of the solution confirmed its highly quality (no changes in transparency, authenticity, or quantitative composition). The principal factors of the solution are given in Table 1.

A differential spectroscopic method [6] was used for the quantitative determination of (1) in the pharmaceutical formulation. The drug has the following UV spectral absorptions (SF-16 spectrophotometer, 10 mm cell): $\lambda_{\text{max}}$ (H$_2$O) 216.281 (lg c 4.43; 4.23). Aqueous solutions comply with the Lambert–Bouguer–Beer law over the range 4-40 $\mu$g/ml.

The optimum conditions for the determination of (1) in the pharmaceutical formulation were established using analytical simplex-planning of the experiment [7]. The optimization parameter chosen was the accuracy of analysis. The following results were obtained: $\lambda = 281 \pm 2$ nm, concentration of comparison solution $X_1 = 10 \mu$g/ml; concentration of solution to be analyzed $X_2 = 22 \mu$g/ml; inverse angular coefficient of the concentration gradient $K = 21.05$. The relative accuracy of the determination (%) was $e_{0.95} = 0.95$.

**LITERATURE CITED**

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**OXYCLODEX, A NEW HEMOSTATIC PREPARATION**

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Oxycelodex (registration No. 76/506/8) is a hemostatic paste for local application which is resorbed into the tissues.

The constituent responsible for the hemostatic effect is cellulose, oxidized by oxides of nitrogen [1]. This material, which is known in medicine as 'hemostatic gauze' and 'hemostatic viscose,' has a hemostatic effect, and is slowly taken up into the tissues. According to studies carried out in the A. V. Vishnevskii Institute of Surgery by Prof. T. M. Daurova, the mechanism of the hemostatic effect of oxidized cellulose is by erythrocyte coagulation, and the material is therefore effective in a variety of disturbances of the blood coagulatory system [4].

It was of interest to obtain new pharmaceutical formulations of oxidized cellulose in the form of pastes, ointments, and aerosols which, possessing these properties, could find application in a number of specific situations such as skin transplantation and the filling of dental cavities. For this purpose, attempts were made to obtain pulverulent oxidized cellulose, followed by various pharmaceutical formulations based thereon.

In developing the technology of preparation of pulverulent oxidized cellulose, the necessity was borne in mind of preparing material with a degree of subdivision such that the material would not be washed away by the blood flow, and would ensure the homogeneity of the product. In conjunction with colleagues at the Khar'kov Scientific-Research Institute for General And Emergency Surgery (A. A. Shalimov, M. I. Shrago, and A. A. Shinkarenko [5, 6]),
we have tested powders of different granular compositions. The results showed that the following composition was optimal: 46-58% of particles of 100-200 μm and 42-54% of particles of less than 100 μm.

It is well known that the grinding of fibrous material to a fine powder presents difficulties, and each case requires the development of special technology. We tested grinding machines of various types (ball mill, colloid mill, roller mill, etc.), and various combinations of these. It was found that the required degree of subdivision could be obtained by a two-stage process, viz., a roller mill followed by grinding in a ball mill. The powdered oxidized cellulose was standardized (VFS 42-483-75), and approved by the Ministry of Health of the USSR for use in medical practice.

Pastes were prepared with a 20% aqueous solution of dextran, which in consequence of its consistency gave a paste of the required viscosity. The solution was obtained by slow addition of dry dextran of molecular mass 40,000-70,000 to water for injection.

Thus, oxycelodex [7] consists of two components, viz., oxidized cellulose powder and a 20% aqueous solution of dextran (VFS 42-492-75), which are distributed in separate flasks in a single pack. The contents of each pack are sterile, maintenance of sterility being ensured by hermetic sealing of the flasks. The paste is prepared ex tempore, the dextran solution being transferred by means of a syringe into the flask containing the oxidized cellulose powder, followed by vigorous shaking for several minutes until a pasty mass is formed, which is administered using a special syringe, or applied with a spatula to the bleeding surface.

Oxycelodex was clinically tested in the Khar'kov Scientific-Research Institute for General and Emergency Surgery, the Department of General Surgery of the LGSMI, the Central Scientific-Research Institute for Stomatology, the surgical clinic of the Patris Lumumba People's Friendship University, the Scientific-Research Institute of Clinical and Experimental Surgery of the Ministry of Health of the USSR, the A. V. Vishnevskii Institute of Surgery, the Department of Operative Surgery of the Voronezh Medical Institute, and the hospital surgery clinic of the Vinnitsa Medical Institute. The drug was used in more than 120 patients.

Indications for the use of oxycelodex are hemorrhage from small blood vessels occurring after percutaneous directed liver and kidney biopsies, percutaneous transhepatic hepatocolangiography, and in various interventions in the organs of the hepatopancreatic system. The drug has been used in the Central Scientific-Research Institute for Stomatology for the stasis of hemorrhage after tooth extraction, particularly in patients with disturbances of the hemogogulatory system. The clinical trials showed that introduction of oxycelodex into the puncture cavity reliably stopped it, causing cessation of blood flow from the small blood vessels. A plug of oxycelodex in the cavity, or a film on the surface of the organ, was completely resorbed after 1-2/weeks, and had no effect on the time required for the healing of the wound. At the end of the second week scarcely any of the material was visible in the region of the wound. Healing of the wound proceeded without complications, no tissue irritation or allergic reactions of either a local or general nature being observed. In all cases, a pronounced hemostatic effect was obtained, including those with disturbances of the hemorrhagulatory system.

As a result of the clinical trials, the drug was recommended for the stasis of hemorrhage from the small blood vessels during percutaneous puncture biopsies of the liver, and percutaneous transhepatic hepatocangiography. Oxycelodex can also be used for the stasis of hemorrhage in donors and recipients of skin transplants, and in tooth extraction and small everyday traumas.

Industrial output of the drug is currently being organized on the basis of the technology which we have developed.

LITERATURE CITED