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TUNING OF THE 'COUGH CENTER' BY INPUTS FROM THE LUNGS

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When we are considering tuning the „cough center"(CC) by inputs from the lungs it is necessary to realize some essential facts: 1) all types of afferent nerve fibers may send information to the CC from all structures in the airways and lungs; 2) there are dynamic changes of airway and lung nerve endings discharge related to breathing movements, and to other physiological and pathological changes in the airway and lung tissues; 3) environmental influences and inherent properties of the afferent limb of the cough reflex (CR) arc are important factors which may modify their complex influence on the CC; 4) CR is not active in healthy persons but they can cough voluntarily; 5) the central integration of activities from airway and lung afferents is poorly understood; 6) the nucleus tractus solitarius (NTS) is strategic site for modifying cough through short-term or long term plasticity (1). It is also likely that there are similar mechanisms in the regulation of pain and cough. The concept of tuning the CC is based on supposition that inputs from airway and lungs to CC can be stimulatory or inhibitory by its nature. We suppose that this influence may be very complex. The stimulatory signal can be conveyed by primary cough inhibitory afferents resulting in suppression of cough. If the stimulatory signal is conveyed by cough excitatory afferents the result will be exaggeration of cough. The input to CC can be primary inhibitory, too, and it can lead to inhibition of cough inhibitory pathways resulting in exeggeration of cough. Oposit result can be suppossed when the input is primary inhibitory and will suppress cough excitatory pathways.