

# Uji Antihipertensi Kombinasi Ekstrak Hibiscus sabdariffa Linn. dan Zingiber officinale var. Rubrum pada Tikus Model Hipertensi yang Diinduksi DOCA-salt = Antihypertensive Test of Combination Extracts of Hibiscus sabdariffa Linn. and Zingiber officinale var. Rubrum in DOCA-salt Induced Hypertension Rat Model

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## Abstrak

Hipertensi memiliki berbagai pilihan pengobatan karena kompleksitas patofisiologinya, termasuk intervensi terhadap inflamasi, sehingga bahan alami yang menargetkan berbagai mekanisme dapat dipertimbangkan. Ekstrak rosella dapat menurunkan tekanan darah dengan menghambat ACE, sementara penambahan ekstrak jahe merah diharapkan dapat mendukung pengobatan hipertensi melalui intervensi inflamasi. Penelitian ini bertujuan untuk mengevaluasi aktivitas antihipertensi kombinasi ekstrak rosella dan jahe merah pada tikus model hipertensi yang diinduksi DOCA-salt. Studi dilakukan terhadap enam kelompok tikus (n=5) yang terdiri dari satu kelompok normal dan lima kelompok tikus model hipertensi. Tikus model hipertensi diinduksi dengan pemberian 30 mg/kgBB DOCA secara subkutan dan NaCl 2% sebagai pengganti air minum selama tiga minggu. Kelompok tikus model terdiri dari kontrol negatif (CMC 0,5%), kontrol positif (4,5 mg/200 g BB kaptopril), dan 3 kelompok dosis kombinasi ekstrak rosella-jahe merah (50:3,5 mg/300gBB; 100:7 mg/300gBB; dan 200:14 mg/300gBB). Pemberian sediaan uji dilakukan secara peroral selama dua minggu kemudian diukur tekanan darah, level biomarker RAAS dan mediator inflamasi. Hasil uji antihipertensi menunjukkan kombinasi ekstrak rosella-jahe merah yang mengandung sianidin-3-sambubiosida dan 6-gingerol memiliki aktivitas antihipertensi karena mempengaruhi tekanan darah sistolik-diastolik secara signifikan pada ketiga dosis uji; level renin secara signifikan pada dosis 50:3,5mg /300grBB dan 200:14mg/300grBB; aktivitas ACE secara signifikan pada ketiga dosis, dan level angiotensin II secara signifikan pada dosis 100:7mg/300grBB dan dosis 200:14mg/300grBB serta terhadap level IL-17A secara signifikan pada dosis 100:7mg/300grBB dan 200:14mg/300grBB. Dosis optimalnya adalah 100:7mg/300gBB, dengan penurunan tekanan darah sistolik dan diastolik tikus model hipertensi secara berturut-turut sebesar  $\pm 45$  mmHg (27,6%) sistolik dan  $\pm 39$  mmHg (33,2%).

.....Hypertension offers diverse treatment options due to its complex pathophysiology, including interventions targeting inflammation, thus natural substances that target multiple mechanisms worth considering. Roselle extract reduces blood pressure by inhibiting ACE, while the addition of red ginger extract is anticipated to support hypertension treatment through inflammation intervention. This research aims to evaluate the antihypertensive activity of combination extracts of roselle-red ginger in DOCA-salt-induced hypertension model rats. This study was conducted on six groups of rats (n=5), comprising one normal group and five groups of hypertension model rats. The hypertension was induced in rat models by subcutaneous administration of 30mg/kgBW of DOCA and 2% NaCl as substitute for drinking water for three weeks. The model rat groups were comprised of negative control (0.5%CMC), positive control (4.5mg/200gBW captopril), and three doses groups of roselle-red ginger extract (50:3.5mg/300gBW; 100:7mg/300gBW; and 200:14mg/300gBW). The test preparations were given by oral gavage over two weeks then blood pressure, RAAS biomarker levels, and inflammation mediator were measured. The anti-

hypertensive test results indicated combination of roselle-red ginger extract containing cyanidin-3-sambubioside and 6-gingerol has antihypertensive activity as it affects systolic-diastolic blood pressure significantly at all test doses; renin level significantly at doses 50:3.5mg/300grBW and 200:14mg/300grBW; ACE activity significantly at all doses, and angiotensin II level significantly at doses 100:7mg/300grBW and 200:14mg/300grBW and IL-17A level significantly at doses 100:7mg/300grBW and 200:14mg/300grBW. The optimal dose was 100:7mg/300gBW, resulting in reductions of approximately  $\pm 45$  mmHg (27.6%) in systolic and  $\pm 39$  mmHg (33.2%) in diastolic blood pressure in the hypertensive rat model.