

# Medicinal Poisonous Plants of the Tomsk Region (Siberia)

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## Abstract

In this study, we presented new data on medicinal poisonous plants of the Tomsk region, used to treat various diseases in scientific and traditional medicine. As a result of the analysis of the distribution of wild poisonous medicinal plants on the territory of the Tomsk region, a list of species used for medical treatment has been formed. Based on the analysis of geobotanical descriptions, the occurrence and abundance of most of the flora species of the Tomsk region were studied, which is the basis for a quantitative assessment of their abundance and some other indicators. The medicinal poisonous species were collected based on previous literature sources and the authors' findings in Siberia. The systematic position of each species stated – the biologically active substances (BAS) that contain the use in medicine, the distribution inside Tomsk region, and the used tissue-part. The list includes 30 species of medicinal poisonous plants belonging to 24 genera and 11 families. The richest in the composition of medicinal poisonous plants used for treating various diseases are the following families: Ranunculaceae, Boraginaceae, Solanaceae, and Apiaceae. Out of 30 species of poisonous medicinal plants, 25 species are used in folk medicine, and 5 species belong to official medicinal plants. Medicinal plants can be an alternative to chemicals and become a source of raw materials for the pharmaceutical industry.

**KeyWords:** Siberian Botanical Garden; Poisonous plants; Pharmacopoeia species, Folk medicine.

## 1. Introduction

### 1.1. 1.1 History of the study of medicinal plants in Siberia

Nowadays, the potential of herbal medicine for the prevention and treatment of various diseases is increasingly expanding. Medicinal plants are efficient for various treatments, including cardiovascular, nervous, and cancer diseases. Clinical trials are introduced to medicinal plants into pharmacological practice. In this regard, it is of scientific interest to study their distribution on the territory of the Tomsk region, ecological and coenotic attribution, frequency of occurrence, distribution in the administrative regions of the Tomsk region, the content of biologically active substances (BAS), and practical value. The study of medicinal plants in Siberia was first initiated by Krylov at the beginning of the last century (since 1885) in the Siberian Botanical garden (Sviridova and Kuznetsova, 2012). The scientist gardener conducts botanical excursions and collects herbarium in the vicinity of Tomsk. He participated in collection missions for the Herbarium of Tomsk State University and published the summary "Flora of Altai and Tomsk province" (1903-1914).

The summary contains keys for defining species, describing morphological features and their ecological and coenotic attribution. The final publication of Flora of Western Siberia was completed in 1964. In the future, the study of the flora of the Tomsk region continued by researchers Prokopiev, Vyltsan, Lvov, etc. In 1985,

botanists Polozhiy, Revushkin, and Baranova prepared the textbook "Determinant of plants of the South of the Tomsk region". In 1994, Vyltsan completed the creation of the first "Determinant of plants of the Tomsk region" (Vyltsan, 1994). The study provides information about 920 species of vascular plants from 406 genera and 99 families. Many findings of the Tomsk region were by Ebel. In 2014, a team of authors published the "Determinant of plants of the Tomsk region" (Ebel et al., 2014). For each species, this publication provides a number of characteristics: flowering time, ecological and coenotic attribution, frequency of occurrence, distribution in the administrative regions of the Tomsk region, and practical value.

### 1.2. 1.2 History and priority areas of the Siberian Botanical Garden

In the 1970s, the Siberian Botanical Garden of Tomsk State University collected new 500 medicinal plants under Revina. Sviridova, Zinner and co-authors found that introduced plants in the South of the Tomsk region in a number of economically valuable features are not inferior to wild species (Sviridova and Kuznetsova, 2012; Zinner, 2010; Zinner, 2011). Currently, botanists of the Siberian Botanical garden of Tomsk State University are engaged in issues of reproductive biology and search for prospective species of medicinal plants (Belyaeva et al., 2014; Kharina and Pulkina, 2016; Nekratova, 2016). The priority direction is the study of medicinal plants used for the treatment of socially significant diseases, including nootropic, antitumor, hemorheological, anti-ulcer effects in natural habitats and their introduction (Kharina and Pulkina, 2016;

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Nekratova, 2016; Revina et al., 1983; Sviridova and Zibareva, 1989; Krylova et al., 2014; Zinner, 2011).

