Suppression of intestinal smooth muscle contraction by 4-ethylguaiacol, a constituent of wood creosote

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＜和文タイトル＞

木クレオソートの成分 4-エチルグアヤコールによる腸の平滑筋収縮の抑制

[Abstract]

Wood creosote, a mixture of phenolic compounds, suppresses *in vitro* contractions of rat intestine. To identify a compound in wood creosote able to inhibit intestinal motility, we screened its constituent phenolic compounds and found 4-ethylguaiacol (4-EG) as an active compound. It suppressed the spontaneous phasic (IC_{50} = 513 ± 48 μmol/l) as well as spasmogenic-agent-induced tonic longitudinal contractions of isolated rat ileum in a reversible and concentration-dependent manner. KCl-depolarization-induced tonic contraction, which was susceptible to a calcium channel blocking agent, was also suppressed by 4-EG with an IC_{50} of 433 ± 41 μmol/l. Furthermore, calcium-ionophore-induced contraction, which was affected by an influx of extracellular calcium ion that bypassed calcium channels, was suppressed by 4-EG with an IC_{50} of 97 ± 18 μmol/l. These results support the concept that the effect of wood creosote to suppress intestinal motility is attributable, partially or entirely, to its component 4-EG and that this effect of 4-EG on the intestinal muscle is produced at some stage(s) of the muscle contraction process after influx of extracellular calcium into the cytosol of smooth muscle.