In vitro study of the tocolytic effect of oroxylin A from Scutellaria baicalensis root.

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摘要

Abstract

Scutellariae Radix is one of the well-known tocolytic Chinese herbs. Oroxylin A is isolated from the root of Scutellaria baicalensis. The main syndrome of preterm birth is caused by uterus contractions from excitatory factors. Administration of tocolytic agents is a strategy to prevent the occurrence of preterm births. The aim of this study was to investigate the effects of oroxylin A on contractions of uterine strips isolated from non-pregnant female Wistar rats (250-350 g). Contractions of the uterus were induced with acetylcholine (Ach) (1 microM), PGF2alpha (0.1 microM), oxytocin (10-3 U/ml), KCl (56.3 mM), tetraethylammonium (TEA; 1 and 10 mM), 4-aminopyridine (4-AP; 5 mM), glipizide (30 microM), a nitric oxide synthase (NOS) inhibitor (LNNA; 10-3M), a beta-receptor blocker (propranolol; 10 microM), and a cyclooxygenase inhibitor (indomethacin; 60 microM). The inhibitory effects of the amplitude and frequency of spontaneous contractions by oroxylin A were antagonized with Ach (IC50 22.85 microM), PGF2alpha (IC5027.28 microM), oxytocin (IC50 12.34 microM), TEA; 1 and 10 mM (IC50 52.73 and 76.43 microM), 4-AP (IC50 67.16 microM), and glipizide (IC5027.53 microM), but oroxylin A was not influenced by Ca2+-free medium, LNNA, propranolol, or indomethacin. Otherwise, oroxylin A-mediated relaxation of the rat uterus might occur through opening of uterine calcium-dependent potassium channels or adenosine triphosphate potassium channel activation. This suggests that oroxylin A is the tocolytic principle constituent of Scutellariae Radix, and oroxylin A may provide a lead compound for new tocolytic drug development in the future.