### 1.3. 1.3 Medicinal plants of the Tomsk region

In the work "Decorative herbaceous plants of Siberia in culture" Amelchenko, Revyakina (2007) provide information about 42 medicinal plants of the Tomsk region, among which predominate representatives of the *Ranunculaceae* families: *Adonis apennina* L., *Aconitum barbatum* Patr. ex Pers., *Thalictrum foetidum* L., *Anemone altaica* Fisch. ex C.A. Mey., *Anemone sylvestris* L., *Anemone patens* L., *Alfredia cernua* (L.) Cass., *Ligularia glauca* (L.) O. Hoffm., *Artemisia gmelinii* Web. ex Stechm., *Artemisia dracunculoides* L., *Fragaria moschata* Duch., *Filipendula vulgaris* Moench., *Sibbaldianthe bifurca* (L.) Kurtz & T. Erikss., *Potentilla erecta* (L.) Rausch.

### 1.4. 1.4 Rare plants of the Siberian Botanical Garden

According to the data given in the monograph "Rare plants of the natural flora of Siberia ..." (2015) (Prokopiev et al., 2015), the Siberian Botanical Garden has 289 species of rare plants of the Siberian flora belonging to 166 genera and 65 families. Of these, 74 species belong to medicinal plants growing in the Tomsk region, including *Athyrium filix-femina* (L.) Roth, *Matteuccia struthiopteris* (L.) Tod., *Aconitum volubile* Pallas ex Koelle, *Adonis apennina* L., *Adonis vernalis* L., *Anemone altaica* Fischer ex C.A. Meyer, *Anemone flavescens* Zucc., *Thalictrum foetidum* L.,

*Trollius asiaticus* L., *Paeonia anomala* L., *Dianthus deltooides* L., *Dianthus superbus* L., etc.

### 1.5. Flora of the Tomsk region

The Tomsk region is still pointedly needed for more flora studies other Siberia regions because of the remote areas. According to the data provided in "Determinant of plants of the Tomsk region" (Ebel et al., 2014) vascular plants of the Tomsk region represented 1170 species belonging to 477 genera and 111 families. The spectrum of leading families is as follows: *Compositae* (142 species), *Poaceae* (113), *Cyperaceae* (72), *Brassicaceae* (61), *Rosaceae* (59), *Leguminosae* (54), *Ranunculaceae* (47), *Caryophyllaceae* (46), *Scrophulariaceae* (36), *Polygonaceae* (35), *Lamiaceae* (32), *Apiaceae* (29).

### 1.6. Red Book of the Tomsk region

The Red Data Book of the Tomsk Region (2013) includes 36 species of rare medicinal plants of Siberia (higher spore-bearing plants, gymnosperms and angiosperms: *Botrychium multifidum* (S.G. Gmelin) Rupr., *Dryopteris filix-mas* (L.) Schott, *Juniperus communis* L., *Aconitum anthora* L., *Actaea spicata* L., *Silene viscosa* (L.) Pers., *Persicaria vivipara* (L.) Ronse. Decr., *Hypericum ascyron* L., *Primula veris* subsp. *macrocalyx* (Bunge) Ludi, *Tilia cordata* Miller, etc.

Here is a map of the research area (Tomsk region) (Figure 1).

