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Data from acellular human heart matrix



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ABSTRACT

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Perfusion decellularization of cadaveric hearts removes cells and generates a cell-free extracellular matrix scaffold containing acellular vascular conduits, which are theoretically sufficient to perfuse

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and support tissue-engineered heart constructs. This article contains additional data of our experience decellularizing and testing structural integrity and composition of a large series of human hearts, “Acellular human heart matrix: a critical step toward whole heart grafts” (Sanchez et al., 2015) [1]. Here we provide the information about the heart decellularization technique, the valve competence evaluation of the decellularized scaffolds, the integrity evaluation of epicardial and myocardial coronary circulation, the pressure volume measurements, the primers used to assess cardiac muscle gene expression and, the characteristics of donors, donor hearts, scaffolds and perfusion decellularization process.

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Specifications Table

Subject area	<i>Biology</i>
More specific subject area	<i>Bioengineering human heart matrix</i>
Type of data	<i>Table, image, text file, figure</i>
How data was acquired	<i>Echocardiography (General Electric), linear mixed-effects models (LME, S-Plus version 8.0, Tibco Software) and angiography (Siemens)</i>
Data format	<i>Analyzed, processed</i>
Experimental factors	<i>Human hearts used in the study were not suitable for transplantation.</i>
Experimental features	<i>Heart decellularization perfusion was performed to remove cells but retain the extracellular matrix scaffold. Characteristics of the scaffold valves, chambers and vasculature were assessed using echocardiography, pressure-volume measurements and coronary angiography. The effect of the human scaffold on the differentiation of human cardiac progenitor cells was also analyzed with different primers</i>
Data source location	<i>Madrid, Spain</i>
Data accessibility	<i>Within this article</i>

Value of the data

- The data provides the schematic information of a decellularization heart perfusion technique that could be followed as a standardized technique for additional decellularization studies.
- The data provides the detail information of the characteristics of donors and heart scaffolds. These physiologic data will provide researchers with important age- and sex-specific reference ranges for evaluating experimental results.
- It also provides the basis of different experiments for a clear demonstration of valve competence, coronary angiography assessment and pressure-volume measurements. These novel assays could be useful tools for the in vitro evaluation of decellularized heart scaffolds.
- The data provides the primers used to assess cardiac gene expression in human cardiac progenitor cells grown on human decellularized extracellular matrices. The primers profile data could be used to identify cardiac cell differentiation.

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