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Reduced toxicity in the roots of *Euphorbia Fischeriana* L.

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Abstract

The object of this study was the roots of *Euphorbia Fischeriana* L. On the territory of Russia, *Euphorbia Fischeriana* grows in the steppes of Transbaikalia (Chita region) and Eastern Siberia. Fisher's spurge has long and successfully been used in folk medicine, the effectiveness of its drugs is explained by the rich chemical composition: the presence of flavonoids, saponins, glycosides, selenium, ascorbates, lactones, providing bactericidal, anti-inflammatory, antitumor effects. The presence of toxicity factors – resins and euphorbon, causing severe intestinal disorders (hemorrhagic diarrhea), limits its use and is the main obstacle to creating a safe therapeutic agent. In Tibetan medicine, to "cleanse" the roots of milkweed, they used broth from goat meat, milk, or a solution of myrobalan, in which the roots of the plant were boiled. The presence of six marker components, such as antiquorin, ent-atizan-3β, 16α, 17-triol, ent-16α, 17-dihydroxyatizan-3-one, cauranic acid, jolkinolide B, jolkinolide A. Analytically, the content of diterpenes was compared before and after extraction with various extractants (goat broth and myrobalan solution). It was found that the use of goat broth as an extractant made it possible to maximize the removal of resins containing anthraglycosides and alkaloids, which have a strong irritating effect on the mucous membrane of the gastrointestinal tract. Thus, the content of antiquorin decreased from 0.49 to 0.01; ent-atisan-3β, 16α, 17-triol from 7.23 to 0.06; ent-16α, 17-dihydroxyatizan-3-one from 0.42 to 0.02; Cauranoic acid from 0.20 to 0.01; jolkinolide B from 0.41 to 0.08, jolkinolide A from 0.22 to 0.02 mg/g, respectively.

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References

[1] A.A. Budantseva. Wild useful plants of Russia. *St.-Petersburgb: Publishing house. SPHFA.* **2001**. 663p. (Russian)

[2] State Pharmacopoeia of the USSR. Issue 1. General methods of analysis. Ministry of Health of the USSR. 11th ed. add. *Moscow: Medicine.* **1987**. 336p. (Russian)

[3] State Pharmacopoeia of the USSR: Vol. 2. General methods of analysis. Medicinal herbal raw materials. Ministry of Health of the USSR. 11th ed., Add. *Moscow: Medicine.* 1989. 400p. (Russian)

[4] E.M. Krivosheeva, M.I. Serdtsev, S.T. Kokhan. Antioxidant and antihypoxic activity of *Euphorbia Fischeriana* L. extracts prepared in different ways. *Electronic Collection of Scientific Papers "Health and Education in the XXI Century"*. **2008**. Vol.10. No.12. P.507-508. (Russian)

[5] Choizhamts. "Ontsar gadon der dzod". Tibetan Medical Treatise. *Publisher: Science.* **1989**. 160p. (Russian)

[6] Plant resources of Russia: Wild flowering plants, their component composition and biological activity. In 6 volumes. Vol.2. Families Actinidiaceae – Malvaceae, Euphorbiaceae – Halorogaceae. comp. Belenovskaya L.M., Lesiovskaya E.E., Bobyleva N.S. *St.-Petersburgb: M.* **2009**. 513p. (Russian)

[7] V.V. Telyat'ev. Healing treasures of Central Siberia. *Irkutsk.* **2000**. 235p. (Russian)

[8] Sumati Prazhnya. Big recipe for Aginsky datsan. Woodcut of the Aginsky Datsan. Early XX century 151 l. *Manuscript, translation by Dashiev D.B.*

[9] D.N. Olennikov, N.I. Kashchenko, N.K. Chirikova. A novel HPLC-Assisted method for investigation of the Fe^{2+}-chelating activity of flavonoids and plant extracts. *Molecules.* **2014**. Vol.19. P.18296-18316.

[10] D.N. Olennikov, N.I. Kashchenko, N.K. Chirikova, S.S. Kuz'Mina. Phenolic profile of Potentillaanserina L. (Rosaceae) herb of Siberian origin and development of a rapid method for simultaneous determination of major phenolics in P. anserina pharmaceutical products by microcolumn RP-HPLC-UV. *Molecules.* **2015**. Vol.20. P.224-248.

[11] Tatiana V. Kornopoltseva, Aldar V. Khobrakov, Elena A. Botoeva, Yulia Yu. Shurygin. Reduced toxicity in the roots of *Euphorbia Fischeriana* L. *Butlerov Communications*. **2021**. Vol.66. No.4. P.26-29. DOI: 10.37952/ROI-jbc-01/21-66-4-26 (Russian)