

Effects of a hydrogen sulfide donor on spontaneous contractile activity of rat stomach and jejunum

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Abstract

We studied the effect of sodium hydrosulfite (NaHS), a donor of hydrogen sulfide (H₂S), on spontaneous contractive activity of isolated preparations of rat stomach and jejunum under isometric conditions. NaHS in concentrations of 10-200 μM reduced the amplitude, tonic tension, and frequency of contractions of the preparations. Blockade of K⁺ channels with a non-specific antagonist tetraethylammonium (10 mM) increased contraction amplitude in the stomach strip and jejunum segment. The effects of NaHS on all parameters of contractile activity of the stomach and jejunum were fully preserved against the background of tetraethylammonium application. These data suggest that H₂S in physiologically relevant concentrations inhibited spontaneous contractile activity of smooth muscle cells in rat stomach and jejunum by reducing the amplitude and frequency of contractions and decreased tonic tension without affecting the function of voltage- and calcium-dependent K⁺ channels. © 2014 Springer Science+Business Media.

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Keywords

hydrogen sulfide, jejunum, potassium channels, smooth muscle cells, stomach