Medullary responses to chemoreceptor activation are inhibited by locus coeruleus and nucleus raphe magnus

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The effect of electrical and L-glutamate stimulation of the nucleus locus coeruleus (LC) and nucleus raphe magnus (NRM) on multiunit activity evoked in the nucleus tractus solitarius (NTS) by activation of arterial chemoreceptors (15?25 ?g kg-1 of sodium cyanoborohydride, i.v.) was studied in rats anaesthetized with urethane (1.1 g kg-1 i.p.). Multiunit discharge of NTS neurones in response to cyanide injection was composed by spikes higher than 200 ?V and about 10 Hz frequency. Electrical and L-glutamate stimulation of the LC and the NRM significantly reduced the frequency of the cyanide-induced multiunit discharge. The results show that neurones of the NTS with input from arterial chemoreceptors can be inhibited by LC and NRM cells, suggesting that these nuclei play a role in controlling chemosensory input at the NTS.