Regulação do pH intracelular : estratégia anticâncer

Cellular pH regulators: potentially promising molecular targets for cancer chemotherapy.


Source

Department of Molecular Biology, University of Occupational and Environmental Health, School of medicine, Fukuoka 807-8555, Japan.

Abstract

One of the major obstacles to the successful treatment of cancer is the complex biology of solid tumour development. Although regulation of intracellular pH has been shown to be critically important for many cellular functions, pH regulation has not been fully investigated in the field of cancer. It has, however, been shown that cellular pH is crucial for biological functions such as cell proliferation, invasion and metastasis, drug resistance and apoptosis. Hypoxic conditions are often observed during the development of solid tumours and lead to intracellular and extracellular acidosis. Cellular acidosis has been shown to be a trigger in the early phase of apoptosis and leads to activation of endonucleases inducing DNA fragmentation. To avoid intracellular acidification under such conditions, pH regulators are thought to be up-regulated in tumour cells. Four major types of pH regulator have been identified: the proton pump, the sodium-proton exchanger family (NHE), the bicarbonate transporter family (BCT) and the monocarboxylate transporter family (MCT). Here, we describe the structure and function of pH regulators expressed in tumour tissue. Understanding pH regulation in tumour cells may provide new ways of inducing tumour-specific apoptosis, thus aiding cancer chemotherapy.

PMID:

14585264