

Nanomedical Technology in Personalized Cancer Medicine

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In vivo understanding of target molecules via molecular imaging with nanoprobe is crucial to assess indication of targeted drug and to monitor its efficacy in patients, which are the key factors in planning personalized cancer therapies. In the smart contrast agent, target contents is the cornerstone to cataloguing patient subgroups and evaluating targeted anticancer drug efficacy as well as its resistance. Further, the ultrasensitivity from high crystallized monodivert metal oxide nanoparticle enables us to image very small sized tumor via MRI. On the other hand, *in vitro* measurement of target contents has a critical role to optimize personalized cancer medicine. These contents promise various nanoplatfroms and nanodevices to translate precise and sensitive nanobiosensor into personalized clinical settings. Thus it is necessary to develop *in vivo* and *in vitro* diagnostic tools to measure multiple targets and/or signaling pathways of cancer toward personalized medicine.

Short Chain Fatty Acids as Markers of Physiological State of the Body

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Modern viewson the functioning ofthe human intestinalmicrofloracantake itto an independentbodywith its ownfeatures that have a significantimpact on themaintenance of homeostasisof the body. In recent years special attention is paid to investigation of such metabolites intestinal microflora, as well as short chain fatty acids that are produced from heteropolysaccharides anaerobic bacteria. Each acid has a physiological effect on the body: ethanoicacid - participates in the supply of substrates lipogenesis and energy supply of the epithelium, and also exerts an antimicrobial effect, regulates the pH level, the motor and secretory activity of the bowel; propionic acid - regulates microcirculation in the mucosa and supports trophic processes, participates in gluconeogenesis, blocks the adhesion of pathogens to the epithelium; butanoicacid is the main factor in the regulation of proliferation and differentiation of the epithelium of the colon, which is the reason of its antitumor activity. The qualitative composition of short-chain fatty acids and their quantitative ratio can be a reliable criterion, pointing to the well-being of bowel.

Mogilev State A.A. Kuleshov UniversitywithMogilevRegional Cancer Centeras one of the promising directions of research carried out work on the definition of short-chain fatty acids in human serum in norm and in pathology.

Developed a method of qualitative and quantitative determination of short-chain fatty acids by capillary gas-liquid chromatography, which allows to carry out qualitative and quantitative definition of acids in the blood serum with a high degree of sensitivity and accuracy. Further studies are on the path of accumulation of statistical data on the concentration of acids in the blood serum of healthy people and people with some malignant tumors of the gastrointestinal tract.