Biologically active substances and homeopathic preparations of Brionia white and dioecious NS. Tereshina

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There are two types of Bryonia used in homeopathy: Bryonia alba L. (White Bryonia or White Bryony) and Bryonia dioica Jaq. / Bryonia cretica L. subsp.dioica (Jacq.) Tutin. (dioecious bryony or dioecious cross), family Cucurbitaceae - pumpkin.

Bryony white is a perennial herb. Several thin stems up to 4 m long emerge from the thick root, climbing with antennae. The leaves are alternate, petiolate, five-lobed, deep-heart-shaped at the base, dentate along the edge, rough on both sides. Antennae are thin, long, spirally twisted. Flowers are dioecious, monoecious. 5–7 stamen flowers in corymbose racemes on long (up to 20 cm) thin peduncles with a deep five-part corolla of dirty yellow color with green veins. 5–12 pistillate flowers in corymbose racemes on shorter (up to 10 cm) peduncles, greenish. The fruit is a spherical black berry 7–8 mm in diameter. It grows in the European part of Russia, the Caucasus and Central Asia.

Since ancient times, the roots of bryony have been widely used in the treatment of various diseases. It was used by Hippocrates and Dioscorides. Galen used it for stomach diseases, and Ibn Sina - for epilepsy, dizziness, coughing, spleen diseases and snakebites. The roots of bryony in allopathy are used as a laxative and diuretic. In addition, their action is described in rheumatic and allergic diseases. They also have an effect in the treatment of gout. The activity of the alcoholic extract of Bryonia dioica against the poliomyelitis virus was established [11, 19, 30].

Bryonia alba was introduced to homeopathy by Hahnemann in 1816. He made Bryony one of the most valuable homeopathic remedies for a wide variety of diseases. Bryony preparations are used for acute febrile, catarrhal and rheumatic diseases, for pleurisy and pneumonia, for relieving pain, including migraine, for hay rhinitis, enterocolitis, appendicitis, for diseases of the female organs (mastitis, inflammation of the tubes and ovaries), etc. . [1, 8, 11, 18].

According to the literature, the roots of bryony contain various bitter cucurbitacins, lipids, tannins, starch, derivatives of trihydroxyoctadecadienoic acids (polyene fatty acids), prostaglandins, enzymes, enzymes (peroxidase and elaterase) [12, 18, 27].

Cucurbitacins are the main class of biologically active substances (BAS) in bryony. Cucurbitacins belong to the group of tetracyclic triterpenes - oxygen-rich substances that contain methyl and hydroxyl groups, not as usual at the C-10 position, but at the C-9 position. Distinguish, depending on the substitution in the ring-A, diosphenyl and -ketolic cucurbitacins. All cucurbitacins with a common side chain at the C-17 position usually contain an oxo group at the C-22 position. Along with A23-monoenes, there are 23, 24 - dihydro compounds. In total, over 40 different types of substitution are currently known. The main representatives of this class of substances are shown in Fig. 1. Cucurbitacins are found in plants in "free" and glycosidic forms, with monoglycosides predominating. Sugars are glucose and rhamnose [27]. According to Pohlmann J., both species of bryony (B. alba and B. dioica) contain cucurbitacins E, B, I, D, J, and L, dehydrocucurbitacins E and B, and tetrahydrocucurbitacin I [27]. The works of A.G. Panosyan et al. showed that the main components of the extract of the roots of bryonia alba are dihydrocucurbitacin D, 2 and 25-glucosyl dihydrocucurbitacin D, and 2,25-diglucosyl dihydrocucurbitacin D. Later, a number of minor cucurbitacins were isolated: rhamnoglucosyl-22depoxy-16,23 - cucurbitacins - 22 deoxoccurbitosides A and B [6]. Table 1 shows cucurbitacins contained in two types of bryony. The study of the biosynthesis of cucurbitacins in Bryonia dioica was studied by Cattel L. et al. [13].

Medicines containing cucurbitacin have been used since ancient times as laxatives and diuretics. Isolated cucurbitacins exhibit a wide spectrum of activity. Their carcinostatic action has been most studied [30].

