

Original Research Article

<http://dx.doi.org/10.20546/ijcmas.2017.601.063>

Persicaria Species in Flora of Azerbaijan and Etnobiology of their Use

Gulnara Shiraliyeva*

Institute of Botany of Azerbaijan National Academy of Sciences, Azerbaijan

*Corresponding author

ABSTRACT

Keywords

Persicaria Hill.,
medical value,
reserves.

Article Info

Accepted:
23 December 2016
Available Online:
10 January 2017

Data about spreading, reserves and bio-ecological properties of *Persicaria* Hill. Species (water pepper) have been gives in paper. Usage of this species is very important. Some of medically important substances in above-ground part indicate their usage both in folk and scientifically medicine. It's nourishment and spice-based properties are revealed in results of ethnobotanical research.

Introduction

Persicaria Hill. – Pepper peachwort-grass or Water pepper genus is the the most interesting representatives of the *Polygonaceae* Juss. Family. All species belong to the genus meets on pastures, in forest, and also in freshwater lakes, spread in the water.

For the chemical consist as well as significant species for the food and for medicine. Polysaccharides in underground part of *Persicaria* species in different development phases was determined in Russia. This substances are indispensable in preparing of drug preparates and nutritional supplements (Yakovlev *et al.*, 1983).

Flavonoids aglycone researched and prepared drugs from *Persicaria hydropiper* by one group scientist in Latvia. Another species of *Persicariya* genus are also important.

Flavonoid glucoside from leaves and surface parts of *Persicaria lapathifolia* L. in different zones of Siberia have been learned by local scientist and the biologically active substances of plant have been used in the preparation of drugs (Visochina, 1998; Kifakh *et al.*, 1984; Khaziyev *et al.*, 2007; Khvorost *et al.*, 1980).

Representatives of genus are used in folk medicine of different nations, in surface part are located essential oil (0.5%), glucoside, 2-2.5% poliqopiperin, flavonoids (ramnetin, izoramnetin, rutin, kvercetin, hyperoside, kempferol), sapinin 4%, acids (formic, acetic valerian and apple), vitamin K, vitamin E, carotene, ascorbic acid 0.2%, ergosterin, tocopherol, naftoxinon, acetylcholine, iron, sugar and microelements.

Antroglucoside and sapinin are meetin the roots. The ancient Greeks and Romans were used this plant as drug against malaria and as styptic. In scientific medicine used as drugstores in anestezol, the pine against hemarroy (component-extract). It's used for hemarroy, chronic endometritis, childhood fibromioms, for prevention of strong menstrual bleeding in modern medicine. Leaves are keeping poligopiperin glucose, flavonoids 2.0-2.5% (kvercetin, kvercitrin, kempferol, rutin, ramnazin), potassium salt, sapinin, pyrocatechin group 3.8% and 0.005% essential oil, ant, fitoserin, filloxinon, tokofepol, valerian, acetic acid, vitamin K, 0.78%, 42.35 mg% carotene, 200 mg% vitamin C and 13% of the ashes. The liquid extract can be used by 30-40 drops in several times a day, brewing (12:200) by 3 times a day with a tablespoon for childhood and hemorrhagic bleeding, women's diseases (Lerato *et al.*, 2015; Mozaffari *et al.*, 2013).

Morpho-ecology, phenology and anatomic properties of this plant have been studied by scientist and also have been determined their resource value and received information about their therapeutic effects on many diseases (Gumenyuk *et al.*, 2006; Krilova *et al.*, 1987). It should be noted that the species are widely spread within the country and widely used. So areals of some species of genus narrowed and have been exposed to the danger of extinction (Shiraliyeva *et al.*, 2007). The diversity of the plants are very interesting for ethnobotanic researches and also for to determine the current state within the country.

Materials and Methods

Field research and expeditions was carried out in the interests of research conducted in different parts of Azerbaijan: norten districts of Lesser Caucasus, Steppe plateau, Ismayilli-Gabala-Sheki regions of the Greater Caucasus and in two districts (Shahbuz, Julfa) of Nakhchivan Autonomous Republic.

