

Study of the anatomical structure of raw materials *Allium cepa* (variety Stuttgart
rizen) used in homeopathy N.N.

Melnikova, T.L. Kiseleva, A.V. Safonov

(Institute of Homeopathy and Naturotherapy of the Federal Scientific Clinical and Experimental Center for
Traditional Methods of Diagnostics and Treatment of the Ministry of Health of the Russian Federation,
Moscow city)

Bulb onion (*Allium cepa* L. Family Alliaceae - Onions [10]) is a perennial bulbous plant. The bulb is oblong or flattened, with yellowish, reddish or white coats; stem up to 1 m tall, thick, fistulous, swollen below the middle; fistulous leaves; globular umbrella, dense, multi-flowered; peduncles several times longer than the perianth; perianth star-shaped, whitish-green, with oblong obtuse leaves; filaments of stamens are longer than the perianth, internal at the base obtuse-toothed. Cultivated plant [5, 9].

The onion is distributed all over the globe. It is believed that onions originate from Asia, and their primary range is determined by the central and southwestern part of Asia, which includes Fergana, the northeastern part of Iran, and Afghanistan [7].

Long-term studies of the onion as a cultivated plant have shown that the onion came to Egypt, where it was cultivated over a large area in the Nile Valley more than 4000 years BC and was used not only as a food product, but also as a remedy [7].

As a field crop, onions are widespread in the southern part of the forest, forest-steppe and steppe zones of European Russia, in the south of Siberia and the Far East. As a garden crop, it is also grown in more northern regions [9]. Crops of onions in our country occupy about 8% of the area under vegetable crops. Currently, more than 80 of its varieties have been zoned [3].

Chemical, bacteriological, and pharmacodynamic studies, begun in the 20th century and continuing to this day, have fully confirmed that onion components have high pharmacological activity. The healing factors of onions are sulfur-containing substances, phytoncides, various amino acids, saponins, vitamins and other substances, in combination with the following pharmacological actions: antiplatelet [6, 11], antioxidant [6], bactericidal, hypoglycemic [6, 11], hypocholesterolemic [11], cardiotropic [6], diuretic [11], anti-inflammatory, antitumor, tonic, fungicidal [8].

In homeopathy, onion is used in the form of a monopreparation *Allium cepa* (Sulfur) [2] and in complex homeopathic medicines Antigrippin, Homeoantigrippin, Corizalia, Rinnosenai, EDAS-117, EDAS-131, EDAS-132 and EDAS-932 [2, 4].

Onions have GOST R 51783-2001 "Fresh onions sold in retail outlets", intended for delivery

retail and catering establishments. Analysis of these documents made it possible to establish that the following requirements and standards are imposed on the quality of onions: appearance, smell, taste, bulb size, dried neck length, content of bare bulbs, with mechanical damage, sprouted, rotted, damaged by mites.

Such an important criterion for assessing the quality of medicinal plant materials as microscopic signs has not been developed by this document, i.e. this GOST cannot serve as a full-fledged normative document for onions used in homeopathy.

The aim of our study was to study the anatomical structure of *Allium cepa* bulbs (Stuttgarten rizen variety).

Microscopic examination was carried out on microscopes LOMO MBI-15U42 (Russia) with 10x eyepieces, 10x and 20x objectives; Olympus CX41 (Japan) with 19x microscope eyepieces, 20x and 40x objectives. For photography, an Olympus DIGITAL CAMERA C-3000 ZOOM camera (Japan) was used.

The studies were carried out in three independent replicates in accordance with GF XI ed., No. 1, p. 277 "Technique of microscopic and microchemical research of medicinal plant raw materials" [1].

Bulbs of the Stuttgarten rizen variety are flat-rounded or round, dense with a thin neck. Dry scales are brownish-golden, juicy - white. Bulb weight 50-90 grams.

RESULTS OF THE STUDY

EXTERNAL SCALE (FIG. 1, 2).

Dry onion scales are dried juicy scales; it is multi-layered and consists mainly of fiber. There is a large amount of calcium oxalate in the upper and lower epidermal layer: practically in every cell there are prismatic single or, less often, crystals crossed with each other.

