

Studi Interaksi Farmakodinamika dan Farmakokinetika Simvastatin dengan Ekstrak Daun Kemuning (*Murraya paniculata* (L.) Jack) Sebagai Antihiperlipidemia = Study of Pharmacodynamics and Pharmacokinetics Interaction of Simvastatin and Kemuning (*Murraya paniculata* (L.) Jack) Leaf Extract as Antihyperlipidemic

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Abstrak

Peneliti terdahulu melaporkan adanya penggunaan bersama salah satu jamu yang mengandung daun kemuning dengan simvastatin memungkinkan potensi adanya interaksi. Penelitian ini bertujuan untuk mengetahui adanya interaksi farmakodinamika dan farmakokinetika simvastatin kombinasi dengan ekstrak daun kemuning sebagai antihiperlipidemia. Pengujian dilakukan 2 tahap yaitu farmakodinamika dan farmakokinetika. Pengujian farmakodinamika meliputi kadar profil lipid darah, asam lemak dan asam amino. Hewan coba dibagi menjadi 9 kelompok yaitu kelompok normal, negatif, positif simvastatin (9 mg/kg BB), ekstrak daun kemuning dosis 1 (157,5 mg/kg BB), dosis 2 (315 mg/kg BB) dan dosis 3 (630 mg/kg BB) serta kelompok kombinasi simvastatin dengan ekstrak daun kemuning dosis 1, dosis 2, dan dosis 3. Pengukuran kadar profil lipid menggunakan spektrofotometer klinikal. Pengujian farmakokinetika diberikan simvastatin 9 mg/kg BB dan kombinasi simvastatin dengan ekstrak daun kemuning 630 mg/kg BB. Konsentrasi simvastatin dalam plasma diukur menggunakan LCMS/MS selanjutnya dihitung nilai AUC, T_{max}, C_{max}, T_{1/2}, Cl/F dan V_z/F. Penelitian secara in-silico menggunakan molecular docking dan molecular dynamic. Pemberian ekstrak daun kemuning maupun kombinasi simvastatin dengan ekstrak daun kemuning mampu menurunkan kadar profil lipid darah kembali normal namun persentase penurunan tertinggi pada kelompok simvastatin. Pada uji farmakokinetika dapat menurunkan kadar simvastatin dalam plasma tikus dan mempengaruhi aktivitas enzim CYP3A4 secara in silico.

.....Previous researchers reported the joint use of one of the herbs containing kemuning leaves with simvastatin allow for potential interactions. This study aimed to determine the pharmacodynamic and pharmacokinetic interactions of simvastatin in combination with kemuning leaf extract as an antihyperlipidemic agent. The research was conducted pharmacodynamics and pharmacokinetics. Pharmacodynamic testing was carried out to test blood lipid profile levels, fatty acid and amino acid profiles. The experimental animal were divided into 9 groups: normal, negative, positive simvastatin (9 mg/kg BW), kemuning leaf extract dose 1 (157,5 mg/kg BW), dose 2 (315 mg/kg BW) and dose 3 (630 mg/kg BW) and the combination group of simvastatin with kemuning leaf extract dose 1, dose 2, and dose 3. Blood lipid profile levels test used a clinical spectrophotometer. Pharmacokinetic testing was given with simvastatin 9 mg/kg BW and a combination of simvastatin with kemuning leaf extract 630 mg/kg BW. The concentration of simvastatin in plasma was measured using LCMS/MS and then the AUC, T_{max}, C_{max}, T_{1/2}, Cl/F and V_z/F values were calculated. In-silico study was conducted using molecular docking and molecular dynamics. Administration of kemuning leaf extract or the combination of simvastatin with kemuning leaf extract was able to reduce blood lipid profile levels back to normal, but the percentage of reduction was highest in the simvastatin group. In pharmacokinetic tests, can reduce simvastatin levels in the plasma of the rats and influence the activity of the CYP3A4 enzyme in silico.