

## Annotation

The total volume of water in the body averages 63.3% of human mass, the volume occupied by water in the extracellular space (interstitial water and blood plasma) is 24.9%. The volume occupied by the intracellular tissue is approximately 38.4%. Significant changes in water (about 10%) can lead to an increased risk of mortality, and the loss of even 2% of body water leads to a significant decrease in brain activity, thermoregulation, the normal levels of water variation are 0.2%. The level of hydration determines the concentration of cellular components, which affects cell metabolism, cellular structure and intercellular metabolism of useful substances.

A disproportionate distribution of lipids in the skin also plays an important role in the development of certain metabolic disorders and can lead to a number of diseases and death. In particular, the presence of excess fat in the upper body, most often observed in men, is closely associated with diabetes and hypertension.

At present, it is impossible to specify a universal method for the quantitative determination of the content of water and lipids in the skin, which would allow to determine the water and lipids content in a certain type of tissue, organ or the whole body, which would combine simplicity and accuracy of measurements. The most promising is the use of optical methods. In particular, the measurement of water and lipids in the skin can be realized using diffuse reflectance spectroscopy. Moreover, potentially determining the distribution profile of water and lipids in the depth of the skin. Nevertheless, there are a number of unresolved issues regarding the interpretation of the reflection spectra of the skin in the near-IR spectral region, which require fundamental research.

This paper is devoted to the study of the possibility of analyzing the distribution of water and lipids in the skin in vivo using the methods of optical spectroscopy of the visible and near IR range - diffuse reflectance spectroscopy.