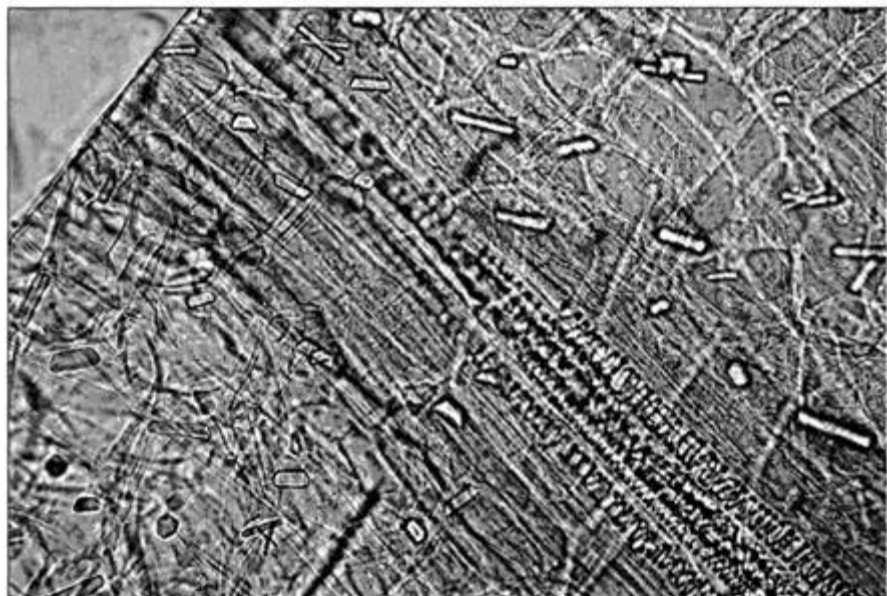


Fig. 1. Outer (dry) onion scales, Stuttgart rizen variety. Increase 200 (20x lens). Crystals of calcium oxalate and vessels are visible

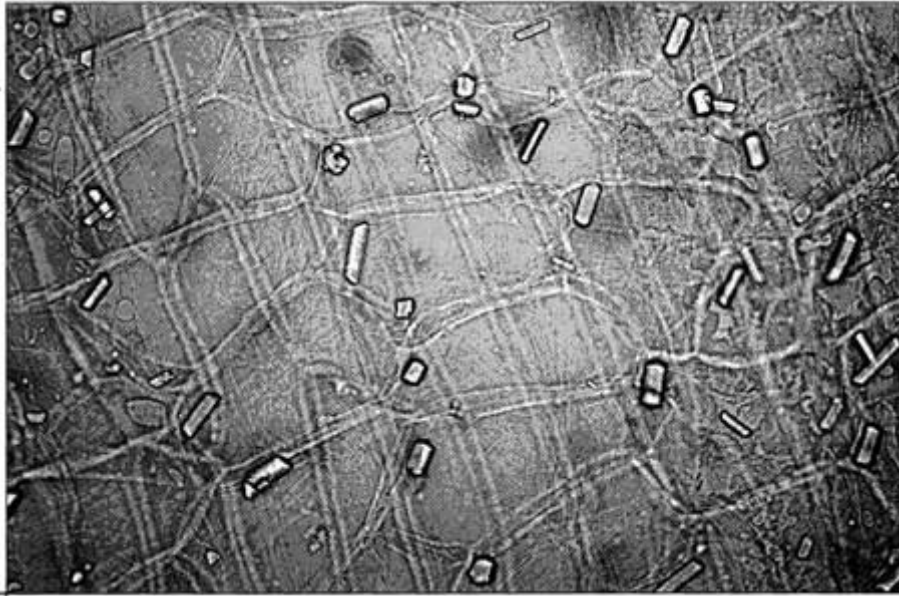


Fig. 2. Outer (dry) onion scales, Stuttgart rizen variety. Increase 200 (20x lens). Crystals of calcium oxalate are visible

UPPER EPIDERMIS (FIG. 3).

