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BIOCHEMICAL PROPERTIES OF ALS AND TEL EFFECTS ON (P) RR INDUCED PROCESSES IN PATIENTS WITH DIABETIC NEUROPATHIES

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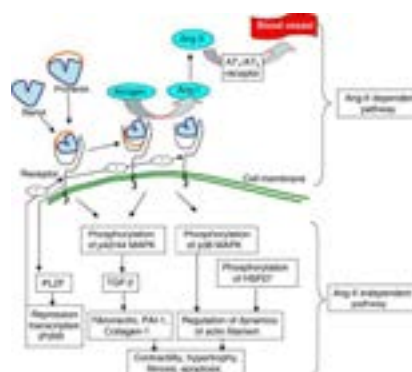
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Background: Diabetes mellitus (DM) is the most common cause of diabetic neuropathy (DN). In 2014 the WHO estimated an overall prevalence of 422 million (8.5%). The incidence of diabetic neuropathy approaches 50% in most diabetic populations; its treatment still remains unresolved. The optimal therapy involves: blood glucose level control, anticonvulsants, antidepressants and opioid administration, though it does not change pathogenic pattern. It has been identified that tumor necrosis factor alpha (TNF α) and renin-angiotensin aldosterone system (RAAS) play a significant role in Type I and Type II diabetes development. The discovery of (pro) renin receptor, (P)RR, has made the renin-angiotensin system (RAS) more multifaceted. After binding to the receptor, renin/prorenin carry out their functions either in angiotensin-II-dependent or -independent pathways that may facilitate the generation of angiotensin-I or activation of second messenger, respectively. The data collected in the present-day indicate the essential pathogenic role of TNF α and RAAS in the development of T2DM and diabetic neuropathy (DNP) through the activation of Ag II or/and transcription factor MAPK and NF κ B an important factors in the control of cell proliferation, differentiation, and apoptosis. In our study we study aliskiren efficacy, that indirectly inhibit the binding of renin to prorenin/renin receptor (P)RR by changing the local conformation of renin. On the other hand, this renin inhibitor significantly decreases the mRNA expression of (P)RR in the kidney cortex of diabetic hypertensive Ren2 rats.

Methodology & Theoretical Orientation: The study population consists of 30 individuals diagnosed with diabetes mellitus (DM) complicated with DNP. The enrolled subjects are divided into two main groups: group I to take aliskiren and group II with the same pathology, proceeding with the treatment without aliskiren but given telmisartan (ARB), for certainty of aliskiren efficacy. At the start of the trial and on completion of the six weeks period TNF α level and C-peptide (for T2DM) will be determined.

Findings: Aliskiren improves conditions of T2DM patients with DNP. Namely, the symptoms of neuropathy are reduced, the blood TNF α level is reduced and C-peptide level is increased.

Conclusion & Significance: Our results confirm hypothesis that TNF α and RAAS may play a substantial role in the development and progression of T2DM as well as in pathogenesis of DPN. Aliskiren has modulatory impact on TNF α , as well as on renin/prorenin both pathways. So, we have results for clinical and pharmacological analysis of aliskiren application in diabetic neuropathy.



Recent Publications

1. Rabie E M, Heeba G H, Abouzied M M and Khalifa M M (2015) Comparative effects of aliskiren and telmisartan in high fructose diet-induced metabolic syndrome in rats. *Eur J Pharmacol.* 760:145-53.
2. A H M Nurun Nabi and Fumiaki Auzuki (2010) Biochemical properties of renin and prorenin binding to the (pro)renin receptor. *Hypertension Research* 33:91-97.
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4. A H M N Nabi, Kazal B Biswas, Akio Ebihara et al. (2013) Renin angiotensin system in the context of renin, prorenin, and the (pro)renin receptor. *Reviews in Agricultural Science* 1:43-60.
5. K B Biswas, A H M Nurun Nabi, F Suzuki, et al. (2010) Aliskiren binds to renin and prorenin bound to (pro) renin receptor *in vitro*. *Hypertens Res.* 33(10):1053-9.

Biography

Anna Sh Archvadze has over 8 years' experience as a Medical Doctor. Over 15 years of experience as a Trainer/Teacher of Medical Sciences. Over 11 years of experience in health and social project/program development, execution, monitoring and completion and; Over 7 years of experience in International Project Management working for the World Bank Financed Health projects, Over 5 years' experience in an assessment of training needs; design and elaboration of training programs, provision of trainings for emergency care medical staff and for health-care services providers, Over 10 years of experience in supervision of the contract performance with medical institutions, pharmaceutical firms, governmental and non-governmental organizations.

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