Katestatin – novi biomarker kardiovaskularne funkcije i arterijskog tlaka: istraživačke perspektive i klinička primjena

Catestatin – a novel biomarker of cardiovascular function and blood pressure: research perspectives and clinical applications

Josip Anđelo Borovac*,
Joško Božić,
Tina Tičinović Kurir

Medicinski fakultet
Sveučilišta u Splitu, Split,
Hrvatska

University of Split School of
Medicine, Split, Croatia

KLJUČNE RIJEČI: arterijska hipertenzija, katekolamini, kromogranin A, histamin, kardioprotekcija.

KEYWORDS: arterial hypertension, catecholamines, chromogranin A, histamine, cardioprotection.

CITATION: Cardiol Croat. 2017;12(3):77. | DOI: <http://dx.doi.org/10.15836/ccar201777>

***ADDRESS FOR CORRESPONDENCE:** Josip Anđelo Borovac, Medicinski fakultet Sveučilišta u Splitu, Šoltanska 2, HR-21000 Split, Croatia. / Phone: +385-92-1721-314 / E-mail: jborovac@mefst.hr

ORCID: Josip Anđelo Borovac, <http://orcid.org/0000-0002-4878-8146>

Aim: Plasma-based biomarkers of functional cardiovascular and hemodynamic status have been fundamental discoveries that propelled modern clinical cardiology. The aim of this work was to provide a review of catestatin – a novel cardiac biomarker that might provide higher sensitivity and specificity in pinpointing and detecting specific phases of cardiovascular pathology progression, with the emphasis on arterial blood pressure.

Materials and methods: An extensive literature search has been performed using the MEDLINE (PubMed) database to retrieve data from high-impact clinical trials and basic studies.

Results: Based on the analysis of thirty original research studies that were selected among 75 screened articles, catestatin, a 21-amino acid residue that is proteolytically cleaved from chromogranin A is a promising novel biomarker of arterial blood pressure. Its physiological relevance lies in the ability to inhibit catecholamine secretion from adrenal chromaffin cells. Preliminary in vivo studies performed in humans demonstrated that catestatin exhibited direct vasoactive effects through marked vasodilation of blood vessels, especially in women. Furthermore, plasma concentrations of catestatin were consistently decreased in hypertensive subjects. In rat models, catestatin promoted the augmented release of histamine from mast cells and thus supported vasodilatory action. In addition, chronic administration of catestatin in rats induced cardioprotection, decreased sympathetic drive and improved autonomic function in subjects with hypertensive cardiomyopathy. In acute coronary syndromes, human subjects with ST-elevation myocardial infarction (STEMI) and unstable angina pectoris (UAP) had significantly lower levels of plasma catestatin compared to control groups.

Conclusion: Plasma catestatin levels are inversely correlated with hypertension phenotype, especially in the early stages of hypertension development. Available data suggests that catestatin might play an important pathophysiological role in early hypertension as well as other pleiotropic cardioprotective roles. All of this makes catestatin worthy of further examination, especially in the light of preventive and therapeutic clinical applications.

RECEIVED:
February 12, 2017

ACCEPTED:
February 28, 2017