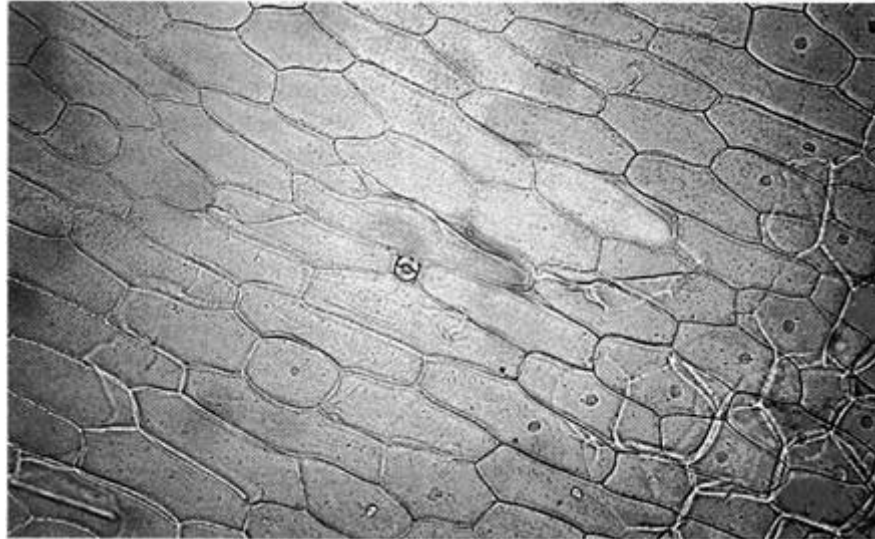
The cells of the inner (upper) epidermis are narrower than those of the outer, and their membranes are thinner. There are no stomata.



Fig. 3. Epidermis of the upper (concave) side of onion, variety Stuttgart rizen. Magnification 200 (lens 20x)

LOWER EPIDERMIS (FIG. 4).

The tissue of the epidermis consists of elongated, tightly closed cells with rare tetraepigenic stomata. The cell membrane is thicker than in the upper epidermis.

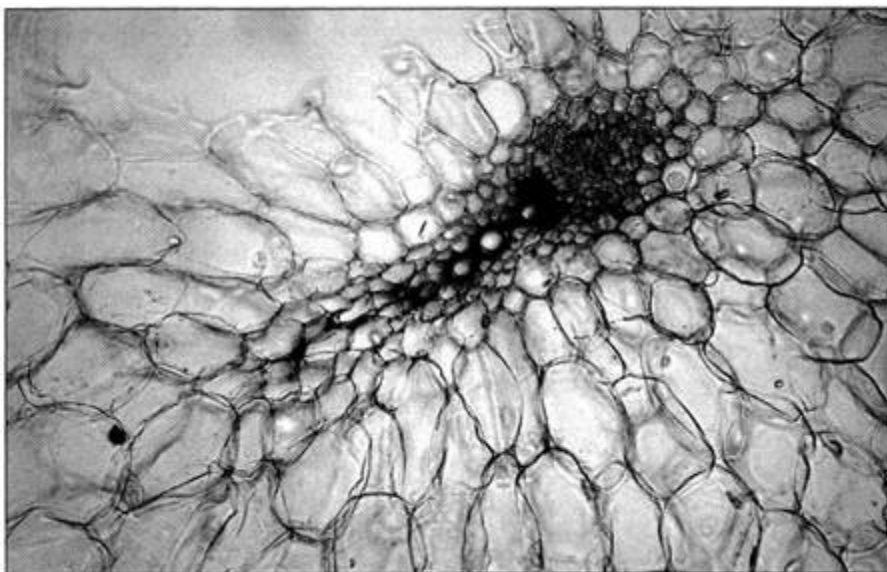


Rice. 4. Epidermis of the lower (convex) side of the onion, variety Stuttgart rizen. Magnification 200 (lens 20x). Stoma visible

