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Application of the fluorescent fiber sensor for tumor cells quantification

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Abstract

In order to effectively treat or destroy tumor cells we should first detect and localize them. The paper presents a specially designed and constructed fluorescent fiber sensor of a very small size, meant for detecting live tumor cells. The sensor was used to measure the luminescent signal's intensity coming from optically excited cells stained with propidium iodide. The intensity of the luminescent signal is proportional to the amount of pathologically changed cells. The obtained results confirm that it is possible to conduct definite and respectable measurements of luminescent signal's intensity by means of the sensor, and at the same time these results allow us to identify tumor cells. The constructed sensor can be applied to the examination of tumor cells grown in vitro or taken from a living organism and examined in laboratory conditions. Because of the small size of the fiber probe it is also possible to use the sensor for detecting tumor cells inside the human body.