Differential Expression of Connexin43 Gap Junctions in Cardiomyocytes Isolated From the Canine Thoracic Veins

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摘要

Abstract

We investigated the phenotypic features of cardiomyocytes, including the gap junctions, in the myocardial sleeve of thoracic veins. Single cardiomyocytes, isolated from the canine pulmonary veins (PV) and superior vena cava (SVC) using digestive enzymes, were examined by immunoconfocal microscopy using antisera against connexin43 (Cx43), Cx40, and other cell markers. The results showed that isolated cardiomyocytes displayed rod shapes of various sizes, ranging from <50 microm to >200 microm in length, and all the cells expressed alpha-actinin and vinculin. Gap junctions made of various amounts of Cx43 and Cx40 were found at the cell borders. These two connexins were extensively co-localized. Comparison between the thoracic veins showed that cells of the SVC contained more Cx43 gap junctions (total Cx43 gap junctions area per cell surface area, 4.0 +/- 0.2% vs 1.5 +/- 0.2%; p<0.01). In addition, for single-nucleus cells, those from the PV were longer (103.7 +/- 3.6 vs 85.0 +/- 3.1 microm; p<0.01) but narrower (14.4 +/- 0.5 vs 16.9 +/- 0.9 microm; p<0.01). In conclusion, canine thoracic veins contain cardiomyocytes with differences in shape and gap junctions, suggesting that the electrical conduction properties may be different between the thoracic veins.