

## **Myoarchitecture and angioarchitecture of the atrio-auricular complex related to secretion and delivery of the atrial natriuretic peptide (ANP) in guinea pig**

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Atrial natriuretic peptide (ANP) is a polypeptide hormone that has diuretic, natriuretic and vasorelaxant effects. It is secreted primarily by atrial and auricular myoendocrine cells, where it is stored within secretory granules. ANP has been characterized by morphological methods in a number of vertebrate species, but little is known of the secretion, delivery and activation mechanisms of ANP. It is known that they are related to the atrial myoarchitecture and angioarchitecture. The objective of the present study was to analyze the myoarchitecture and the angioarchitecture of the guinea pig atria and auricles, focusing at their role in the ANP secretion, storage and delivery. For the study of the muscle fiber bundles arrangement of the atrial-auricle wall their cavities were widely opened and observed with a Zeiss stereoscopic microscope (4x, 40x). For the study of the angioarchitecture of the atrial-auricle walls, a methacrylate resin (Mercox) was injected through the aorta and after the tissue corrosion, the resulting molds were metalized and examined with a scanning electron microscope Jeol JSM-6100. ANP granules were present in the cardiocytes from the four regions studied. ANP-granules were localized principally in the perinuclear region of the cells. The atrial myoarchitecture is formed by small muscle bundles, uniformly organized in defined directions, generally parallel to the transverse axis. The muscle bundles in the auricles are concentrated as multidirectional bundles. Smaller perpendicular oriented bundles come from these larger bundles and coming out from the small ones there are other bundles even smaller, resulting in a bundle arrangement ordered in a three main magnitude levels. The arterial arrangement in the atria, showed a vascular net very elongated and relatively uniform and dense, with the presence of more or less wide elongated spaces between the vessels. In the auricle wall, the arterial net is denser, more irregular, and tortuous. Therefore, the architecture of the atria and auricles in the guinea pigs would represent, besides a mechanical role, an important morphological basis for the ANP release.