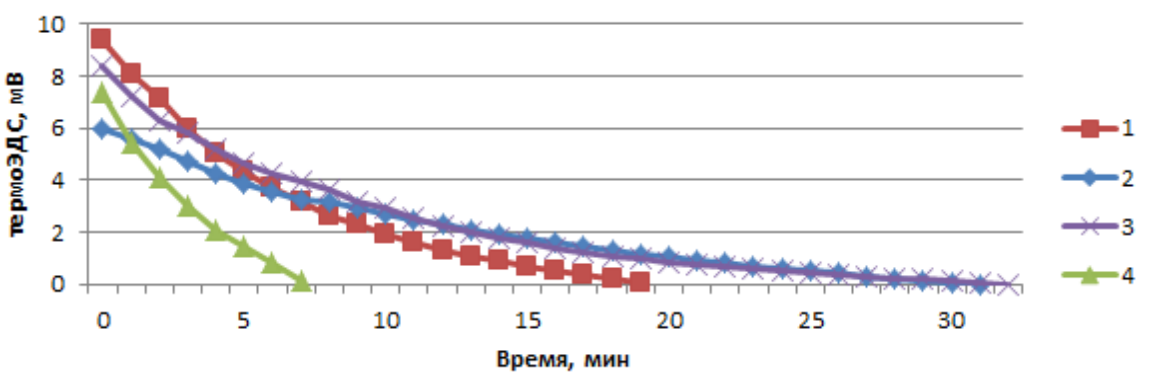

Рис. 1 . Экспериментальная зависимость ЭДС от времени для различных препаратов, 1 – «Тайм-фактор», 2 – «Линекс», 3 – «Омепразол», 4 – «Нимесил»

Экспериментально установлено, что некоторым образцам необходимо до 30 мин для полного растворения, это говорит о том, что приготовление раствора с веществами, входящими в состав препарата самостоятельно невозможно. В противном случае, лекарство полного лечебного эффекта нести не будет.

На данном этапе проведена оценка выделения энергии. В дальнейшем планируется расширение выборки образцов, уточнение математической модели.

1. Волков А.С., Тягунин А.В., Копосов Г.Д. Журнал Приборы и техника эксперимента. № 5 (2017)

ELECTROMECHANICAL COUPLING IN CARDIOMYOCYTES DEPENDS ON ITS ELECTROTONIC INTERACTION WITH FIBROBLASTS

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Cardiac fibroblasts can influence cardiomyocyte electrical activity. Existing mathematical models of fibroblast-cardiomyocyte interaction allow analyzing only electrical responses of effect cardiomyocytes and fibroblasts to their electrical interaction. In our work, we examined fibroblast on the cardiomyocyte mechanics by modelling. We got significant changes in both action potential duration and force generation in the cardiomyocyte depending on the number of fibroblasts connected with it.

Cardiac fibroblasts are one of the main types of cardiac cells. Their amount is about two times higher than the number of cardiomyocytes [1, 2], while just the cardiomyocytes provide the heart contraction in response to the electrical stimulation of the cardiac tissue. Cardiomyocytes and fibroblasts contact by means of the gap junctions with high resistance. The current through the gap junctions provides mutual electrotonic

influence on the membrane potential of both cells [4]. A few mathematical models of the fibroblast-cardiomyocyte coupling were developed, one of them is the MacCannell2007 model [5]. In that model the fibroblast-cardiomyocyte electrical interaction was described by a system of the ordinary differential equations. The effect of the number of fibroblasts connected with the cardiomyocyte on the electrical activity of either one of them was studied there.

However, the influence of the fibroblast-cardiomyocyte coupling on the cardiomyocyte mechanics was not considered in that model, because cardiomyocyte mechanical activity was not described in the MacCannell2007 model at all. Here we study this influence. A backward effect of the cardiomyocyte mechanics on the electrical cardiomycyte-fibroblasts interaction was considered in our model, as well.

The work was carried out within the IIF UrB RAS theme No AAAA-A18-118020590031-8, and was supported by the Russian Foundation for Basic Research (18-29-13008, 18-01-00059, 18-015-00368) and by RF Government Act #211 of March 16, 2013 (agreement 02.A03.21.0006).

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