Despite the fact that, for example, cucurbitacins E, I, B, D, C, O, P and Q, dihydrocucurbitacin B, isoccurbitacin B, datiskacin and dihydrocucurbitacin-20-acetate, have proved to be very effective, therapeutic use has not yet been possible due to their relatively high toxicity. The literature reports on the hepatoprotective and contraceptive effects of certain cucurbitacins [11]. Cucurbitacins have stimulating, tonic, antitumor, antimicrobial, anthelmintic, laxative and antihepatic effects, increase capillary permeability and lower pressure, and exhibit high cytotoxicity in the culture of KB and He1a tumor cells [15, 22].

Table 1

Cucurbitacin of the roots of bryony white and dioecious

Вещество, вид растения	Агликон	Углеводный остаток	Литература
Bryonia dioica Bryonia alba	Кукурбитацин Е	1.1	27
-K-	Кукурбитацин В	•	27
-8-	Кукурбитацин I HO Me COR H Me H Me H Me H Me H Me	(*)	27, 28
ff-ĸ-	Кукурбитацин D		27
+10 =	Кукурбитацин Ј		27
-K-	Кукурбитацин 8		27
-16 ×	Кукурбитацин L R = (CH ₂),CMe ₂ OH B' = H	a	6, 13, 27, 28
- 10 -	Дегидрокукурбитации Е		27
1221	Дегидрокукурбитацин В		27
	Townserverse for the second		12 14 22
Principality	теграгидрокукуронтацият		15, 14, 27
Potonia diaira Potonia dha	22-деоксокукуроитации С		6 14
Boronia dioica, Bryonia alba	23,24 дигидрокукуроитации в		12
Resona dioica	Сарагадроизокукуронтация т		20
Bryonia dioica	Сукуронтация 5 Фуропирановое производное кохорбитацина 5		20
Bryonia dioica (25-0-Ацетипбриомарид)	23,24 Дигидрокукурбитацин Е	2-0 D-глюкопираноза	28
Впуоліа dioica, Впуоліа alba (2-0 D-глюкопиранозил- кулурбитацин I)	R = CH:CHCMe _s OH	R' = -D-глюкопиранозил	24, 28
Bryonia alba	6' = H	R = CH.CHCMe.OD-глюкопиранозил	24
Bryonia alba	Кукурбитацин I	R = CH:CHCMe,OD-глюкопиранозил R = -D-глюкопиранозил	24
Bryonia dioica (элатеринид)	R = CH:CH CMe ₂ OAc	R' = -D-глюкопиранозил	28
Вгуопіа dioica (бриомарид)	R = (CH.).CMe.OH	8° = -D-глюкопиранозил	28
Bryonia dioica (25-О-ацетипбриомарид)	R = (CH ₂) ₂ CMe ₂ OAc	R' = -D-глюкопиранозил	28
Bryonia alba (22-дезоксокукурбитозид А)	16,23,эпонси-кукурбитадиен-5,24-дион- 3,11-2-20-диоп	R' = -L-рамнопиранозил- (14)- = D- глюкопираноза	6
Bryonia alba (22-дезоксокукурбитозид B)	16.23.эпонси-кукурбитатриен-1,5,24- дион-3,11-2 -20-диоп	R' = -L-рамнопиранозил- (12)- = D- глюкопираноза	6

table 2

Raw materials for the production of homeopathic brionia tinctures by foreign

pharmacopoeias				
Pharmacopoeia	Plant species used	Used part of the plant		
GPI	Bryonia alba L.	Dry roots		
GFSSh	Bryonia alba L., Bryonia cretica L.	Fresh roots harvested before flowering		
GFG, 1985	Bryonia cretica L.	Fresh roots harvested before flowering		
GFG, 2000	Bryonia alba L., Bryonia cretica L.	Fresh roots harvested during flowering		
FF	Bryonia alba L., Bryonia cretica L.	Fresh underground organs		