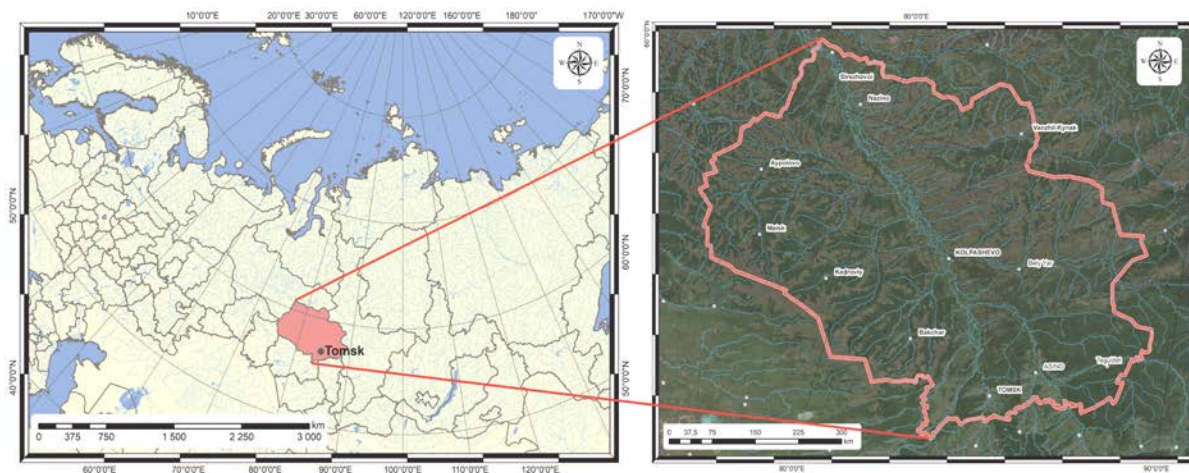


Figure 1 Map of the Tomsk Region

## 2. Materials and Methods

The medicinal poisonous species were collected based on previous literature sources (Ebel et al., 2014; Amelchenko, 2010; Amelchenko and Revyakina, 2007) and the authors' findings in Siberia (Nekratova and Shilova, 2015; Nekratova, 2015; Nekratova and Shilova, 2016; Nekratova and Letchamo, 2018; Nekratova and Kosmodemyanskiy, 2019). Based on the analysis of geobotanical descriptions, the occurrence and abundance of most of the flora species of the Tomsk region were studied, which is the basis for a quantitative assessment of their abundance and some other indicators. The listed indicators are mainly among studies of the plant

ecology and their resources, which constitute the scientific basis for the rational use of flora and vegetation of any region. In addition, the occurrence of species and their abundance made it possible to scientifically substantiate the identification of rare species in the flora of the Tomsk region, which is an initial and very important stage for organizing their practical protection.

## 3. Results and Discussion

As a result of the analysis of the distribution of wild medicinal poisonous plants on the territory of the Tomsk region, a list of species used for treatment in both folk and scientific medicine was formed (Table 1). To compile the list of species, the following literary sources were used

(Amelchenko, 2010; Ebel, 2014; Minaeva, 1991; Nekratova, 2015; Prokopiev et al., 2015; Shilova et al., 2010; State Pharmacopoeia ..., 2018; Wild useful plants of Russia, 2001 etc.). To compile the list of species, 42 literary sources were used. All sources are listed in the bibliography.

The list includes 30 species of medicinal poisonous plants belonging to 24 genera and 11 families. The richest in the composition of medicinal plants used for the treatment of various diseases are the following families: *Ranunculaceae* (13 species), *Boraginaceae* (3 species), *Apiaceae* (2 species), *Asparagaceae* (2 species), *Nymphaeaceae* (2 species). Out of 30 species of medicinal poisonous plants, 25 species are used in folk medicine, 5 species belong to official medicinal plants (Table 1).

About some species used the aerial tissues in the medicine, others used the underground tissues, and some used particular organs. Of the entire list of medicinal plants, 17 species could classify as frequently occurring, common 1 species, rare 9 species, and the remaining species are infrequent and rare (Ebel et al., 2014).

The BAS content of Tomsk medicinal poisonous plants showed 16 species contain flavonoids: *Adonis apennina* L., *Anemone patens* L., *Chelidonium majus* L., *Cicuta virosa* L., *Clematis alpina* subsp. *sibirica* (L.) Kuntze, *Conium maculatum* L., *Convallaria majalis* L., etc.

Tannins that are polyphenol complex with flavonoids found in 12 species of medicinal poisonous plants of the Tomsk region: *Actaea cimicifuga* L., *Cynoglossum*

*officinale* L., *Nuphar lutea* (L.) Smith., *Nymphaea candida* C., *Symphytum officinale* L., *Thalictrum flavum* L., *Thalictrum foetidum* L., etc.

Most species of medicinal poisonous plants are alkaloid-containing (26 species): *Aconitum anthora* L., and other species of this genus, *Actaea cimicifuga* L., *Adonis apennina* L., *Chelidonium majus* L., *Cicuta virosa* L., *Conium maculatum* L., *Cynoglossum officinale* L., *Datura stramonium* L., etc.

Six medicinal poisonous species having essential oils are *Chelidonium majus* L., *Cicuta virosa* L., *Conium maculatum* L., *Convallaria majalis* L., *Nymphaea candida* C. Presl, *Paeonia anomala* L.

Seven species vitamin-bearing are *Adonis apennina* L., *Chelidonium majus* L., *Clematis alpina* subsp. *sibirica* (L.) Kuntze, *Conium maculatum* L., *Echium vulgare* L., *Polygonatum odoratum* (Mill.) Druce, *Xanthium strumarium* L.

Fourteen medicinal poisonous species, including saponins are *Actaea cimicifuga* L., *Clematis alpina* subsp. *sibirica* (L.) Kuntze, *Echium vulgare* L., *Paris quadrifolia* L., *Paeonia anomala* L., *Polygonatum odoratum* (Mill.) Druce, *Scrophularia nodosa* L., etc.