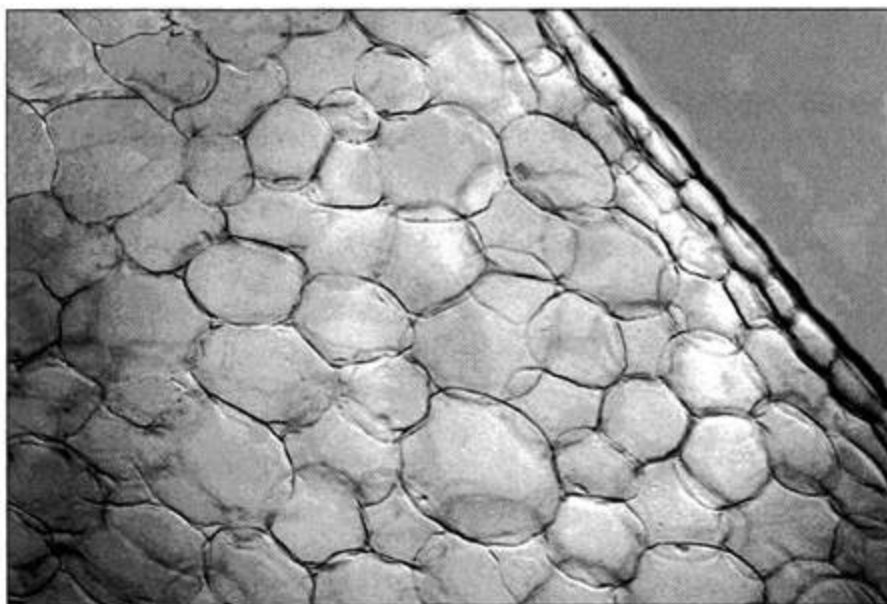
JUICE SCALE (FIG. 5 and 6).

The succulent scales are a thickened, overgrown sheath of the assimilating leaf, whose main purpose is to store reserve nutrients. Vascular bundles, which are a continuation of the vascular bundles (veins) of the leaf, form a single-row ring in the mesophyll. By their structure, the vessels are spiral and annular-spiral, collateral type, closed; they are surrounded by a parenchymal sheath. The cross section shows that the epidermis is covered with a cuticle.

The given diagnostic signs in the anatomical structure of fresh onions will allow identifying this raw material and, when developing normative documents for fresh onions used in homeopathy, include the section "Microscopy".



Rice. 5. Part of the cross-section of the succulent scales of the onion leaf, Stuptarten Riesen variety. Magnification 200 (lens 20x). The conductive beam is visible (closed, collateral).



Rice. 6. Part of the cross-section of the succulent scales of the onion leaf, Stuptarten Riesen variety. Magnification 200 (lens 20x). The cuticle of the epidermis is visible and mesophyll cells.

LITERATURE

1. State Pharmacopoeia of the USSR, 11th ed. Issue 1. M.: Medicine, 1987. -- S. 277.
2. State register of medicines. - M.: Technical book, 2002. -- 1301 p.
3. Dolgacheva V.S. Plant growing: Textbook. manual for stud. higher. study. institutions. - M.: Publishing Center "Academy", 1999. - 368 p.

4. Kiseleva T.L., Ageeva T.K., Tsvetaeva E.V. Homeopathic medicines approved for medical use on the territory of the Russian Federation. Study guide. / Edited by T.L. Kiseleva - M.: AOZT "Belee", 2000. - 538 p.

5. Nikitin A.A., Pankova I.A. Anatomical atlas of useful and some poisonous plants / L.: Nauka, 1982. -- 720-724 p.

6. Okunevich I.V., Sapronov N.S., Ryzhenkov V.E., Indenbom M.L., Kuznetsov A.S. // Chem.-pharm. magazine. - 1999. - No. 11. - WITH. 14-16.

7. Pivovarov V.F., Ershov I.I., Agafonov A.F. Onion plants. - M.: Mytishchi interdistrict printing house, 2001. - 500 p.

eight. Slepko G.I., Lobareva L.S., Mikhailenko L.Ya., Shatnyuk L.N. Biologically active components of garlic and the prospects for their use in therapeutic and prophylactic nutrition. - Nutrition issues, No. 5, 1994. - p. 28-31.

nine. Flora of the USSR / Ed. acad. V.L. Komarov. - L.: Publishing house of the Academy of Sciences of the USSR. - 1936. - Vol.5. - 759p.

10. Cherepanov S.K. Vascular Plants of Russia and Neighboring Countries (within the former USSR). Russian edition. - SPb.: Mir and family, 1995. -- 992 p.

11. Encyclopedic Dictionary of Medicinal Plants and Products animal origin. Textbook / Ed. G.P. Yakovlev and K.F. Blinova. - SPb.: Special literature, 1999. -- 407 p.

Melnikova, N.N. Study of the anatomical structure of the raw material *Allium cepa* (Stuttgarten rizen variety) used in homeopathy / N.N. Melnikova, T.L. Kiseleva, A.V. Safonov // Traditional medicine. - 2003. - No. 1 (1). - S.11-14.

[To favorites](#)