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Characteristics of cardiomyocyte culture from different species: sheep, rat, and GFP mouse

Wongon Kim
Seoul National University College of Medicine, Korea

Background: Adequate cardiomyocyte culture technique is essential for auto-cardiomyocyte implantation. In this regard, few studies have compared the cardiomyocyte culture patterns of different species. In this study, we compared the characteristics of adult cardiomyocyte cultured from the sheep, rat and GFP mouse.

Materials & Methods: Two of each of Corriedale sheep, Sprague-Dawley rats and GFP mice were used. Cardiomyocyte culture was performed using portion of left ventricular muscle from each animal. Phase contrast light microscopy was performed immediately after isolation and periodically during culture.

Results & Conclusion: Cardiomyocytes freshly isolated from the ventricles of the three species showed similar morphological forms but their sizes tended to decrease in accordance with species size. During primary culture, cardiomyocytes from all three species attached to the culture dish and proliferated with some contaminating non-cardiomyocyte heart cells. These cardiomyocytes progressively lost their original morphologies. In GFP mice, cardiomyocytes characteristically lost their viabilities during subculture and died but the cardiomyocytes of goats and rats did not. We presume that genetic manipulation used for fluorescence in these animals may have contributed to this result. To the best of our knowledge, this is the first report of GFP mice cardiomyocyte culture.

wongon@snu.ac.kr