Three medicinal poisonous species containing cardiac glycosides are: *Adonis apennina* L., *Clematis alpina* subsp. *sibirica* (L.) Kuntze, *Convallaria majalis* L.

However, there are very few species synthesizing ecdysteroids in the flora of poisonous medicinal plants of the Tomsk region: *Paris quadrifolia* L.

**Table 1** - List of poisonous plants of the Tomsk region used in the treatment of diseases

No.	Species/Family	BAS	Application in medicine	Status in Tomskregion	Tissues used
1.	<i>Aconitum anthora</i> L. <b>Ranunculaceae</b>	Alkaloids, phytosterols, fatty acids (Wild useful, 2001)	In folk medicine (Amelchenko, Revyakina, 2007; Prokopiev et al., 2015). Antitumor agent. Nervous diseases (anticonvulsant, sedative) (Minaeva, 1991). Rheumatism. Tincture 100 g / 1 liter of alcohol, 1 tablespoon each for external use (Balakirev et al., 2006).	Very rarely (Ebel et al., 2014)	Underground part
2.	<i>Aconitum barbatum</i> Patrin. ex Pers. <b>Ranunculaceae</b>	Alkaloids delasin, lycoctonine, tangorin, batocanin (Minaeva, 1991)	In folk medicine. Antitumor agent. Nervous diseases (anticonvulsant, sedative) (Minaeva, 1991). Rheumatism. Tincture 100 g / 1 liter of alcohol, 1 tablespoon each for external use (Balakirev et al., 2006).	Rarely (Ebelet al., 2014).	Underground part
3.	<i>Aconitum septentrionale</i> Koelle <b>Ranunculaceae</b>	Alkaloids, phytosterols, fatty acids (Wilduseful ..., 2001; Lapin et al., 2004).	In folk medicine. Antitumor agent. Nervous diseases (anticonvulsant, sedative) (Minaeva, 1991). Rheumatism. Tincture 100 g / 1 liter of alcohol, 1 tablespoon each for external use (Balakirev et al., 2006).	Occasionally (Ebelet al., 2014).	Underground part
4.	<i>Aconitum volubile</i> Pallas ex Koelle <b>Ranunculaceae</b>	Alkaloids, phytosterols, fatty acids (Minaeva, 1991)	In folk medicine. Antitumor agent. Nervous diseases (anticonvulsant, sedative) (Minaeva, 1991). Rheumatism. Tincture 100 g / 1 liter of alcohol, 1 tablespoon each for external use (Balakirev et al., 2006).	Occasionally (Ebelet al., 2014).	Underground part

