

mother tincture and topical external application in the form of cream, ointment, but frequently used for contusion, wounds, rheumatism and inflammation.

Haemorrhoids are a disease resulting from circulatory disorders in the vessels of the haemorrhoidal plexuses of the lower rectum, which is accompanied by varicose veins and vein thrombosis and is often complicated by bleeding. Haemorrhoids are classified by origin as primary and secondary, by localization - as internal, external and mixed, along the course - as acute and chronic. Regardless of the characteristics of the initial status of the patient, pharmacotherapy of haemorrhoids is primarily aimed at eliminating symptoms characteristic of the acute course of the disease: bleeding from the rectum, discomfort, itching, pain and burning sensation in the anus.

Therapy consists of the use of topical and systemic agents. Topical agents on the pharmaceutical market are widely represented in the form of ointments, emulsions, rectal suppositories and solutions for the preparation of baths that contain analgesic, anti-inflammatory, thrombolytic and haemostatic components, enzymes, etc. Exclusively local therapy is not always effective, therefore it must be combined with phlebo- and lymphotropic drugs. The use of drugs in the form of suppositories is advisable in the case of internal haemorrhoids.

Homeopathic medicines for haemorrhoids are in demand because they have such advantages as: natural origin of the components; small doses of the active substance and no side effects; availability of some drugs; the manifestation of allergies is impossible, good tolerance.

The activity of the active pharmaceutical ingredient, its release from the dosage form and absorption are closely dependent on pharmaceutical factors, such as, excipients. Thanks to biopharmaceutical investigations, it was found that excipients can enhance, reduce, change the nature of the action of medicinal substances. The purpose of our investigation is the preparation of the rectal suppositories with Arnica tincture using of the different bases and emulsifiers, which are widely applied in modern technology of drugs. Suppositories were made by pouring a molten mass into molds made of polyvinyl chloride film with a mass 1.5 g. Obtained samples of suppositories have been analysed using the organoleptic, physical and chemical methods.

### **Application potential of crude drug of shrubby alder (*Duschekia fruticosa* (Rupr.) Pouzar) in Altai Krai and Republic of Altai (Russia)**

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Species of the genus *Duschekia* Opiz and shrub alder (*Duschekia fruticosa* (Rupr.) Pouzar) in particular are promising sources of polyphenolic compounds and substances with antimicrobial, anti-inflammatory, immune stimulating and diuretic effects. They are widely used in folk medicine as hemostatic, wound healing, anti-inflammatory and other agents (Budantsev & Lesiovskaja, 2001; Golovkin et al., 2001-2002). An integrated pharmacognostic study of the bark, leaves and infructescences of *D. fruticosa* showed the presence of tannins, derivatives of benzoic and hydroxycinnamic acids, coumarins, flavonoids, ellagotannins, amino acids, fatty acids, carbohydrates and trace elements. 19 substances were isolated in the individual state: derivatives of benzoic (3) and hydroxycinnamic (5) acids, and benzo- $\alpha$ -pyrone (3); flavonoids (4) and ellagotannins (4). The largest

amount of flavonoids is found in leaves and infructescences (2.14%), tannins – in infructescences (8.97%). According to the content of tannins, the bark, leaves and infructescences of *D. fruticosa* can be classified as a tannin-bearing medicinal plant raw material. Palmitic, linoleic and linolenic acids prevailed among 12 detected fatty acids. The content of fatty acids in infructescences is higher than in bark and leaves. 16 amino acids were identified, 8 of which are essential. The highest content of amino acids was found in the leaves of *D. fruticosa*. Glutamic acid is the predominant amino acid in both leaves and infructescences (Radko et al., 2001; Kulagina et al., 2004a; Kulagina et al., 2004b, 2007; Kulagina, 2006; Kulagina et al., 2010).

In Altai Krai, *D. fruticosa* is rarely found in the Northwestern and Northern Altai (Russian Altai), and on the Salair Range. Here it grows on the banks of rivers and rivulets, in damp forests, on forest edges, burned-out and felled areas, stony slopes and screes (Krasnoborov, 2003; Silantyeva, 2013). In the Republic of Altai, the species is more common and widespread in Northern and Central Altai in forests and open woodlands, on the banks of rivers and rivulets, burned-out and felled areas, along roads, on stony meadow slopes and placers (Papina, 2012). The introduction in Central Siberian Botanical Garden of SB RAS (Collection of plants of CSBG SB RAS, 2020) showed that this large shrub reaches a height of 2.6–3.1 m at 10 years old and 3.9–5.4 m at 20–30 years old. It blooms simultaneously with foliage expansion in the second half of May and bears fruit since the age of years. The shrubby alder is a winter-hardy (1), shade-tolerant and non-drought-resistant species. It is slightly affected by powdery mildew. *D. fruticosa* prefers well-drained, relatively fertile and moist soils, but tolerates poor soils. The shrubby alder is recommended for group and single plantings on the banks of water bodies. In the Republic of Komi, the species is noted as a rare in nature, but promising shrub for introduction (Martynov, 2007). It is suggested for landscaping in Siberia by industrial scales (Ignatieva & Vinkovskaya, 2018). In the cities of Magadan Oblast, it is a common shrub resistant to tailpipe pollution and dust loading (Berkutenko, 2011). Thus, despite the relatively small resources of shrubby alder in the nature of Altai Krai and the Republic of Altai, it can be successfully cultivated to obtain crude drug.

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**Фітохімічний аналіз екстрактів *Acorus Calamus***  
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Перспективною рослиною для дослідження є айр звичайний *Acorus Calamus*, коріння якого застосовується в медицині. Біологічно активні речовини кореневищ айру проявляють протизапальну, спазмолітичну, бактерицидну, фунгістичну і анальгетичну дію, впливають на смакові рецептори, підвищують апетит, покращують травлення, рефлексорно стимулюють секрецію шлункового соку. Саме тому дослідження айру звичайного є досить актуальним в наш час [3].

Мета роботи полягала в визначенні вмісту біологічно активних речовин у спиртово-водних екстрактах коріння *Acorus calamus* залежно від стану сировини. В якості сировини використовували кореневища свіжого, висушеного та придбаного в аптеці айру звичайного.