The natriuretic peptide system is a complex family of peptides and receptors that contributes to the control of body fluid homeostasis and blood pressure regulation. The members and receptors of this system are atrial natriuretic peptide (ANP), brain natriuretic peptide (BNP), and C-type natriuretic peptide (CNP) and natriuretic peptide receptors A, B and C (NPR-A, NPR-B and NPR-C). This study aimed to determine the immunolocalization of natriuretic peptide receptors (NPR-A, NPR-B and NPR-C) in the caprine cardiac atrium and ventricles. Peroxidase-anti-peroxidase method was applied to 5-7 µm thick sections from formalin-fixed paraffin-embedded tissues to demonstrate the localization of NPRs in the cardiac tissue. Immunostaining results reveal that NPR-C antibody showed a stronger immunoreactivity in endothelial cells including predominantly cardiomyocytes than NPR-A and NPR-B antibodies, with a much weaker NPR-B immunoreactivity, in the caprine cardiac tissue. Each NPR was widely distributed within the cardiac muscular cytoplasm. There was no expression of NPRs in the nucleus of myocardial cells. Stronger NPR-C immunoreactivity in the cardiac tissue is closely associated with the fact that ANP, BNP and CNP remove from the circulation through NPRC, a clearance receptor that is involved in natriuretic peptide degradation. A stronger NPR-C immunostaining also shows parallelism with the release into the circulation of ANP and BNP produced by atria and ventricles, respectively. Observation of stronger NPR-C immunoreactivity confirms that ANP is mainly effective in the atrial contraction and BNP has chiefly an effect on the ventricular contraction. We believe that the results will provide a basis for future works to understand whether the expression of natriuretic peptides and their receptors vary across caprine and breeding other mammals in sex and age dependent manner.

Keywords: Caprine, natriuretic peptides, natriuretic peptide receptors, heart.