The effect of Ca\(^{2+}\)-activated chloride channel modulators on rat uterine smooth muscle contractility

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1. We tested the effects of two Ca\(^{2+}\)-activated chloride channel (Cl\(_{Ca}\)) blockers, niflumic acid (NFA) and anthracene-9-carboxylic acid (A9C), and two large conductance Ca\(^{2+}\)-activated potassium channel (BK\(_{Ca}\)) openers, isopimaric acid (IPA) and NS1619 on rat uterine contraction \textit{in vitro}.

2. In some experiments chloride salts in the physiological salt solution (PSS) were replaced by gluconates.

3. A9C caused contractions in naive tissue in standard PSS. NFA and A9C inhibited oxytocin-induced contractions in chloride-replaced PSS with \(pIC_{50}\) values of 5.6 (\(n = 1\)) and 6.1 \(\pm\) 0.3 (\(n = 3\)), respectively. This suggests they are acting on a channel other than Cl\(_{Ca}\).

4. IPA and NS1619 inhibited oxytocin-induced contractions in both standard and chloride replaced PSS; interestingly they were more potent during chloride replacement experiments.

5. The overlapping pharmacology of Cl\(_{Ca}\) and BK\(_{Ca}\) channels makes it difficult to ascertain their respective roles in the regulation of rat uterine smooth muscle contractility.