ATRIAL GRANULES IN THE ATRIA OF SHEEP

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ÖZET
Koyun Atriumunda Atrial Granüller

Bu çalışmanın amacı koyun atriumlarında atrial granüllerin varlığını belirlemek ve onlarısehen atriumundakilerle karşılaştırılmaktır. Granüllerin incelemek için elektron mikroskop kesitleri alınmış ve resimleri çekilmİŞtır. İki farklı grup seçilmiştir ve bir grup koyunun atrium ve ventrikül doku örnekleri alınmıştır. Bir grup seçilmiştir %4 NaCl ilaveli yemle beslenmiş diğer gruba normal yem verilmiştir. Ko-
yunlar da normal yem ile beslenmiştirlerdir. Seçilen atriumlarında olduğu gibi koyun atriumlarında da a-
tial granüller gözlenmiştir, ventrikülerde granül görülmemiştir.Yemdeki sodun artış ile atr-
iumlardaki granüllerin atrial cardiocyte’lerin et-
rafında daha yoğun olarak gözlemdiği be-
lirlenmiştir.

Anahtar Kelimeler: Koyun atriumu, atrial gra-
nüller, ANP

SUMMARY

The aim of this study is to observe the atrial gra-
nules in the atria of sheep and compare them with
those of in rats’ atria. Electron microscope slides
were prepared to examine the granules. Atria and
ventricles were taken from the two different groups
of rats and one group of sheep. One group of rats
were fed with 4% by weight of NaCl added died.
The other group were fed with normal rat diet. The
sheep were fed with normal sheep diet. The granules
were found in the atria of sheep as seen in rats atria,
but they were not observed in the ventricles. In the
atria, granules were seen densely around the atrial
cardiocytes, increased when the amount of sodium in
the diet rised.

Key Words: The atria of sheep, atrial granules,
ANP

INTRODUCTION

It was recently found that the heart atrial muscle
produces polypeptide hormones. Those polypep-
tides called atrial natriuretic peptides (ANP). (1,2). They regulate the salt and water balance and
of blood pressure (3). Electron microscopic slides
prepared from atrial and ventricular tissue samples
showed that cardiocytes were different from each
other (4). Atrial cardiocytes had granules around the
nuclei, but ventricles had none. In contrast, gra-
nules were seen in the walls of ventricles as well
as in the atria of non mammalian species (5.). It was
pointed out that quantity of ANP changed between
animals species. Several researchers showed that
small rodents had far more atrial granules than large
mammals and right atrium has more granules than
the left (1,6,7).

MATERIALS AND METHODS

Sheep and rats were decapitated, their atriums
and ventricles rapidly excised. They were kept in
2.5 % glutaraldehyde-phosphate buffer at 4°C for 2
hours in a refrigerate. Then the tissue material were
fixed in 1% OsO₄ solution and later transferred into
aceton series which were prepared from same buf-
er solution. When they were dehydrated vestapal
inclusion were obtained. Slides of 600-900 A° are
taken in Reichert UM 3 ultramicrotoms. These slides
were examined in microscope with uranil acetat Rey-
nold’s technique (100C electron microscope). Electron
micrographs were taken (8,9).

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RESULTS

The histological slides of sheep and rats' atria photographed electron microscopically in order to observe the existence of atrial granules (Photos 1-5). Atrial granules were obviously seen around the nuclei of atrial cells, Right atrial cells seem to have more granules than the left's. In the salt added group atrial granules were seemed to be denser and bigger.

Ventricles seemed to have no granules (Photo 6).

Photo 1. Sheep left atrial cells (x10000)

Photo 2. Left atrial cell of the experimental rat (x10000)
Photo 3. Right atrial cell of the experimental rat (x10000)

Photo 4. Sheep right atrial cell (x10000)
Photo 5. Right atrial cell of the experimental rat in salt added group (x10000)

Photo 6. Sheep ventricular cell without any granules (x10000)
DISCUSSION

It was found that atria of mammals had granules but ventricles had none. In electron microscope slides (Photo 1) granules were seemed to accumulate around the nucleus as De Bold and Cantin (1,10) had mentioned. It was said that granules showed some differences (quantity, size, distribution) in different animal species (2,11). In the slides it was observed that atria of rats contained more granules than atria of sheep and also rat granules were bigger than those of sheep’s (Photos 3-4). In addition, it was admitted that the amount of ANP showed some differences between right and left atrium. Right atrium contains 1.5-4 times more granules than left atrium (12).

In this study both the left atria of rats and sheep were seemed to contain granules. Right atria contained more granules than left atria. The number of atrial granules were comparable increased by the salt concentration in the diet. Thus there was an increase in the number of the granules in the rats consumed 4% salt added diet (Photos 5).

Histological studies shows that, in the mammals, atria are the basic source of ANP and ANP secretion is also directly related to the salt consumption.

As in most mammals atria of sheep also contains similar granules thought to be the secretion site of ANP.

REFERENCES