

Mapping of cardiac electrical activity using voltage-sensitive dyes (VSDs) is considered to be a valuable method for electrophysiological studies. VSD di-4-ANEPPS is currently used in our laboratory for recording of MAPs in isolated hearts. This paper presents continuation of our previous study focused on examination of electrophysiological effects of this dye on rabbit and guinea pig isolated hearts. Electrograms, recorded during staining with the dye and washout from it, were compared and the types and frequency of dysrhythmias evaluated. Five New Zealand rabbits (b. m. 2.89 ± 0.20 kg) and three guinea pigs of non-specified breed (b. m. 403.33 ± 41.1 g) of both sexes were included in this study. Isolated hearts were perfused according to Langendorff with Krebs-Henseleit solution (K-H). Spontaneously beating hearts were allowed to stabilize at 37°C for 30minutes – control period. Then, the tissue was stained with di-4-ANEPPS, diluted in K-H (20-25min) and subsequently washed-out with dye-free K-H (20-25min). During the whole experiment, electrogram signals were recorded. Perfusion with VSD caused specific changes of electrograms in all examined hearts: AV-blockades, single ventricular extrasystoles, and monomorphic ventricular tachycardia, with a significant difference in both species. We have proved that although certain electrophysiological changes were present in the hearts of both species, these changes are mostly reversible. Rabbit myocardium can be considered more suitable model for studies at the level of electrophysiology of the whole heart.