S-isopetasin, a sesquiterpene of petasites formosanus, allosterically antagonized carbochol in isolated guinea pig atria

柯文昌

Ko WC;Wang SH;Chen MC;Lin YL and Chen CF

摘要

Abstract

We investigated the antimuscarinic effect of S-isopetasin in isolated guinea pig atria to clarify whether it preferentially acts on muscarinic M 2 or M 3 receptors. The tension changes of isolated atria were isometrically recorded on a polygraph. S-Isopetasin at 50 and 100 microM significantly inhibited baselines of contractile tension and heart rate, but atropine at 1 microM enhanced both. S-Isopetasin (10 - 100 microM) did not significantly alter the concentration-negative inotropic response curves of carbachol (CCh) in left atria. S-Isopetasin (10 - 100 microM) allosterically antagonized negative inotropic and chronotropic responses induced by CCh in spontaneously beating right atria, based on the slopes of Schild plots significantly differing from unity. On the contrary, atropine (0.01 - 1 microM) competitively antagonized all the above responses to CCh. The pA 2 values of S-isopetasin were significantly less than that of S-isopetasin in guinea pig trachealis, suggesting that S-isopetasin may preferentially act on tracheal muscarinic M 3, but not cardiac muscarinic M 2 receptors. However, atropine preferentially acts neither. This finding reveals that S-isopetasin may have benefit in the treatment of asthma.