Effects of Pollen-Extract Components, Diamines and Derivatives of Feruloylputrescine on Isolated Bladder and Urethral Smooth Muscles of Mice.

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The contracting or inhibitory effects of pollen-extract components, diamines and derivatives of feruloylputrescine (FP) were investigated on the isolated bladder or urethral smooth muscles of mice. Among the nine diamines (NH2.(CH2)n.NH2, n = 2-10) tested, five of them with shorter carbon chains (n = 2-6) (0.1-30.0 mM) only slightly contracted the bladder strips and to some extent inhibited the noradrenaline (NA, 1.77 microM)-induced contraction of urethral strips. 1,5-Diaminopentane (C5), a component of the pollen-extract, inhibited most effectively the NA-induced contraction of urethral strips with an IC50 value of 2.3 mM (95% confidence limit: 2.0-2.6 mM). FP, also a component of the pollen-extract, inhibited the NA-induced contraction of urethral strips in a non-competitive manner, producing 32.5 +/- 5.5% (N = 5) inhibition at 378 microM. Among the derivatives of FP, feruloylcadaverine inhibited urethral contraction most potently, producing 46.3 +/- 7.1% (N = 5) inhibition at 359 microM. These derivatives had no effect on bladder contraction. In contrast, four diamines with longer carbon chains (n = 7-10) contracted the bladder strips (3-30 mM) and potentiated the NA-induced contraction of urethral strips (10 microM-3 mM). Thus, the components of the pollen-extract, FP and C5, potently inhibited urethral contraction, which may facilitate the discharge of urine in vivo.

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