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## CONTENTS

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SPECIAL AWARDS

1A ASH PROGRAMS

---

ASH ABSTRACTS

6A **Cardiology**

17A **Pharmacology and Therapeutics**

40A **Endocrinology/Central Nervous System**

54A **Epidemiology**

61A **Electrolyte/Membrane Transport**

68A **Nephrology**

80A **Noninvasive Techniques**

87A BAAP PROGRAM

---

BAAP ABSTRACTS

89A **ANP: Peptide Synthesis, Storage, Release, and Metabolism**

93A **Cardiovascular and Neurological Actions of ANP**

102A **ANP and Renal Function**

109A **ANP and the Endocrine System**

121A **ANP Receptors and Second Messengers**

## CONTENTS *continued*

128A ANP in Cardiovascular Disorders

135A ANP in Renal and Hepatic Disorders

140A ANP in Hypertension

---

### AUTHOR INDEXES

144A Third Annual Meeting of the American Society of Hypertension

149A Third Annual World Congress on Biologically Active Atrial Peptides

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### GENERAL INFORMATION

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**Hemodynamic and renal effects of atrial natriuretic peptide ( $\alpha$ -hANP) in normal man**

5047

G Müller-Esch, J Potratz, JM Heim, P Ball, S Klohs, J Alt, and PC Scriba, *Depts. of Medicine and Biochem. Endocrinology, Medical Univ., Lübeck, and Dept. Medicine, Univ. München, FRG*

We studied the hemodynamic and renal actions of  $\alpha$ -hANP in 7 healthy volunteers. 200  $\mu$  of  $\alpha$ -hANP were given as an intravenous bolus injection. M-mode-echocardiography was performed and serum levels of ANP and cGMP as well as cGMP-, sodium- and potassium excretion were determined.

Within 2 min, a transient heart rate increase of 34% together with a fall of mean arterial blood pressure of 11% was observed. Stroke volume increased from  $77.5 \pm 15.1$  to  $90.3 \pm 10.2$  ml and cardiac index from  $2.44 \pm 0.41$  to  $2.88 \pm 0.41$  l/m<sup>2</sup>/min. Ejection fraction rose from  $62.9 \pm 1.8$  to  $73.5 \pm 3.8\%$  ( $p < 0.01$ ). Hemodynamic changes were most pronounced from 10 to 15 min after injection and reached baseline values another 15 min later. Serum ANP rose 20fold; cGMP rose 8fold within the first 15 min and normalized after 1 hour. Urinary cGMP excretion increased nearly 8fold, urine volume 9fold, sodium excretion 5fold and potassium excretion doubled. These renal effects—in contrast to the hemodynamic changes—showed a maximum within the first 30 min, but were still present for at least 90 min later. No severe side effects were observed.

*Conclusions:* Improved myocardial performance together with sustained diuresis and natriuresis may be of therapeutical benefit in the acute treatment of congestive heart failure. The role of cGMP as a marker for ANP action is confirmed.