Cont. Table 1

5.	<i>Actaea cimicifuga</i> L. <b>Ranunculaceae</b>	Triterpenoids, tannins, saponins, alkaloids, resins, phytosterols, salicylic and isoferulic acids (Minaeva, 1991; Wilduseful ..., 2001).	In folk medicine. Cardiovascular diseases (hypotensive, anti-sclerotic) (Minaeva, 1991). Antitumor agent (leukemia) (Wilduseful ..., 2001). Tincture 2/10 on 70% alcohol (Pashinsky, 1989)	Often (Ebelet <i>et al.</i> , 2014).	Rhizomes with roots
6.	<i>Adonis pennina</i> L. <b>Ranunculaceae</b>	Cardiac glycosides, alkaloids, flavonoids, and vitamin C (Minaeva, 1991).	In folk medicine (Amelchenko and Revyakina, 2007; Prokopiev <i>et al.</i> , 2015). Cardiovascular diseases. Nervous diseases (sedative) (Minaeva, 1991). Infusion of 1-2 teaspoons of dry raw materials for 1 glass of boiling water, take 1 tablespoon 3 times a day (Balakirev <i>et al.</i> , 2006). In folk medicine (Amelchenko and Revyakina, 2007; Prokopiev <i>et al.</i> , 2015). Nervous diseases (asthenia, epilepsy). Cardiovascular diseases (hypertension).	Rarely (Ebelet <i>et al.</i> , 2014).	Aerial part
7.	<i>Anemone patens</i> L. <b>Ranunculaceae</b>	Anemonin, triterpenecompounds, flavonoids, phytoncides, phytosterols (Wild useful ..., 2001; Ulanova 1985).	Antitumor agent (Minaeva, 1991; Wild useful ..., 2001). Infusion of 2 teaspoons of herbs in 1 glass of boiled water, drink in equal shares throughout the day (Balakirev <i>et al.</i> , 2006).	Often (Ebelet <i>et al.</i> , 2014).	Aerial part
8.	<i>Caltha palustris</i> L. <b>Ranunculaceae</b>	Protoanemonin, choline, berberine, carotene, triterpene glycosides (Minaeva, 1991).	In folk medicine. Antitumor effect. Nervous diseases (Minaeva, 1991). Infusion of 1/2 spoon of dry raw materials in 250 ml of hot water, take 50 ml 3 times a day before meals (Balakirev <i>et al.</i> , 2006). Pharmacopoeia species (State Pharmacopoeia..., 2018; Shikov <i>et al.</i> , 2021).	Often (Ebel <i>et al.</i> , 2014).	
9.	<i>Chelidonium majus</i> L. <b>Papaveraceae</b>	Alkaloids, saponins, bitter and resinous substances, flavonoids, choline, histamine, methylamine, organic acids, essential oil, carotene, vitamin C (Minaeva, 1991).	Antitumor agent (external and internal tumors). Cardiovascular diseases (hypertension, angina). Nervous diseases (epilepsy) (Minaeva, 1991). Tincture (1/10) for 40% alcohol (Pashinsky, 1989). Infusion of 1 tablespoon of dry raw materials for 1 glass of boiling water, take 2 tablespoons 3 times a day before meals (Balakirev <i>et al.</i> , 2006).	Often (Ebel <i>et al.</i> , 2014).	Aerial part
10.	<i>Cicuta virosa</i> L. <b>Apiaceae</b>	Cycutotoxin, alkaloids, polyacetylenecompounds, coumarins, essential oil, flavonoids (Minaeva, 1991; Wilduseful..., 2001).	In folk medicine. Nervous diseases (epilepsy, hysteria, neurasthenia) (Minaeva, 1991; Wild useful..., 2001). One of the most poisonous plants in the Russian flora. Independent use is not recommended, only use in doses selected by the doctor (Balakirev <i>et al.</i> , 2006).	Often (Ebelet <i>et al.</i> , 2014).	Rhizomes with roots
11.	<i>Clematis alpina</i> subsp. <i>sibirica</i> (L.) Kuntze <b>Ranunculaceae</b>	Triterpenesaponins, protoanemonin, polysaccharides, flavonoids, caffeic and quinicacids, sugars, alkaloids, cardiac glycosides, vitamin C, microelements (Sdobnikova, Kovalevich, 1975; Kosichenko and Kozakova, 1980; Bokova <i>et al.</i> , 1982).	In folk medicine. (Prokopiev <i>et al.</i> , 2015). Antitumor agent. Cardiovascular diseases: nootropic effect (Shilova <i>et al.</i> , 2010); heart weakness (Minaeva, 1991). Infusion of 1 teaspoon of dry raw materials for 2 cups of boiling water, drink 1 tablespoon 3-4 times a day (Balakirev <i>et al.</i> , 2006).	Often (Ebel <i>et al.</i> , 2014).	Aerial part

