

THE ROLE OF SODIUM-CALCIUM EXCHANGER IN THE ELECTRICAL
ACTIVITY OF EMBRYONIC CHICKEN HEART

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ABSTRACT

Heart is one of the most important organs of the body and also it is one of the first organs during to the development. The electrical activity of heart is essential for its function.. It has been shown that the sodium-calcium exchanger (NCX) is an important exchanger for calcium homeostasis. We hypothesize that the NCX may be present during development. To test this hypothesis we recorded the spontaneous electrical activity of heart from the embryonic chicken heart before and after blocking NCX during different stages of development with different concentration of KB-R7943. We found that the blocking of this exchanger does have significant effect on the amplitude and the rise time of AP. We found out that changes in duration of AP were less in atrium in early stages of development and increased during later stages of development. Interestingly these results were opposite in ventricles where increase in duration of AP was more during early stages of development and decreased during later stages of development. Similarly there was an increase in decay time of atrium and ventricular action potential at different stages of development. There were relatively few very significant changes in rise time of AP. Hence it is quite apparent that the blocking of NCX affects the plateau phase of AP or the calcium extrusion phase. It is also certain that NCX is one of the exchangers present in early embryonic hearts to actively play role in shaping the electrical activity.