecting a species by a single attribute to multi-criteria analysis involving several conditions simultaneously.

File Main Creation External data Work with databases Help What do you want to do?

Резимы Вставить Вырезать Копировать Буфер обмена Фильтр По возрастанию По убыванию Удалить сортировку Сортировка и фильтр Обновить Создать Орфография Сохранить Удалить Дополнительно Записи Найти Перейти Выбрать Найти

Главное меню Фильтр Растения

Лекарственные растения Республики Бурятия

ID 40

Отдел Плауновидные Lycopodiophyta

Класс Плауновидные Lycopodiopsida

Семейство Баранцовые Huperziaceae Rothm.

Род Баранец Huperzia Bernh.

Вид Баранец обыкновенный Huperzia selago (L.) Bernh. Ex Schrank et Mart.

Морфологическое описание Вечнозелёное травянистое равноспоровое многолетнее растение высотой до 30 см. Стебли прямостоячие, интенсивно-зелёные, у основания восходящие, дикотомически разветвляющиеся. Листья многогранные, шириной около 1 мм, линейно-ланцетовидные, пельопарные или слабопарные, кожистые, отстоящие от стебля, расположенные в 8 продольных рядов. Спороангии шаровидные, желтоватые, на коротких ножках, расположены в пазухах листьев в верхней или средней части стебля; споры очень мелкие. В пазухах листьев часто образуются мазозаметные выводковые почки длиной до 4 мм. Спорами размножается в аэрозоле. После спорообразования и созревания.

Химический состав сырья Травя содержит алкалоиды (0.6-1.1%, ликоподии, ликоподии, 12-эпиликоподии (псевдоселогин), 7α-гидроксисангидроликоподии, аннотинин, аннотоксин, акрифоллин, α-обскурин, β-обскурин, хуперин А, хуперин В, селогенин, серратин, серратин, лупидоллин, алкалоиды L8, L20, L30). Каротиноиды: β-каротин, лютеин, эпокси лютеин, зеаксантин, неоксантин, β-криптоксантин, родоксантин, мутакоксантин. Фенолкарбоновые кислоты: в надземной части – феруловая, ванилиновая. Флавоноиды: лютеоллин, апигенин, трицин, селогин.

Тип ареала Циркумполярный

Поясно-зональная группа Темнохвойная

Экологическая группа Гигромефит

Жизненная форма Травя кистекопная

Места произрастания и экология Бореальный голарктический вид. Растет во влажных хвойных лесах, кедровых и лиственничных редколесьях, зарослях кедрового стланика, высокогорных тундрах, на скалах.

Фармакологическое действие Травя баранца характеризуется рвотным, диуретическим, слабительным, abortивным и антиоксидантным действием. Ее отвар применяют для лечения хронического алкоголизма, никотиновой зависимости, псориаза, болезни Альцгеймера. Поскольку трава баранца очень токсична, лечение проводится лишь в условиях стационара под контролем врача. Разработана нормативная документация на препарат «Ликоподиин нитрат», используемый как седативное средство, купирующее абстинентный алкогольный синдром. Имеются противопоказания к лечению отваром баранца: это сахарный диабет, гипертоническая болезнь, болезнь сердца, туберкулез, эпилепсия.

Группа лекарственных растений по специфике действия

Применение Рвотные Мочегонные Слабительные Антиоксидантные

Отчет

Fig. 3. Data entry window.

File Main Creation External data Work with databases Help What do you want to do?

Резимы Вставить Вырезать Копировать Буфер обмена Фильтр По возрастанию По убыванию Удалить сортировку Сортировка и фильтр Обновить Создать Орфография Сохранить Удалить Дополнительно Записи Найти Перейти Выбрать Найти

Главное меню Фильтр Растения

Лекарственные растения

ID 408

Отдел Цветковые (Покрытосеменные)

Класс Лилейные (Однодольные)

Семейство Луковые

Род Лук

Вид Лук стареющий

Морфологическое описание Травянистое многолетнее луковидное растение с горизонтальным корневищем, покрытым пленчатой оболочкой. Листья 5-10(12) мм в ширину, узкие, линейные, жесткие. Зонтичные соцветия. Листья эллиптические. Нити тычинок шпильчатые. Столбик значительный.

Тип ареала Евроазиатский

Применять фильтр Сбросить фильтр

Записи: 1 из 44 С фильтром Поиск

Fig. 4. Example of a database search for plants containing alkaloids.

File Main Creation External data Work with databases Help What do you want to do?

Резимы Вставить Вырезать Копировать Буфер обмена Фильтр По возрастанию По убыванию Удалить сортировку Сортировка и фильтр Обновить Создать Орфография Сохранить Удалить Дополнительно Записи Найти Перейти Выбрать Найти

Главное меню Фильтр Растения

Лекарственные растений

ID 164

Отдел Голосеменные

Класс Хвойные

Семейство Сосновые

Род Лиственница

Вид Лиственница сибирская

Морфологическое описание Хвойное дерево высотой до 30 м, с раскидистой кроной. Кора серая, с глубокими трещинами. Листья линейные, длиной до 10 см, суженные к основанию. Шишки цилиндрические, длиной до 15 см. Семена крылатые.

Тип ареала Евросибирский

Применять фильтр Сбросить фильтр

Записи: 1 из 21 С фильтром Поиск

Fig. 5. Example of a combined database search for plants by active compound and zone-altitudinal group.