Cont. Table 1

12.	<i>Conium maculatum</i> L. <b>Apiaceae</b>	Alkaloids, tannins, essential and fatty oils, flavonoids, vitamin C, carotene (Minaeva, 1991; Bulgakov <i>et al.</i> , 2016).	In folk medicine. Antitumor agent Nervous diseases (epilepsy, anticonvulsant) (Minaeva, 1991). Tincture of 50 grams of fresh flowers / 0,5 liters of alcohol (Balakirev <i>et al.</i> , 2006). Pharmacopoeia species (State Pharmacopoeia..., 2018; Shikov <i>et al.</i> , 2021) Cardiovascular diseases (acute and chronic circulatory failure, myocardiodystrophy). Nervous diseases (in folk medicine): epilepsy, paralysis (Minaeva, 1991). Infusion of 2-6 grams of flowers per 1 glass of water, drink 1 tablespoon 3 times a day (Balakirev <i>et al.</i> , 2006). In folk medicine. Antitumor agent (tumors of the female genital area). Cardiovascular diseases (hypertension). Nervous diseases (sedative effect) (Minaeva, 1991). Infusion of 1 spoonful of raw materials for 1 glass of boiling water, take 1/2 teaspoon 3 times a day (Balakirev <i>et al.</i> , 2006). Pharmacopoeia species (State Pharmacopoeia..., 2018; Shikov <i>et al.</i> , 2021).	Often (Ebel <i>et al.</i> , 2014).	Aerialpart
13.	<i>Convallaria majalis</i> L. <b>Asparagaceae</b>	Cardiac glycosides, mayalin alkaloid, essential oil, choline, organic acids, sugars, starch, flavonoids (Komissarenko <i>et al.</i> , 1988).	Cardiovascular diseases (acute and chronic circulatory failure, myocardiodystrophy). Nervous diseases (in folk medicine): epilepsy, paralysis (Minaeva, 1991). Infusion of 2-6 grams of flowers per 1 glass of water, drink 1 tablespoon 3 times a day (Balakirev <i>et al.</i> , 2006). In folk medicine. Antitumor agent (tumors of the female genital area). Cardiovascular diseases (hypertension). Nervous diseases (sedative effect) (Minaeva, 1991). Infusion of 1 spoonful of raw materials for 1 glass of boiling water, take 1/2 teaspoon 3 times a day (Balakirev <i>et al.</i> , 2006). Pharmacopoeia species (State Pharmacopoeia..., 2018; Shikov <i>et al.</i> , 2021).	Rarely (Ebel <i>et al.</i> , 2014).	Aerialpart
14.	<i>Cynoglossum officinale</i> L. <b>Boraginaceae</b>	Alkaloidcynoglossin, glycosidin, coumarins, allantoin, choline, tannins, inulin, resins, carotene, litospermicacid, cinnamicacid, andfumaricacid (Minaeva, 1991; Yunusova <i>et al.</i> , 2012).	Nervous diseases (manic-depressive psychosis, epilepsy, hysteria). Antitumoragent (stomachcancer) (Minaeva, 1991; Wild useful ..., 2001). 1 drop of dope juice with 2 tablespoons of water 3 times a day only under medical supervision (Balakirev <i>et al.</i> , 2006). In folk medicine. Nervous diseases (epilepsy, convulsions, fright) (Minaeva, 1991; Wild useful..., 2001). Infusion of 10 grams of raw materials per 300 ml of boiling water, take 15 ml 3 times a day (Balakirev <i>et al.</i> , 2006). Pharmacopoeia species (State Pharmacopoeia..., 2018; Shikov <i>et al.</i> , 2021).	Very rarely (Ebel <i>et al.</i> , 2014).	Roots
15.	<i>Datura stramonium</i> L. <b>Solanaceae</b>	Alkaloidatropine, scopolamine, carbohydrates, phenolicandfattyacids (Minaeva, 1991; Wild useful ..., 2001).	Nervous diseases (manic-depressive psychosis, epilepsy, hysteria). Antitumoragent (stomachcancer) (Minaeva, 1991; Wild useful ..., 2001). 1 drop of dope juice with 2 tablespoons of water 3 times a day only under medical supervision (Balakirev <i>et al.</i> , 2006). In folk medicine. Nervous diseases (epilepsy, convulsions, fright) (Minaeva, 1991; Wild useful..., 2001). Infusion of 10 grams of raw materials per 300 ml of boiling water, take 15 ml 3 times a day (Balakirev <i>et al.</i> , 2006). Pharmacopoeia species (State Pharmacopoeia..., 2018; Shikov <i>et al.</i> , 2021).	Very rarely (Ebel <i>et al.</i> , 2014).	Fruits
16.	<i>Echium vulgare</i> L. <b>Boraginaceae</b>	Saponins, alkaloids, fattyoil, vitaminC, choline, phenolicandfattyacids (Minaeva, 1991; Wilduseful ..., 2001; Kruglov andSvechnikova, 2007).	Nervous diseases (manic-depressive psychosis, neurosis, hysteria) (Wild useful..., 2001). Extract 0.25 grams of dry raw materials per 100 ml of boiling water. Take orally 2 drops of the extract per 1 tablespoon of water 3 times a day (Balakirev <i>et al.</i> , 2006).	Rarely (Ebel <i>et al.</i> , 2014).	Flowers and leaves
17.	<i>Hyoscyamus niger</i> L. <b>Solanaceae</b>	Atropine group alkaloids, glycosides, fatty oil, rutin flavonoid, phenolic and fatty acids, etc. (Minaeva, 1991; Wild useful..., 2001).	Nervous diseases (manic-depressive psychosis, neurosis, hysteria) (Wild useful..., 2001). Extract 0.25 grams of dry raw materials per 100 ml of boiling water. Take orally 2 drops of the extract per 1 tablespoon of water 3 times a day (Balakirev <i>et al.</i> , 2006).	Occasionally(Ebel <i>et al.</i> , 2014).	Leaves and seeds

