Substance P depresses bioelectrical responses evoked in the nucleus tractus solitarii: Interaction with ?-aminobutyric acid-ergic neurons

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The effects of intracerebroventricular (i.c.v.) administration of substance P (SP) and ?-aminobutyric acid (GABA) on responses evoked in the nucleus tractus solitarii (NTS) by electrical stimulation of the ipsilateral sinusal nerve were studied in ?-chloralose-anesthetized rats. Both SP (0.01-10 ?g) and GABA (100 ?g) significantly depressed the presumably C-fiber mediated, late negative wave of the response. The effects were almost completely prevented by bicuculline (10 ?g i.c.v.). It is concluded that i.c.v. administered SP induces dose-dependent depression of baro- and/or chemosensory transmission in the NTS, via a mechanism involving interactions with GABAergic neurons of the NTS.