Список растений

ID: 40

Отдел: Плауновидные (Lycopodiophyta)

Класс: Плауновидные (Lycopodiopsida)

Семейство: Баранцевые (Huperziaceae Rothm.)

Род: Баранец (Huperzia Bernh.)

Вид: Баранец обыкновенный (*Huperzia selago* (L.) Bernh. Ex Schrank et Mart.)

Морфологическое описание: Вечнозеленое травянистое равноспоровое многолетнее растение высотой до 30 см. Стебли прямостоячие, интенсивно-зеленые, у основания восходящие, ликоидными разветвленными. Листья многочисленные, шириной около 1 мм, линейно-ланцетовидные, цельнокрайные или слабозубчатые, кожистые, отстоящие от стебля, расположенные в 8 продольных рядов. Спорангии шаровидные, желтоватые, на коротких ножках, расположены в пазухах листьев в верхней или средней части стебля; споры очень мелкие. В пазухах листьев часто образуются малозаметные выводковые почки длиной до 4 мм. Спороношение происходит в апреле-июне. После спороношения и развития выводковых почек побеги продолжают вегетировать (иногда более 10 лет). Хамефит.

Ареологическая группа: Циркумполярный

Поясно-зональная группа: Гемиксубарктическая

Экологическая группа: Гигромезофит

Биоморфологическая группа: Травянистые кустарниковые

Вид внесен в Красную книгу Республики Бурятия: -

Статус редкости: Не регламентируется

Статус угрозы: Не регламентируется

Применение: Народная медицина

Используемые части: Травя

Распространение (районы): Окинский, Кабанский, Джидинский, Закаменский, Северо-Байкальский, Баргузинский, Курумканский, Муйский

Группа по принципу действия: Мочегонные, Слабительные, Рвотные, Антиоксидантные

Доминирующие группы химических соединений: Алкалоиды

Химический состав сырья: Травя содержит алкалоиды (0.6-1.1%, ликоподин, ликодин, 12-эпилюдолин (псевдоселагин), 7α-гипроксангидролюдолин, аниотин, аниотоксин, акрифоллин, α-обскурин, β-обскурин, хуперин А, хуперин В, селоголин, селратин, селративин, пушилолин, алкалоиды L8, L20, L30). Каротиноиды: β-каротин, лютеин, зиксид лютеина, зеаксантин, неоксантин, β-криптоксантин, родоксантин, мутаоксантин. Фенолкарбоновые кислоты: в надземной части – феруловая, ванилиновая. Флавоноиды: лютеолин, апигенин, трифенил, селогин.

Фармакологическое действие: Травя баранца характеризуется рвотным, диуретическим, слабительным,

Fig. 6. Search result.

Thanks to the interconnections between the main thematic blocks (botany, pharmacology, toxicology, chemistry) and related tables, the database is designed to support:

- research in plant physiology, biochemistry and phytochemistry;
- comprehensive analyses based on distribution, ecological preferences, chemical composition and pharmacological action;
- visualisation of relationships between species, bioactive compounds and therapeutic effects.

Data on medicinal plants have been compiled from scientific literature and can be continuously updated as new information becomes available regarding chemical composition, resource potential, conservation status and practical applications of the species. This flexibility is crucial for evidence-based conservation prioritisation (Farnsworth et al., 2020).

Conclusion

The medicinal flora of the Republic of Buryatia comprises 556 species of vascular plants, with Asteraceae, Rosaceae and Ranunculaceae being the leading families. Ecologically, the forest and steppe floristic complexes dominate, reflecting the zonal position of the region within the light-coniferous taiga and forest-steppe zones.

The predominance of species with wide ranges (57%) and herbaceous perennial life forms (64.5%) is characteristic of boreal floras, indicating that the medicinal flora of Buryatia has been formed mainly from ecologically plastic, widely distributed taxa adapted to the harsh continental climate.

The majority of medicinal plants in Buryatia (91%) are used exclusively in traditional Oriental medicine and lack pharmacopoeial status. This highlights a significant knowledge gap and underscores the urgent need for comprehensive phytochemical, pharmacological and toxicological studies of these species to facilitate their integration into evidence-based healthcare.

Rare and endangered medicinal plants of Buryatia (25 species) face considerable threats, mainly from over-harvesting for commercial and traditional purposes. The complete absence of monitoring and up-to-date data on the distribution and abundance of these species impedes the development of effective conservation measures.

The object-relational database created in this study provides a structured information system for storing, systematising and analysing data on the medicinal flora of Buryatia. It is designed to support research, education, conservation planning and sustainable resource management.

Future work should focus on (i) conducting field surveys to update the distribution and population status of rare and threatened medicinal species; (ii) initiating pharmacological and toxicological studies of non-pharmacopoeial species; and (iii) developing mobile applications based on the database to facilitate species identification in the field.

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Conflicts of interest

No potential conflict of interest has been reported by the authors, reviewers, or subject editor.

Author's contributions

(using [CrediT](#))

Larisa Afanaseva: conceptualisation, data curation, investigation, supervision, validation, visualisation, writing—original draft, writing—review and editing; Yurii Rupyshev: data curation, investigation, writing—review and editing; Irina Dylgyrova: data curation, investigation, validation, visualisation; Arina Serebryukhova: data curation, investigation, validation, visualisation.

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