
THE ROLE OF RECEPTOR-CONTROLLED CA₂₊- CHANNELS IN PROVIDING THE RELAXANT EFFECT OF 1- O -GALLIOL-6- O -BISGALLIOL-2,4-VALONEIL- B-D - GLUCOSE POLYPHENOLS

F.Yu. Ahmedov

Andijan State University, Uzbekistan

A.E. Zaynabiddinov

Andijan State University, Uzbekistan

U.G. Gayipov

Institute Of Bioorganic Chemistry, Academy Of Sciences Of The Republic Of Uzbekistan

R.N. Raximov,

Institute Of Bioorganic Chemistry, Academy Of Sciences Of The Republic Of Uzbekistan

ABSTRACT: Euphorbia plant species are mainly biennial or perennial herbaceous plants found in mountainous areas. In folk medicine, Euphorbia plant species are used as a lowering body temperature, analgesic, as well as in the treatment of gastritis, tonsillitis, anti-inflammatory, lowering blood pressure, in the treatment of liver disease, malaria, refreshing.

KEYWORDS: Euphorbia, isometric contractile, O-galliol-6-O-bisgalliol-2,4-valoneyl- β -D-glucose.

INTRODUCTION

The staff of the Institute of Bioorganic Chemistry of the Academy of Sciences of the Republic of Uzbekistan isolated a number of polyphenols that have a vasorelaxant effect, depending on the structure of the plant Euphorbia. One of them, in particular, is 1-O-galliol-6-O-bisgalliol-2,4-valoneyl- β -D-glucose (PS-1).

The aim of this study was to analyze the vasorelaxant effect of polyphenol (PS-1) isolated from the plant species Euphorbia on the isometric contractile activity of rat aortic vascular smooth muscle.

THE MAIN FINDINGS AND RESULTS

Preparation of aortic vascular drug was performed using a standard method. The experiments were performed on healthy white, purebred rats (150–200 gr.) Fed under standard feed and water conditions. The results of the experiment were also calculated on the basis of the Student's t-criterion of the level of statistical reliability of values between groups, and were assessed as statistically reliable at values $p < 0.05$, $p < 0.01$.

Receptor-controlled Ca^{2+} -channels play an important role in the regulation of Ca^{2+} homoeostasis in smooth muscle cells. In our experiments, the effect of polyphenols on aortic contractile force induced by α_1 -adrenoceptor agonist phenylephrine (PE) in the presence of L-type Ca^{2+} -channel blocker-verapamil was studied. In these conditions, muscle contraction caused by PE was observed to be $13.7 \pm 2.8\%$ lower than in the control without verapamil. Under these conditions, PS-1 (40 μM) polyphenols reduced aortic contraction caused by PE to a maximum of $89.4 \pm 5.4\%$ compared to controls.

CONCLUSION

Based on the analysis of the literature and experimental results, the vasorelaxant effect of PS-1 polyphenol on the isometric contraction activity of the rat aortic aneurysm drug in vitro isolated from plant species Euphorbia may be mainly related to receptor-controlled Ca^{2+} -channel blockade.

REFERENCES

1. Вазорелаксантное действие полифенольных соединений растений Euphorbia в зависимости от их химической структуры. / Ahmedov F.Yu., Zaynabiddinov A.E., Gayibov U.G., Yunusov L.S. // Universum: химия и биология. – 2020. – № 10 (76). Ч. 1. – С. 14-19
2. Influence of new polyphenol compound from Euphorbia plant on mitochondrial function / U.G. Gayibov, E.J. Komi_Iov, R.N. Rakhimov, N.A. Ergashev [et al.] // Journal of Microbiology, Biotechnology and Food Sciences. – 2019. – № 8 (4). – P. 1021–1025.

3. Influence of valoneoyl groups on the interactions between *Euphorbia* tannins and human serum albumin / S. Sekow_ski, M. Bitiucki, M. Ionov, M. Zdeb [et al.] // *Journal of Luminescence*. – 2018. – № 194. – P. 170–178
4. Vasorelaxant and hypotensive effects of cheonwangbosimdan in SD and SHR rats / B. Kim, C. Jo, H-Y. Choi, K. Lee // *Hindawi Evidence-Based Complementary and Alternative Medicine*. – 2018. – № 1–8.
5. Rakhimov R.N., Abdullajanova N.G., Kamaev F.G. Phenolic compounds of *Euphorbia canescens* and *E.franchetii* // *Chemistry of natural compounds*. – 2011. – № 2. – P. 258–259.