

**Cantin M & Genest J.** The heart and the atrial natriuretic factor.  
*Endocrine Rev.* 6:107-27, 1985.  
[Clinical Research Institute of Montreal, Quebec, Canada]

The search for natriuretic hormones or factors led to the finding that the atria is a peptide-secreting endocrine gland. This new natriuretic hormone was purified, sequenced, and synthesized, and its cDNA and gene were cloned. The native and synthetic hormones exert identical wide-ranging effects on the kidney, blood vessels, adrenal cortex, and pituitary. [The *SCI*® indicates that this paper has been cited in more than 615 publications.]

## A Collaboration on Hypertension Research

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Marc Cantin, who died on June 18, 1990, and I were close collaborators, with complementary expertise and a convergence of scientific interests. Whereas my major objective in hypertension research throughout the last four decades has centered mostly on the mechanisms of hypertension, especially from the point of view of the regulation of sodium and its disturbances, Cantin had been involved since 1973 in the study of the granules found in rats' atrial cardiocytes. He demonstrated their proteinic nature, as they incorporated both tritiated leucine and fucose.

In 1981, when A.J. de Bold reported<sup>1</sup> the effects of massive and short duration diuresis and natriuresis in rats following intravenous injection of rat atrial homogenates,<sup>1</sup> our research group rapidly confirmed this crucial finding. It was an answer to our problems and the start of a major multidisciplinary effort not only from the members of our research group, but also from several other laboratories in our institute. Our group fast became a leader in the exploitation of this

discovery because both Cantin and I were prepared by our previous work in the field.

There was an intense interest in many laboratories and medical centers working in nephrology, hypertension, endocrinology, and cardiology. So, Cantin and I decided, in 1984, to publish a complete review on the subject. It was the first one and covered all known aspects of atrial natriuretic factor (ANF) research. In this paper, we covered the work done on the "natriuretic hormone." This also was called the "third factor" regulating sodium excretion because there were two other previously well-studied factors: glomerular filtration rate and aldosterone. Many very able scientists had devoted considerable time and effort to the isolation of this putative "natriuretic hormone," which had been thought to be of hypothalamic origin and to be a digitalis-like substance because of its inhibition of the Na/K ATPase activity.

I wrote this part and the historical features concerning ANF, as well as the biochemistry of ANF, whereas Cantin covered the other aspects: radioimmunoassay, radioreceptor assay, receptors, effect on the second messengers, structure/activity relationship, and effects in various tissues and in various types of experimental hypertension. The interest in this review was because it was the first, and it came out at the height of the interest in ANF, especially in the US, Canada, Japan, and Europe. Our work and that of one of our major competitors, P. Needleman,<sup>2</sup> in St. Louis, was recognized in 1988 by the Distinguished Achievement Research Award of the American Heart Association.

Since all the work reported from our institute on ANF research was done "in house," from the cloning of the gene and its localization to its effects in experimental animals in various clinical conditions, it demonstrated the importance of integrated clinical research institutes.

1. de Bold A J, Bernstein H B, Veress A T & Sonnenberg H. A rapid and potent natriuretic response to intravenous injection of atrial myocardial extract in rats. *Life Sci.* 28:89-94, 1981. (Cited 1,525 times.)

[See also: de Bold A J. The discovery of atrial natriuretic factor. Citation Classic. *Current Contents/Life Sciences* 34(26):8, 1 July 1991.]

2. Needleman P, Adams S P, Cole B R, Currie M G, Geller D M, Michener M L, Sapler G B, Schwartz D & Standaer D G. Atriopeptins as cardiac hormones. *Hypertension* 7:469-82, 1985. (Cited 450 times.)

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