LIRAGLUTIDE PROVIDES PROTECTION IN AGING HEARTS

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GLP-1 agonism has several beneficial effects in the human body, including lowering body weight, improving glucose metabolism and insulin resistance, lowering blood pressure, and preventing atherosclerotic plaques, all of which appear to lead to greater protection of function and cardiovascular system. For this reason, it is frequently used in diabetes and in the treatment of insulin resistance. However, it is unknown whether GLP1agonism has cardioprotective effects in the elderly heart in insulin resistance that develops with aging. Therefore, systemic parameters of aged rats (24 months) and ionic parameters at the cellular level were investigated by treatment with the GLP-1R agonist liraglutide (LG: 4 weeks old). Action potential (AP) parameters, ionic currents and Ca^{2+}-regulation at cellular levels were studied in freshly isolated ventricular cardiomyocytes. It significantly improved increases in both SBP and DBP along with improvements in oxidant and antioxidant status. Extended AP times and depolarized membrane potentials of cardiomyocytes isolated from aged rats were normalized by LG treatment through recoveries in K^{+}-channel currents. Changes in Ca^{2+}-regulation, including leaky ryanodine receptors (RyR2), can also be ameliorated by this treatment through recoveries in Na^{+}/$Ca2^{+}$-exchanger currents. Overall, our data provide, for the first time, important insights into the direct cardioprotective effects of LG and GLP-1R agonism in the hearts of aged rats.