

PUBLICATIONS

STUDY OF THE VASORELAXANT EFFECT OF THE FLAVONOID CHRYSOSPENETIN ON RAT AORTIC SMOOTH MUSCLES

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Flavonoids are a group of natural polyphenolic compounds found in many medicinal plants that are of particular scientific interest as biologically active substances that protect the cardiovascular system. They are secondary metabolites extracted from plant tissues and possess antioxidant, anti-inflammatory, and vasoprotective properties; from this perspective, these studies investigated the mechanisms of action of the flavonoid Chrysosplenetin.

The experiments were conducted under isometric conditions using a vascular aortic preparation on white outbred rats (200–250 g). Phenylephrine in experiments; NaCl – 120.4; KCl – 5; NaHCO₃ – 15.5; NaH₂PO₄ – 1.2; MgCl₂ – 1.2; CaCl₂ – 2.5; C₆H₁₂O₆ – 11.5 (pH=7.4). Reagents were used. The aortic rings were connected to the Radnoti (Isometric-Transducer, USA) sensor using platinum wire hooks.

The relaxant effect of the flavonoid chrysosplenetin is dose-dependent, and at concentrations of 1–80 µM, it was found to significantly suppress the force of a rat aortic contraction induced by 50 mM KCl. Based on these results, it is possible to predict the effect of the flavonoid on potential-dependent Ca²⁺ channels. To clarify this hypothesis, in subsequent experiments, we compared the interaction with a special potential-dependent Ca²⁺ channel blocker—verapamil; when 0.1 µM of verapamil was added to the medium, a relaxation of the aortic preparation by 53.2±2.2% was observed. When studying the effect of the chrysosplenetin concentration (29.4 µM) on IC₅₀, an additional relaxation of 13.2±3.2% was observed, as seen from the results obtained.

As can be seen from the results obtained, the studied flavonoid vascular smooth muscle preparation effectively affects potential-dependent Ca²⁺ channels, leading to the relaxation of mulculi, as evidenced by experiments using the special blocker of these channels, verapamil.