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Effects of granisetron and vagotomy on c-fos mRNA expression in the rat medulla oblongata as assessed by *in situ* hybridization

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ABSTRACT

Cancer chemotherapy-induced nausea and vomiting have been demonstrated to involve humoral as well as neuronal mechanisms. A leading role of serotonin (5-hydroxytryptamine, 5-HT) in these mechanisms is supported by inhibition of the emesis by 5-HT₃ receptor antagonists. We compared the effects of granisetron, a selective 5-HT₃ receptor antagonist, and vagotomy on c-fos mRNA expression in the nucleus of the solitary tract (NTS) and the area postrema (AP) of the rat caudal brainstem by means of *in situ* hybridization. The expression of c-fos mRNA in the NTS and AP was significantly elevated 2 h after cisplatin administration. The induction of c-fos expression by cisplatin in the NTS was significantly inhibited by pretreatment with granisetron. In contrast, the c-fos expression in the AP did not differ between the cisplatin group and the granisetron-treated cisplatin group. The degree of the induction of c-fos mRNA expression in both the AP and NTS was similar between the vagotomy and sham operation groups. Our results suggest that the expression of c-fos mRNA in the NTS may be specifically controlled by 5-HT₃ receptors and that nonspecific humoral factors, such as modulation of transcriptional activity, play an important role in c-fos expression in the AP after vagotomy.

[PDF (283K)] [References]

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