Stationary methods and routes of research have been applied in studies. Geography-systematically, floristic-systematically methods are used in determination of plants (Beydeman, 1954; Flora of Azerbaijan, 1955). Names of plants are given according to Flora and taking into account changes of to the latest nomenclature (Askerov, 2016, Talibov *et al.*, 2008).

Experimental parts

Persicaria Hill. – Peachwort-grass genus are represented in the flora by 8 (*P.amphibia* (L.) S.F.Gray, *P.brittingeri* (Opiz) Opiz, *P.lapathifolia* (L.) S.F.Gray, *P.maculate* (Rafin.) A.et D.Love, *P.minor* (Huds.) Opiz, *P.orientalis* (L.) Spach & *P.tinctoria* (Ait.) Spach) species. This species (except *P.brittingeri*) divided the genus *Polygonum* L. (Conspectus, 2006).

The toxicity of herbal parts of *Persicaria* is very low. In medicine, herbal part of the plant used in the form of solutions, extracts and decoctions from from hemorrhoids and internal bleeding. Often used as atonic and spastic weakening means. Also found diuretic effect of these species (Khaziyev *et al.*, 2007).

Persicaria amphibia (L.) S. F. Gray (= *Polygonum amphibium* L.) - water pepper, is a perennial plant with creeping stems at a height of 1 meter and the bulbous root system. Lancet-shaped or oblong leaves arranged on the stem, from the main part leaves are the round or heart-shaped, hard edges with hairs and curved shapes. Group of the flower at the end of trunk or branches, which is also close 35sm by length, cylindrical or oval. Flowers - pink color. Seeds been raised on both sides, black and shiny.

During the scientific inspection of the genus for Azerbaijan flora have been meet 3 variation of this species:

1. *var. notans* Leyss. - Leaves floating. The body under the water.
2. *var. terrestre* Leyss. - Trunk is straight or branched. Lancet-shaped leaves with sharp, short - stalk-shaped, found in damp places
3. *var. decumbens* Klett. et Richt. - Creeping stems. Lower leaves with short stiff hairs. In contrast to the previous variation is formed by drying the water area

Organic acids, saponins, vitamin C, carotene, coumarins, flavonoids in roots, saponin in leaves; hydrocarbons, organic acids, vitamins C and K, carotenoids, carboxylate acids, coumarins, flavonoids in a ground part of *Persicaria amphibia* species have been identified. The plant roots are used as a diuretic prepartate in medicine. Local population replaced the drug «Smilax» by broth brewed from the roots of plants.

In various regions of Azerbaijan the young leaves and shoots of the plant are used as a spice. The plant is also used as forage. Seeds of plants eaten by poultry and leaves by waterfowl (geese and ducks). Plant is a valuable raw material for saponin and dyeing materials of color woolen thread and used in carpet weaving in Lagich region of Azerbaijan.

Among them *Persicaria hydropiper* species are the most interesting for the beneficial properties. According to the last literature date this species is common distributed only in the Talysh (Askerov, 2016), but results of the long-term research has shown that species distributed also in Shakhbuz district near of Batabat lakes in the Nakhchivan Autonomous Republic, and around the Ustupu village of Ordubad region. The "Nakhchivan Autonomous Republic taxonomic spectrum" is referred to in (Talibov *et al.*, 2008).

This plant (*Persicaria hydropiper*) distributed in flora of Nakhchivan Autonomous Republic and used by local population as food plant have been established in results of ethnobotanical research. At the same time, this plants are used in folk medicine for to treat a number of diseases. Areal of this plants in Shakhbuz district are narrowed and are not found in common place by comparative to earlier time according to the opinion of local communities.

