

Comparison of the antidiarrheal effects of wood creosote and loperamide in the rat jejunum and colon *in vitro*

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In vitro のラット空腸および結腸における木クレオソートおよびロペラミドの止瀉効果の比較

[Abstract]

Wood creosote, a mixture of guaiacol, creosol and related compounds, has long been used as an antidiarrheal agent. The goal of our study was to investigate the antisecretory effect of wood creosote and to compare it to the effect of loperamide, a synthetic opioid widely used in the treatment of diarrhea. Experiments were performed in rat jejunal and colonic mucosal sheets, mounted in modified Ussing chambers. Active electrogenic transport was monitored electrically as short circuit current (I_{sc}) and hypersecretory responses were induced by acetylcholine (ACh). Neither loperamide nor wood creosote had any significant effect on basal I_{sc} , when added to the serosal bathing solution at concentrations of 0.1-50 $\mu\text{g}/\text{ml}$. In contrast, under hypersecretory conditions, both agents showed concentration-dependent (0.1-100 $\mu\text{g}/\text{ml}$) antisecretory effects inhibiting ACh-induced responses in the jejunum and colon. However, the effects suggest regional differences, with loperamide being most potent in the jejunum, while wood creosote showed equal potency in both jejunum and colon. Based upon these *in vitro* findings, we conclude that like loperamide, the antidiarrheal action of wood creosote is due, at least in part, to its antisecretory activity.