Cont. Table 1

18.	<i>Nuphar lutea</i> (L.) Smith. <b>Nymphaeaceae</b>	Alkaloids, phytosterols, carbohydrates, tannins, phenolic and fatty acids (Wilduseful ..., 2001; Maksyutina <i>et al.</i> , 1985; Fedotcheva <i>et al.</i> , 2016).	In folk medicine. Cardiovascular diseases (hypertension). Antitumor agent (Fedotcheva <i>et al.</i> , 2016). Nervous diseases (insomnia) (Minaeva, 1991; Wilduseful..., 2001). Infusion of 20 grams of dry raw materials per 1 liter of boiling water, take 1 tablespoon 3 times a day (Balakirev <i>et al.</i> , 2006).	Often (Ebel <i>et al.</i> , 2014).	Rhizomes
19.	<i>Nymphaea candida</i> C. Presl <b>Nymphaeaceae</b>	The alkaloid nymphenin, tannins, starch, glucose, essential oil, and the glucosidenymphalin (Minaeva, 1991).	In folk medicine. Nervous diseases (soothing, hypnotic effect). Cardiovascular diseases (Minaeva, 1991). A decoction of 1 teaspoon of raw materials for 1 cup of boiling water, take 3 times a day, 1 teaspoon (Balakirev <i>et al.</i> , 2006).	Often (Ebel <i>et al.</i> , 2014).	Flowers
20.	<i>Paris quadrifolia</i> L. <b>Melanthiaceae</b>	Glycosides, alkaloids, saponins, ecdysterone, polypodine (Novoselskaya <i>et al.</i> , 1981).	In folk medicine. Cardiovascular diseases (heart failure, tachycardia, arrhythmia). The nervous disorder (convulsions, somnolence) (Minaeva, 1991). It is recommended to use only in dosages selected by a doctor and under the supervision of a doctor (Minaeva, 1991).	Often (Ebel <i>et al.</i> , 2014).	Aerial part
21.	<i>Paeonia anomala</i> L. <b>Paeoniaceae</b>	Essential oil, peonoside, peonoflorin, iridoids, salicylic and gallic acids, flavonoids, saponins, sterols, tannins, sugars, starch, salicin glycoside, resins, etc. (Minaeva, 1991; Zaripova <i>et al.</i> , 2005).	In folk medicine (Amelchenko and Revyakina, 2007; Prokopiev <i>et al.</i> , 2015). Nervous diseases (sedative, anti-stress effects in insomnia, neurasthenia, epilepsy) (Romanova <i>et al.</i> , 2014). Cardiovascular diseases (vegetative-vascular disorders, hypertension) (Minaeva, 1991). Antitumor agent. Alcoholic 10% root tincture, 30-40 drops are used 3 times a day (Balakirev <i>et al.</i> , 2006; Pashinsky, 1989).	Often (Ebel <i>et al.</i> , 2014).	Underground part
22.	<i>Polygonatum odoratum</i> (Mill.) Druce <b>Asparagaceae</b>	Alkaloids, steroids, carbohydrates, flavonoids, saponins, mucus, sugars, vitamin C (Minaeva, 1991; Wilduseful ..., 2001; Belenovskaya and Budantsev, 2014; Strigina <i>et al.</i> , 2003).	In folk medicine (Amelchenko, Revyakina, 2007; Prokopiev <i>et al.</i> , 2015). Cardiovascular diseases (Minaeva, 1991). A decoction of 40-50 grams of raw materials per 0.5 liters of water (Balakirev <i>et al.</i> , 2006).	Often (Ebel <i>et al.</i> , 2014).	Rhizomes
23.	<i>Scrophularia nodosa</i> L. <b>Scrophulariaceae</b>	Alkaloid scrofularin, saponins, iridoids, carbohydrates, flavonoids, coumarins, organic acids, tannins (Minaeva, 1991).	In folk medicine (Prokopiev <i>et al.</i> , 2015). Antitumor agent. Nervous diseases (insomnia) (Minaeva, 1991). Infusion of 1 teaspoon of raw materials in a glass of boiling water, drink 1/3 cup during the day (Balakirev <i>et al.</i> , 2006).	Usually (Ebel <i>et al.</i> , 2014).	Roots