Persicaria hydropiper (L.) Spach –Water pepper or pepper peachwort-grass named by local population as bitterness, pepper, bitter, male-frog herb, known as kakra in districts. Good melliferous plant. Odorless and burning delicious. After drying, strongly loses weight

Annual grass, plant stems, smooth, height 20-50 (70)sm, reddish, usually upright, on the basis of branching and often poorly articulated-bent slightly below. The leaves are alternate, oblong, sharp or blunt, the wedge-shaped base, with 3-9sm in length and width by 0,7-2sm. Flowers at the end of the body are like funnel, curtains, red, cylindrical, smooth side up, and the edges, covered by bristles. Flower field line 4-5, 3-4.5 mm length. There 6-8 units of stamens. Slightly branched. Convex or three-edged black-brown colored fruits hypocritical, petty walnut-shaped forms, with the length 2.2-3.0 mm. June-September are blossoms, the fruit grows in August-October. Flowers are collected in the ear, formed at the end of the branches. Flowers by 3-5mm in length, simple, green-pink, and brown dots on going. Flowers are delicate, elegant, soft, whether brush spikes, by 4-6sm length.

The more interest moments in investigations of morphology properties of *Persicaria hydropiper* species was the study of internal processes of developed phases in intracortical part of the root and at the end concluded that

for this radial allocation of primary cortex cell are characterized.

As shown ethnobotanical researches for hemostatic action local population are collected, dried and used year-round of this plant. Hemostatic drug. The effect of uterine muscle is weak in the rye sput extract. There is also painkillers feature.

Aqueous extract of Water pepper with 70% ethyl spirit in 1:1 proportion is used in folk medicine as analgesic.

The practice of folk medicine are shown that decoction and aqueous extract of the plant are applied as hemostatic under disorders such as medicine and hemorrhoidal uterine bleeding menopausia and dismenoreya functions. Plant with rye spur are used as analgesic.

Decoction prepared in 12:200 proportion and have taken 3 times in day by a tablespoon.

In folk medicine plant is used as astringent analgesic and hemostatic agent. In addition, for kidney stones, edema, gastric ulcers, eczema, asthma, and used in the treatment of thyroid diseases.

Plants of this species are collected in nature and exported for medicines purpose in the North Caucasus, Ukraine and Belorussia. Plants are distributed basis on humid coasts, meadows, forests and at about forest roads.

Plant must be cut by sharp instrument in flowering period, in 4-5m tall from the soil cover.

Raw material must be lined with a thin layer on roofs, in well-ventilated areas, or at a 40-50°C temperature in the oven. Raw materials and other parts should be kept in cool, air-permeable areas. Detention period - 3 years. Above-ground part of the plant used in preparing of spicy salads, soups, sauces in regions.

Persicaria lapathifolia (= *Polygonum nodosum*) – Scapula leaved peachwort-grass, 20-60 cm (120 cm) by tall, often thickened, straight or ascending, simple or branched stem, annual plant. Leaves are elongated or lanceolate, located on stems, and a lot of time on the bottom side of the bare surface is covered by the leaf veins.

Clusters form inflorescence. Flowering part completely without veins, 2cm long, white or pink colour. Seeds in the lentils form, dark brown. *Persicaria lapathifolia* has a wealth of chemical composition: in the roots - anthraquinones; in an elevated part - organic acids (malic, citric), saponins, vitamins C, K, PP, sapinin; in leaves - alkaloids, vitamins C and K, carotene, flavonoids; in the seeds and fruits - vitamin C. The broth from the ground parts of the plant have antibacterial activity against Flexner dysentery sticks. The seeds are used in food as cereals.

Persicaria maculata (Rafin.) A. et D.Löve (= *Polygonum persicaria*) - spotted peachwort-grass.

The height of plant - 20-60cm, annual herb plant. Short stature, lanceolate leaves are alternately arranged on the stem. Small pink flowers tightly arranged, without veins. Fruit - triangular-shaped nut.

The ground part of *Persicaria maculata* formed during the flowering period. and consist hyperoside and quercetin, vitamin K in a small amount sapinin, essential oils. Presence of anthraquinone found in the roots.