Bryonia alba root extracts contain as the main lipid fractions: 3- O-acyl-24-alkyl (alkenyl) -7-cholestenes, triacylglycerols, 1,2-diacyl-3-monogly-

copirano-sn-glycerols, 1,2-diacyl-3-diglycopyranosyl-sn-glycerols, 1,3-bis- (3-sn-3-snphosphatidyl) glycerols, phosphatidylethanolamines, 3-sn-phosphatidylcholines and methyl esters of fatty acids. The content of unsaturated fatty acids in lipid fractions is 60–94%, where the main component is linolenic acid. In addition, palmitic, palmitolenic, stearic, oleic and linoleic acids are present. In the composition of carbohydrates in glycolipid fractions, - glucopyranose and

--galactopyranose. Panosyan A.G. et al., the composition and content of phytosterols in the fraction of their acyle-ethers were determined: 24-methyl ---7-cholesten-3 - ol - 3%, 24-ethyl--7-cholesten-3 - ol - 40%, 24-methyl-lidene ---7-cholesten-3 - ol - 3%, 24-ethyl-den--7-cholesten-3 - ol - 47%, 4-methyl, 24-ethylidene ---7-cholesten-3 - ol - 5%, 4-methyl, 24-ethyl ---7-cholesten-3 - ol - 2%. Phytosterols in the fraction from acyl ethers practically do not differ in composition from the fraction of free 24-alkyl (alkenyl) - -7-cholesten-3 - tins and their -D-glucopyranosides [5].

The lipid composition of the roots of white bryony is typical of nonphotosynthetic plant tissues [23]. This also applies to the fatty acid composition, with a relatively high content of linolenic acid, which reaches 74–77% in the fractions of phytosterol esters and monoglycopyranosyl diglycerides [5].

The roots of bryony contain lectins. N-acetyl-galactosamine-specific lectin was isolated from the B. dioica rhizome [25].

Glucoprotein, bryodin, has been isolated from the roots of Bryonia alba, which exhibits the effect of inhibition of ribosomes [29]. The protein content of bryony leaves has been reported [3].

Found in the roots of Bryonia dioica -7-stigmastenol [21]. Amino acids N4-ethyl-L-asparagine and N4- (2-hydroxyethyl) -L-asparagine [21].

Bryonic and bryonic acids [18], glycosides bryonoside and bryoside [20] were found from the class of triterpenoids in the roots of Bryonia dioica. Brionolic acid was also found in the roots of Bryonia alba [4]. A triterpenoid, briocoumaric acid, was isolated from the roots of Bryonia dioica (Fig. 2.) [20].

Homeopathic remedies

Matrix homeopathic tincture of bryony is described in all leading foreign homeopathic pharmacopoeias. For the preparation of tinctures, two types of bryony are used: Bryonia alba L. and Bryonia cretica L. The Homeopathic Pharmacopoeias of Germany (GFG), USA (GFSS) and France (FF) currently use both plant species as raw materials (Table 2) [16, 17, 26, 32]. It should be noted that in normative documents for homeopathic medicines, the name "Bryonia" is often indicated, without specifying the type of plant. For the preparation of tinctures, all pharmacopoeias use bryony roots, however, there are differences in the type of raw materials used (dry or fresh) and the time of preparation. In Russia, homeopathic tincture of bryony white, prepared from fresh raw materials, is traditionally used.

Literature data (Table 1) and our studies [9, 10] indicate that, despite the similar chemical composition of the two species of bryony, there are differences in the composition of cucurbitacins. In addition, our research has established that homeopathic tincture of bryony white from fresh raw materials contains mainly cucurbitacin glycosides, and aglycones predominate in the tincture from dried raw materials [9, 10]. The reason for this difference is that in the process of drying the roots of bryony, partial cleavage of glycosides occurs, along with this, the different strength of the alcohol used to prepare the tinctures affects the composition of the extracted compounds. it

the circumstance, obviously, can be reflected in the pharmacological action of homeopathic preparations prepared on the basis of matrix tinctures from white and dioecious bryony, from dry and fresh raw materials.

