

# Ekspresi mRNA B-type Natriuretic Peptide, Natriuretic Peptide Receptor Type-A dan Type-C pada miosit jantung penderita obesitas = The MRNA expression of B-type Natriuretic Peptide, Natriuretic Peptide Receptor Type-A and Type-C in cardiomyocytes of obese population

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## Abstrak

<b>ABSTRAK</b><br>

### Latar Belakang:

Obesitas merupakan salah satu masalah kesehatan utama yang banyak ditemukan di negara maju maupun negara berkembang. Obesitas menjadi salah satu faktor risiko timbulnya penyakit kardiovaskular. Diketahui bahwa populasi obesitas memiliki kadar plasma BNP yang rendah dibanding kelompok normal. BNP adalah suatu hormon yang disintesis oleh miosit atrium yang berperan dalam meregulasi hemodinamik tubuh. Selain itu BNP memiliki efek anti fibrosis dan anti hipertrofi pada jantung. Dipikirkan bahwa adanya gangguan sintesis BNP di miosit jantung sebagai salah satu penyebab. Maka, penelitian ini bertujuan untuk melihat profil ekspresi mRNA BNP, NPR-A dan NPR-C pada populasi obesitas.

### Metode:

Studi potong lintang dilakukan di Rumah Sakit Jantung dan Pembuluh Darah Harapan Kita (RSJPDHK). Jaringan miosit tersimpan yang sudah dilakukan ekstraksi RNA dibagi menjadi 2 kelompok berdasarkan IMT, kelompok obesitas (IMT  $\geq 27$ ) dan kelompok normal (IMT  $< 27$ ) dan sesuai kriteria inklusi dan eksklusi. RNA kedua kelompok dilakukan sintesis cDNA, ekstraksi protein dan Real-Time PCR untuk mendapatkan mean  $\pm$  Ct. Kemudian dilakukan penghitungan menggunakan metode Livak untuk mendapatkan nilai ekspresi relatif mRNA. Data kemudian di analisis statistik menggunakan SPSS 20.

### Hasil Penelitian:

Sebanyak 48 pasien diikutsertakan dalam penelitian ini dengan jumlah kelompok normal 34 orang dan kelompok obesitas 14 orang. Hasil ekspresi mRNA BNP, NPR-A dan NPR-C lebih rendah pada kelompok obesitas dibanding kelompok normal. Namun, tidak didapatkan perbedaan bermakna ekspresi mRNA BNP (p 0,768), NPR-A (p 0,838) dan NPR-C (p 0,768) antara kelompok obesitas dibanding kelompok normal.

### Kesimpulan:

Penelitian ini tidak menemukan perbedaan ekspresi mRNA BNP, NPR-A dan NPR-C yang bermakna antara kelompok obesitas dengan kelompok normal.

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<b>ABSTRACT</b><br>

## Background:

Obesity is presenting as a significant health problem across the world. Obesity is a risk factor for cardiovascular diseases. The plasma level of B-type natriuretic peptide (BNP) has been identified to be lower in obese people compare to normal. As we know, BNP is one of the cardiac hormones synthesized by atrial myocyte that plays a role in hemodynamic regulations. In addition, BNP exerts its anti fibrotic and anti hypertrophic effects in the heart. It has been hypothesized that one of the possible mechanism responsible for this inverse relationship is the impaired synthesise of BNP by cardiomyocytes. Therefore, the aim of our study is to evaluate the mRNA expression profile of BNP, Natriuretic peptide receptor type-A (NPR-A) and Natriuretic peptide receptor type-C (NPR-C) in cardiomyocytes of obese population.

## Method:

A cross-sectional study was conducted in Rumah Sakit Jantung dan Pembuluh Darah Harapan Kita (RSJPDHK). Cardiomyocytes that have been performed the RNA extraction proses were divided into 2 groups, Obese group (BMI  $\geq 27$ ) and Normal group (BMI  $< 27$ ), according to BMI and inclusion and exclusion criteria. Synthesize cDNA, protein extraction and Real-Time PCR were performed in order to have the mean of  $\Delta\Delta Ct$ . Livak method was used to determine the relative expression mRNA value. SPSS 20 for Windows was used for the purpose of statistical analyses.

## Results:

48 patients were included in this study that consist of 34 patients in normal group and 14 patients in obese group. The mRNA expression of BNP, NPR-A and NPRC were

lower in obese group compared to normal group. However, there was no significant difference between groups.

## Conclusion:

In conclusion, there is no significant difference of mRNA expression of BNP, NPR-A and NPR-C between obese and normal group.;

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