MODERN METHODS OF MICROSCOPIC PLANT ANALISIS

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The method of light microscopy is the most widely and traditionally used when examining plant objects and in pharmacognostic analysis of medicinal raw materials. Among new promising methods reflecting the microstructure of plants we should notice a method of scanning electron microscopy. Modern scanning electron microscopy allows a wide magnification range which is from 10 fold to 1000000 fold, that is approximately 500 times faster than the best optical microscopes. Applying this method a thin electron bunch of a scanning microscope runs on the surface of a specially fixed and dried plant object coated with a thin layer of metal which is usually gold. The received information is being sent to a cathode ray tube, creating an almost three-dimensional image of examining surface. Among the advantages of scanning microscopy is a large resolving power and depth of definition, the relative ease in the resulting images describing and comparing; the ability to connect additional devices, relatively low requirements for the preparation of plant object.

The method of scanning electron microscopy provides a more complete and reliable information when examining the microstructure, first of all a primary epithelial tissue – the epiderm, which diagnostic features of the structure are widely used in pharmacognostic analysis; in practical and theoretical anatomy of plants, in palynological analysis .

Using scanning electron microscopy we can also provide information about the chemical composition of cells. For example, the method of X-ray microanalysis allows to identify and quantify the content of chemical elements from the spectra arises of X-ray emission. In this case the objects under study should not be covered with a layer of metal.

To method which deserves the attention of research plants and herbal raw materials should be noticed the fluorescent microscopy which allows not only to determine the biologically active substances and their localization in cells and tissues of plants but also identify the physiological state of the algae, as their cells which differ in their physiological state give different color shades and brightness of the glow.

This method gives us the chance of carrying out rather fast and exact assessment of degree of viability of seaweed cultivated by biotechnological methods, including spirulina, widely used as biologically active food supplements.