

## Efek jenis diet rendah natrium terhadap perbaikan fungsi endotel pada subjek dengan hipertensi derajat I = Effects of a low-sodium diet on the improvement of endothelial function in subjects with grade I hypertension.

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### Abstrak

Latar Belakang: Hipertensi berkontribusi secara bermakna terhadap morbiditas dan mortalitas kardiovaskular (KV) di dunia. Dua penyebab terpentingnya adalah asupan garam dan disfungsi endotel yang dapat dinilai menggunakan flow-mediated dilatation (FMD). Modifikasi keduanya dapat menurunkan morbiditas dan mortalitas hipertensi. Diet rendah natrium DRN belum diterapkan secara optimal di dunia karena keterbatasan produk garam rendah natrium. Belum ada studi tentang perbandingan efek diet rendah natrium yang bervariasi terhadap perbaikan fungsi endotel yang dinilai melalui FMD pada subjek hipertensi derajat I, khususnya di Indonesia.

Metode: Uji klinis ini dilaksanakan di RSJPD Harapan Kita terhadap 52 subjek hipertensi derajat I (26 laki-laki dan 26 perempuan), berusia 25 - 59 tahun, dan berindeks massa tubuh 18,5 - 29,99 kg/m<sup>2</sup>. Subjek dieksklusi jika berpenyakit atau berfaktor risiko KV, memiliki penyakit liver, kanker, alergi rumput laut, infeksi berat, atau dalam terapi KV, hormonal, steroid, atau terapi herbal rutin. Data primer didapat dari anamnesis dan pemeriksaan fisik. Subjek-subjek dirandomisasi menjadi dua kelompok, yaitu kelompok DRN dengan kadar natrium 21 - 23% dan kelompok DRN dengan kadar natrium 38 - 40%, kedua diet diberikan dalam bentuk kuah. Nilai FMD diukur sebelum intervensi dan 60 menit setelahnya.

Hasil: Karakteristik dasar, termasuk diameter arteri brakialis prakompresi dan pascakompresi serta FMD, tidak berbeda bermakna di antara kedua grup. Pada kelompok DRN 38 - 40%, nilai FMD pada menit ke-60 pasca-intervensi menurun dibandingkan nilainya pra-intervensi, tetapi perbedaan tersebut tidak bermakna median [kisaran]: 7,92 [0,00 - 17,50];  $p > 0,05$ ). Pada kelompok DRN 21 - 23%, nilai FMD pada menit ke-60 pasca-intervensi meningkat dibandingkan nilainya pra-intervensi, tetapi perbedaan tersebut juga tidak bermakna 7,65 [1,36 - 19,51];  $p > 0,05$ ).

Simpulan: Nilai FMD pasca-intervensi tidak berbeda bermakna antarkelompok. Ketidakbermaknaan perbedaan nilai-nilai FMD dalam penelitian ini mungkin disebabkan oleh aspek-aspek internal subjek yang memengaruhi fungsi endotel dan prosedur evaluasi FMD.

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Background: Hypertension contributes significantly to cardiovascular (CV) morbidity and mortality in the world. Two of its most important causes are salt intake and endothelial dysfunction which can be assessed using flow-mediated dilatation (FMD) test. Modification of both may decrease its morbidity and mortality. Low-sodium diet (LSD) has not been optimally implemented in the world due to the limited low-sodium salt products. There has been no study regarding the effects of low-sodium salt with various sodium concentrations on FMD of grade-I-hypertension subjects, especially in Indonesia.

Methods: This clinical trial was conducted at the NCC Harapan Kita on 52 grade-I-hypertension subjects 26 men, 26 women, aged 25 - 59 years old, with body mass index of 18.5 - 29.99 kg/m<sup>2</sup>. Subjects were excluded if they had CVD, CV risk factors, liver disease, cancer, seaweed allergy, severe infection, or on

routine CV-, hormonal-, steroid, or herbal-therapy. Primary data were collected from anamnesis and physical examinations. We randomly assigned the subjects into two groups, i.e. the group LSD with sodium concentration of 21 - 23% and the group of LSD with sodium concentration of 38-40% . Both diets were given in a soup form. The FMD values were measured before the intervention and 60 minutes after it. Results: Baseline characteristics, including pre-compression and post-compression brachial artery diameter and baseline FMD, were not significantly different between both groups. At group LSD 38 - 40%, FMD value at 60 minutes post-intervention was decreased compared to its baseline value, but the difference was not significant median [range]: 7.92 [0.00 mdash;17.50];  $p>0.05$ ). At group LSD 21 - 23%, FMD value at 60 minutes post-intervention was increased compared to its baseline value, but the difference was also not significant 7.65 [1.36 mdash;19.51];  $p>0.05$ ). Conclusion: The post-intervention FMD values were not significantly different between both groups. The non-significant differences between FMD values in this study may be due to the subjects' internal aspects influencing endothelial function and FMD evaluation procedure.