In folk medicine since ancient times this plant used as a remedy for hemorrhoids. Liquid extract and broth for the same purpose are used in medicine. Raw is green, low odor, bitter taste, has a little astringent effect. The above-ground part of the plant used for healing wounds, consist the essential oils and

from flavonoids - avikulyarin, giperin. In the leaves - flavonoids (quercetin, giperin); there is data about presence the steroids and flavonoids in the seeds. *Persicaria maculata* species and now used in folk medicine as a remedy for hemoroid. Used in all regions of Azerbaijan.

References

- Askerov, A.M. 2016. Plant words of Azerbaijan /Baku-(azeri).p.166.
- Beydeman I.N. 1954. Methods of phenological observations in geo-botanical studies./ M.; L., 127 p. (russian).
- Conspekt of the Caucasian flora. 2006.
- Flora of Azerbaijan. 1955. II: 216-224 (russian).
- Gumenyuk, I.D., Musatenko, L.I. 2006. Anatomical features of vegetative organs of *Persicaria amphibian* under the moderate water deficit // *Ukraine Bot. J.*, issue 63, №5, pp. 699-712 (Russian)
- Kifakh, S., YusifK., Blinova, K. 1984. Flavonol aglycones of *Polygonum hydropiper* //Uzbekistan SSR, Tashkent, Chemistryof nature compounds, Public house "FAN", №5. 1984, pp. 658-659.
- Kriloval, L., Kaporova, V.I. 1987. The resource characteristics of *Polygonum bistorta* L. in the European part of the USSR // *Plant Res*, vol. 23, issue 3, pp.381-388, (Russian).
- Khaziyev, R.Sh., Karaban, D.N. The accumulation of flavonoids in the aerial parts of *Polygonum aviculare* and features of thei water extraction in the preparation of infusions // *Plant Res.*, 2007, vol. 43, issue. 3, pp.102-107.
- Khvorost, P.P., Komissarenko, N.F. 1980. Phlavanoids of *Polygonum aviculare* // Uzbekistan SSR, Tashkent, *Chemistry of Nature compounds*, №6. pp.262-264
- Lerato Seleteng, A., Moteetee, Sandy, V.V. 2015. Etnobotanical survey of medicinal used in the Maceru district of Lesotho. / *J. Ethnopharmacol.*, pp.184-200
- Mozaffari, A.S., Kamkar, A., Archana, G., Aziz, P. 2013. Ethnobotany and folk medicinal uses of major trees and shrubs in Northern Iran, *J. Med. Plants Res.*, Vol7, (7), pp.284-289.
- Shiraliyeva, G.Sh., Ibadullayeva, S.J. 2007. Recovery of endangered species of *Persicaria* Hill. / Materials of Intern. Scientific Conf. "Problems of ecology, nature and society" dedicated to 100yearsanniversary of acad. H.Aliyev, Baku, 2007, pp.345-346 (azeri).
- Talibov, T.H., Ibrahimov, A.Sh. 2008. Taksonomical spectrum of flora of *Nakhivan Autonomous Republic*, Public house "Ajemi", pp. 120-121 (azeri).
- Visochina, G.I. 1998. The content and the amount of some of the main flavonoids in the aerial parts of *Polygonum aviculare* L. grows in Siberia./ *Plant Res.*, v.32, issue 4, pp.47-55.
- Yakovlev, A.I., Churilov, G.I. Characteristics and dynamics of the content of polysaccharides in the aboveground part of *Polygonum hydropiper* L. // *Plant Res.*, "Nauka" ("Science") Leningrad department, vol.19, issue 1,pp. 68-71.

How to cite this article:

Gulnara Shiraliyeva. 2017. *Persicaria* Species in Flora of Azerbaijan and Etnobiology of their Use. *Int.J.Curr.Microbiol.App.Sci*. 6(1): 527-531.
doi: <http://dx.doi.org/10.20546/ijcmas.2017.601.063>