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# To assessing the functional and metabolic states of nerve cells (a new approach)

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## Abstract

At the cellular level, the functional shifts are obviously accompanied by the metabolic shifts that relate to neurons vital functions (activity), with a bad or good FS induced respectively by a bad or good metabolic (vital) state (Murik, 2003). Besides, it is not clear how to distinguish a good metabolic (vital) and FS of a nerve cell from a bad metabolic (vital) and FS of it. According to our approach, the level of polarization of nerve cells (i.e. resting potential) is an integral indicator of the metabolic (vital) and FS of nerve tissue cells. This approach implies that the most suitable electrophysiological macroelectrode method for assessing the metabolic (vital) and FS of nerve tissue of the human brain is a simultaneous recording of the EEG and direct current (DC) potential (Murik, 2004; Murik, Shapkin 2004). Many investigators consider the DC potential as neuronal origin that reflects membrane polarization and EEG as an indicator of neural activity. When taken in combination, these two parameters (DC potential and EEG) can be a basis for the precise differentiation between various metabolic and FS of the nerve tissue cells. Our previous animal experiments (Murik, Shapkin 2004; Murik, 2008) showed that the bad metabolic and FS of the depolarising excitation type emerged in the nervous tissue of neocortex during relatively mild ischemia and the negative emotional excitement in the development of fear motivation. Recent human experiments evidenced that this kind of metabolic and FS there is during hyperventilation probe (frequent deep one-minute long breathing) in the neocortex too.

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