
DESCRIPTION OF THE EFFECT OF 1-O-GALLOYL-2,3-HEXAHYDROXYPHENOIL-4,6-VALONEIL- β -D-GLUCOSE POLYPHENOLS ISOLATED FROM EUPHORBIA-PLANT SPECIES ON RECEPTOR-CONTROLLED Ca^{2+} -CHANNELS

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: To date, the classification, synthesis / biotransformation, and broad-spectrum pharmacological activity of plant-derived polyphenols have been studied in detail by some researchers, and one of the potential sources of these polyphenols is the plant species Euphorbia. Depending on the structure of plants of the genus Euphorbia, the staff of the Institute of Bioorganic Chemistry of the Academy of Sciences of the Republic of Uzbekistan isolated a number of polyphenols with vasorelaxant effect, including 1-O-galloyl-2,3-hexahydroxydiphenol-4,6-valoneyl- β -D-glucose (PS-2) polyphenol is one of them.

KEYWORDS: 1-O-galloyl-2,3-hexahydroxydiphenol-4,6-valoneyl- β -D-glucose, Bioorganic Chemistry, Euphorbia, Ca^{2+} .

INTRODUCTION

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 $p < 0.05$, $p < 0.01$.

THE MAIN FINDINGS AND RESULTS

In our initial experiments, the effect of polyphenols on the aortic contraction force caused by phenyl ephedrine (PE) in the presence of L-type Ca^{2+} -channel blocker-verapamil was studied. Muscle contraction caused by PE was observed to decrease by $13.7 \pm 2.8\%$ from control compared to verapamil-free conditions. Under these conditions, PS-2 (25 μM) polyphenols reduced aortic contraction caused by PE to a maximum of $83.3 \pm 4.9\%$ compared to controls. To supplement and clarify these experiments, we investigated the relaxant effect of PS-2 polyphenol on receptor-controlled Ca^{2+} channels with α -adrenoceptor blocker-phentolamine (PA). In our experiments, the relaxant effect of PS-2 (25 μM) polyphenols was observed to decrease PE reduction by 43.2 ± 4.1 compared to phentolamine conditions under 10 μM phentolamine.

CONCLUSION

These results suggest that the relaxant effect of the polyphenols studied may be related to receptor-controlled Ca^{2+} -channel blockade.

REFERENCES

1. Vazorelaxant Effect Of The PC-3 And PC-2 Polifenol Compounds Depending On Their Chemical Structure / Ahmedov F.Yu., Zaynabiddinov A.E., Gayibov U.G., Yunusov L.S. // European Journal of Molecular & Clinical Medicine. – Scopus Indexed online journal. -2020. V. 7. (8). - P. 1145-1155.
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.