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METHODS

Adaptation of an ML-2 Microscope to *In Vivo* Experimental Studies of the Peripheral Circulation

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Russian industry has no experience in manufacturing special optic microscopes for *in vivo* studies on the laboratory animals. We modified an ML-2 microscope in order to solve some problems arising during studies of the peripheral circulation. The basic scheme of technical modification is presented in Fig. 1.

The microscope body is raised few centimeters with the aid of a metal plug (1). Taking into account peculiarities of illumination of the bioplate (the skeletal muscles or the intestinal

mesentery), a condenser (2) is made of two hollow metal cylinders. During focusing, the inner cylinder can be manually moved up and down by rotation-translation movement along the helical slot in the outer cylinder and fixed in a definite position with the stop screw (3). A demountable metal housing (4) with the condenser optic unit is placed in the inner cylinder. The outer cylinder is inserted in the metal flange (5), fitted with three centered screws and fastened firmly to the microscope base. A metal housing with collector lens is stationary mounted on the flange. For light flux dosage an iris (6) with graduated aperture-setting limb is attached to the illuminator taken from an MBI-15 mi-

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croscope. During TV biomicroscopy with the aid of special measuring equipment, the incandescent lamp (12 V, 100 Wt) of the illuminator runs off a stabilized power supply made of two B5-46 sources of a direct current. The optic part of an MFN-10 photomicro adapter (7) works as the eyepiece of ML-2. The absence of extra optics between the microscope nosepiece and photoocular, along with the possibility of switching over the image to either the visual monitoring ocular or to the photoocular, allows to maximally use the advantages of long-focus objectives and wideangle oculars (Leitz, Germany) and to minimize optic distortions and losses of light in MFN-10. The adapter tube (8) for TV camera attachment (9) is made of two hollow metal cylinders. The outer cylinder is fastened to the regular socket of MFN-10 with the stop screw (10), and the inner one can be moved up and down and fixed in a definite position with the stop screw (11). Both cylinders can rotate independently around the common axis. The inner cylinder in its upper part has a threaded flange (12) for TV camera attachment. Such a tube provides for alignment of the "microscope - TV camera" system and for rotation of the TV image through 360° in all directions. In order to work with micromanipulators (Leitz, Germany), a demountable metal bracket (13) was placed under the microscope stage instead of a regular bracket. The bracket has two demountable lateral bars (14) for attachment and fixation both the right and the left micromanipulator. The latter is attached and fixed in a definite position with additional brackets (15) having two degrees of freedom.

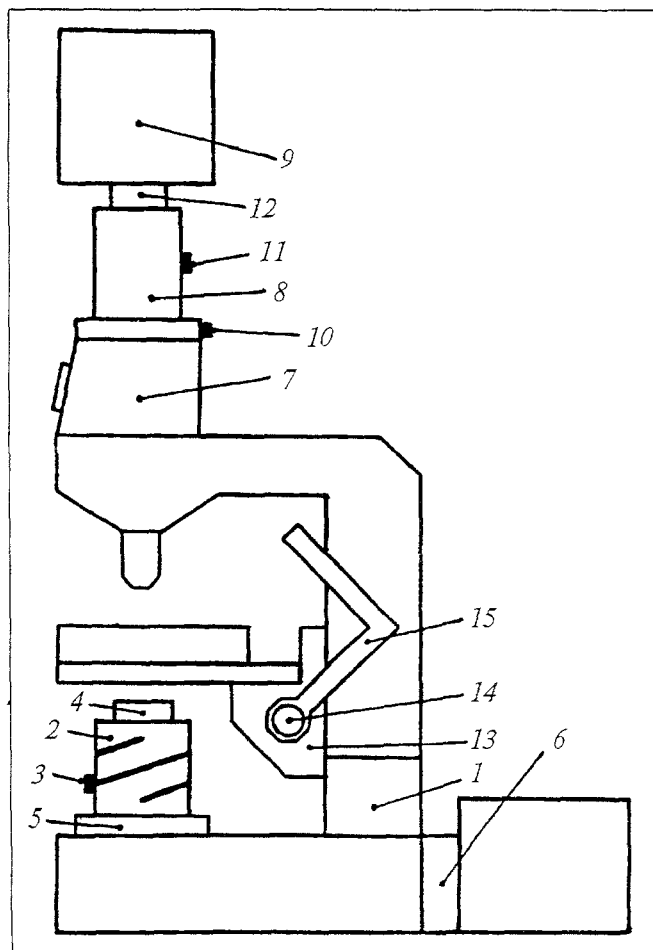


Fig. 1. Schematic of technical modifications of ML-2 microscope.

Such a modification of ML-2 microscope was used by us in *in vivo* experiments over 3 years and is rather convenient for studies on small laboratory animals.