Table 3

A drug	Breeding	Indications
Influcid	Bryonia D2	Flu
Pneumodoron	Bryonia 02 10 g in 100 g of preparation	Bronchitis, bronchopneumonia
Bronhotussitis - GF	Bryonia alba D3	Antitussive and expectorant for bronchitis
Sagrippin homeopathic	Bryonia alba D3	ARVI
Spigelon	Bryonia cretica D3	Headache
Acogrippin	Bryonia alba D3, D12	Acute respiratory diseases (ARD), influenza
Briorus-EDAS (EDAS)	Bryonia D3	Opodeldok, joint inflammation, sprains, insect bites
Violine Artrox	Bryonia alba D4	Inflammatory and degenerative diseases of the musculoskeletal system
Violine-Candida	Bryonia D4	Candidiasis
Bronhalis-Hel	Bryonia cretica D4	Expectorant for chronic bronchitis, smoker's catarrh
Girel	Bryonia cretica D4	Flu
Rusbrikar	Bryonia alba D4	Arthritis treatment

Complex homeopathic preparations based on bryony

Table 3 (continued)

A drug	Breeding	Indications
Aflubin	Bryonia D6	ARI, influenza, inflammatory, rheumatic diseases
Bronchostat	Bryonia alba D6	Acute and chronic bronchitis, cough syndrome with influenza and ARVI
Aconite-plus	Bryonia alba C3	ARI
Briacon Edas	Druppin C2	Acute diseases of the upper respiratory tract,
(EDAS-103)	Bryonia CS	parainfluenza conditions
Briapis-EDAS	Bryonia C3	ARI, adenovirus infections, bronchitis, otitis media,
(EDAS-307m)		tonsillitis
Defekol-EDAS	Bryonia C6	Constinution tractment
(EDAS-124)		
Gastropan-EDAS (EDAS-954)	Bryonia alba C6	Diseases of the gastrointestinal tract (gastritis, gastric ulcer and duodenal ulcer)
Baby Sed	Bryonia alba C12	Increased excitability, tearfulness, sleep disorders in children over 7 years old
Agri for children	Bryonia alba C30	ARI, flu



Rice. 1. The most important cucurbitacins

Bryonia is one of 26 homeopathic medicines registered in Russia [7]. Examples of complex homeopathic preparations containing dilutions of tinctures of two types of bryony are given in table. 3. For complex homeopathic medicines, combinations of certain active ingredients and several dilutions of one component can be distinguished. For example, bryony is often included in preparations accompanied by phytolacca: "Agri" (Phytolacca C200, Bryonia alba C200) - acute respiratory diseases, influenza; "Echinacea compositum CP" (Bryonia cretisa D6 and Phytolacca D6) - inflammatory diseases of the respiratory system, urinary tract, skin; or chilybuhi vomit: "Normagast" (Bryonia alba D6, D12 and Nux vomica D4, D12) - functional disorders of the gastrointestinal tract (GIT), gastroenteritis, enterocolitis;



Fig. 2. Briocoumaric acid

As you can see, bryony in combination with phytolacca is used in drugs for the treatment of acute respiratory viral infections, and the combination with chilibuha emetic is used in drugs for the treatment of diseases of the gastrointestinal tract.

In addition to complex drugs, bryony used by v simple (one-component) preparations in the form of granules (dilutions D3, C3, C6 and higher), drops (dilutions D3, C3, C6 and higher), ointments (5%), oils (5%), opodeldoc (5%) [7] ...

Bryony is considered one of the main homeopathic remedies with versatile reliable action. It is used for diseases, the main symptoms of which are violations of the secretory function of the mucous membranes, serous and synovial membranes, especially a decrease in secretion. All inflammatory processes accompanied by serous effusion, prolonged febrile conditions of all types, with irritation of the meninges, bronchitis, pneumonia, rheumatic arthritis, gastritis, hepatitis, etc. [1, 8, 18].

Conclusion

The versatile pharmacological action of bryony is due to the presence of various biologically active substances in it: cucurbitacins, lipids, lectins, proteins, triterpenoids, amino acids. Homeopathic matrix tinctures of white bryony and dioecious bryony, from dry and fresh raw materials, have a different composition of cucurbitacins.

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