Cont. Table 1

24.	<i>Symphytum officinale</i> L. <b>Boraginaceae</b>	The alkaloid cynoglossin, glucoalkaloidconsolidated,iridoids, polysaccharides, steroid saponins, coumarinscopoletin, allantoin, tannins monoterpane glycosides, oxycoric acids (Minaeva, 1991; Lyashenkoet al., 2015).	In folk medicine. Nervous diseases (anticonvulsant activity). Antitumoragent (Minaeva, 1991). Infusion of 1 teaspoon of raw materials in a glass of boiling water, drink 1/3 cup during the day (Balakirev et al., 2006).	Very rarely (Ebel et al., 2014).	Rhizomes
25.	<i>Thalictrum flavum</i> L. <b>Ranunculaceae</b>	Triterpenesaponins, flavonoids, coumarins, resins, tannins, organic acids, alkaloids (berberine, talmin, glaucin, etc.) (Minaeva, 1991).	Infolkmedicine. Cardiovascular diseases (hypertension). Antitumor agent (Minaeva, 1991). Alcoholic tincture on 40% alcohol, 15-20 drops 2-3 times a day in the afternoon (Pashinsky, 1989).	Often (Ebel et al., 2014).	Aerialpart
26.	<i>Thalictrum foetidum</i> L. <b>Ranunculaceae</b>	Triterpenesaponins, flavonoids, coumarins, resins, tannins, organic acids, alkaloids (berberine, talmin, glaucin, etc.) (Minaeva, 1991;Savelieva et al., 2016).	In folk medicine(Amelchenko and Revyakina, 2007; Prokopiev et al.,2015). Cardiovascular diseases (hypertension). Antitumor agent (sarcoma and other tumors) (Minaeva, 1991). Alcoholic tincture on 40% alcohol, 15-20 drops 2-3 times a day in the afternoon (Pashinsky, 1989).	Often (Ebel et al., 2014).	Aerialpart
27.	<i>Thalictrum minus</i> L. <b>Ranunculaceae</b>	Triterpenesaponins, flavonoids, coumarins, resins, tannins, organic acids, alkaloids (berberine, talmin, glaucin, etc.) (Minaeva, 1991).	In folk medicine. Cardiovascular diseases (hypertension).Antitumor agent (Minaeva, 1991). Alcoholic tincture on 40% alcohol, 15-20 drops 2-3 times a day in the afternoon (Pashinsky, 1989).	Often (Ebel et al., 2014).	Aerialpart
28.	<i>Thalictrum simplex</i> L. <b>Ranunculaceae</b>	Triterpenesaponins, flavonoids, coumarins, resins, tannins, organic acids, alkaloids (berberine, talmin, glaucin, etc.) (Minaeva, 1991).	Infolkmedicine. Cardiovascular diseases (hypertension).Antitumor agent (Minaeva, 1991). Alcoholic tincture on 40% alcohol, 15-20 drops 2-3 times a day in the afternoon (Pashinsky, 1989).	Often (Ebel et al., 2014).	Aerialpart
29.	<i>Veratrum lobelianum</i> Bernh. <b>Melanthiaceae</b>	Alkaloids, glycoside veratromarin, triterpenoids, amino acids, resins, gum, fatty oil, starch, sugars, mineral salts, coloring and tannins (Minaeva, 1991).	Pharmacopoeia species (State Pharmacopoeia..., 2018; Shikovet al., 2021). Cardiovascular diseases (hypertension). Nervous diseases (epilepsy, melancholy) (Minaeva, 1991). It is recommended to use only in dosages selected by a doctor and under the supervision of a doctor (Minaeva, 1991).	Often (Ebel et al., 2014).	Rhizomes and roots
30.	<i>Xanthium strumarium</i> L. <b>Compositae</b>	Iodine, flavonoids, alkaloid, vitamin C, resins, saponins, terpenoids, xanthostrumarin (Minaeva, 1991; Wild useful ..., 2001, Bubenchikova et al., 2009).	In folk medicine. Antitumor agent (throat tumors) (Minaeva, 1991; Korepanovet al., 2011). Infusion of 2 teaspoons of raw materials for 1 cup of boiling water, take 1/2 cup 3 times a day before meals (Balakirev et al., 2006).	Very rarely (Ebel et al., 2014).	The whole plant (aerial part and roots)

#### 4. Conclusion

In this study, we presented new data on medicinal poisonous plants of the Tomsk region, used to treat various diseases in scientific and traditional medicine. Flora of poisonous medicinal plants of the Tomsk region includes 30 species belonging to 24 genera and 11 families. The Tomsk region is rich in medicinal and poisonous plants. This list may not include all species. We are planning to expand our list. However, Tomsk pharmacologists are actively studying medicinal plants of Siberia, and in the future we plan to expand the list with new types of medicinal plants. Medicinal plants can be an alternative to chemicals and become a source of raw materials for the pharmaceutical industry.

#### 5. Conflict of interests

The authors declare that there is no conflict of interest concerning this work or the preparation of the manuscript.

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