

GABA-ERGIC INHIBITION OF COUGH IN THE NUCLEUS OF SOLITARY TRACT IN CATS

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The nucleus of the solitary tract (NTS) comprises the second-order neurons, which are the first synaptic target for the primary cough-related sensory input. In our experiments, GABA-ergic agents were microinjected into the rostral (rNTS) and caudal solitary tract nucleus (cNTS) in cats.

Bilateral microinjections of GABA, baclofen, and unilateral microinjections of muscimol in the rNTS reduced cough number, and cough expiratory effort, and prolonged the duration of the cough inspiratory phase. GABA and muscimol microinjections decreased the amplitudes of cough inspiratory effort. Microinjections of GABA into the cNTS suppressed cough number.

Bilateral microinjections of bicuculline in the rNTS reduced the number of coughs, inspiratory and expiratory cough efforts, and prolonged the duration of the cough expiratory phase and the total cough cycle duration. Saclofen reduced only cough expiratory efforts. Bilateral microinjection of bicuculline in the cNTS reduced number of coughs and amplitudes of cough expiratory efforts and elongated duration of cough expiratory phase and total cough duration.

Our results indicate that neurons in NTS participate in the regulation of cough excitability and spatiotemporal characteristics of the cough motor pattern via GABA-ergic mechanisms.

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