APPLICATION OF SPECTRAL METHODS TO COMMENTS AND PROOF OF PRODUCT QUALITY POWER AND MEDICAMENT

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Global problems and environmental deterioration is partly as a result, the epidemiological situation in the world and in particular in Ukraine.

Currently, there are several methods of research of natural water content: atomic emission, atomic absorption and spectroscopic. The latter is the most expressive and accurate.

The purpose of research - to conduct a study based on the integrated application of spectroscopic and chemical methods. Its essence lies in the analysis of contaminants in natural waters, carried out by studying their absorption spectra and luminescence, followed by comparing the results obtained with the reference spectra or the results of chemical analysis. Reference spectrum - a spectrum of individual substances, taken in a certain amount and dissolved in water. Such research is important and promising, and may have practical applications.

Materials and methods of research. Spectral methods were used: the study of the absorption spectra in wide spectral range (including UV region near UV), luminescence spectra using time division techniques. Luminescence excited by laser radiation YLHY-501 (excitation wavelength = 337.1 nm □zb) and xenon lamp radiation DKeEl-1000 (excitation wavelength range 300 - 650 nm), which laid out a range with a double prism monochromator DCC - 4. Spectrometer DFS - 12 (inverse linear dispersion 10 Å / mm) was used to record spectra of luminescence.

Results. For absorption spectra of natural waters most informative on the presence of impurities in the water are the 200-350 nm region 1 (near UV). It is in this area absorb these most common compounds in natural waters like nitrates, nitrites, chromates, sulphates, phenol, ammonium chloride (most of these compounds are toxic). The most prominent peak at 48,000 cm-1 (Figure 1). The presence of this peak is explained by the presence in the studied waters of nitrites and nitrates.

Taking into account the presence of natural substances in the waters advisable not only to distinguish them from the impurity of human nature, but quantitatively determine their composition.

One of the most harmful to human health anthropogenic admixture is phenol. Phenol unlike many other impurities must luminescence spectrum with a peak at 370 nm. Therefore, its presence in water is most easily detected.

The problem of quality testing products and drugs can also be solved by using spectroscopic methods. This is especially true for those substances (which are part of these products and drugs) that have biological and fotohimichnou effect on the human body.

On the other hand, we have shown that adenosine is part of the complexes formed in DNA under irradiation is the most stable photochemically centers pas which localized electronic excitations. Despite the existence of a mechanism of self-DNA negative impacts are substances (food dyes and colorings medical probes) that are phototoxic effect this macromolecule. We have shown that the introduction of a certain amount of the dye solution DNA dye luminescence intensity increases 10 times. At the same time, irradiation systems DNA + dye in the visible region of the spectrum where the dye absorbs 23000-16000 cm-1 absorbance value of the absorption band of DNA 38500 cm-1 decreases. This is a manifestation of phototoxic effect of dyes for DNA, which allows them to offer the use of photodynamic therapy. This currently dye can be used for fluorescent detection of DNA.

Conclutions

The results suggest that, due to the spectral properties of the investigated inorganic salts, organic impurities and man-soluble organic dyes becomes possible spectral detection of food and medicines to the presence in them of these harmful to human health. But to further address these vital issues requires a corresponding spectral modern equipment. To measure the absorption spectra need a device that measures the dependence of the optical density of the sample in the wavelength range of 200-800 nm (50000-2500 cm-1) and by reference spectra could analyze the absorption bands of the samples. To measure the luminescence spectra desired

instrument that measures the intensity of luminescence in the wavelength range of 300-1200 nm (33000-8300 cm-1) with the equipment for a time separation spectra (fluorescence / phosphorescence) and to record the temperature control of samples in a wide temperature range (from 4.2 K - the temperature of liquid helium to room temperature).