Optimasi Kandungan S-Allyl-Cysteine (SAC) dengan Rekayasa Proses Peeling Untuk Suplemen Kesehatan Berbasis Black Garlic = Optimization S-Allyl-Cysteine (SAC) Content With Modified Peeling Process for Health Supplement based Extract Black Garlic

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Abstrak

S-Allyl-Cysteine (SAC) adalah senyawa bioaktif pada black garlic. Senyawa S-Ally-Cysteine (SAC) pada black garlic (BG) dapat menghambat atau menurunkan angka Plasminogen Activated Inhibitor (PAI-1) pada pasien komorbid COVID-19. Penelitian ini bertujuan untuk melakukan optimasi terhadap kandungan SAC untuk suplemen kesehatan berbasis black garlic. Rekayasa proses peeling dilakukan di tahap awal dimana BG dilakukan ekstraksi tanpa melalui proses pengupasan. Butiran BG (dengan kulit) dilakukan penghancuran (proses milling) dilanjutkan dengan ekstraksi dengan pelarut air. Variabel ekstraksi yaitu rasio bahan baku BG terhadap pelarut air (1:1, 2:3, 1:2 w/v) serta suhu ekstraksi (30°C dan 60°C). Analisis SAC dilakukan dengan metode High Performance Liquid Chromatography (HPLC), dengan fase diam kolom Phenomenex Luna C18 dan fase gerak sodium asetat: metanol. Penentuan kondisi optimum ekstraksi dilakukan dengan metode Respons Surface Methodology (RSM). Kondisi optimum yang diperoleh adalah dengan rasio pelarut 1:2, suhu ekstraksi 60°C dan tanpa melalui proses pengupasan, sehingga didapatkan kandungan SAC optimal sebesar 306,27 ppm. Optimasi kandungan SAC diharapkan dapat memperbaiki kualitas ekstrak black garlic dan dapat sebagai cost reducing untuk proses produksi di skala industri.
.....S-Allyl-Cysteine (SAC) is a bioactive compound in black garlic. It can inhibit or reduce the number of Plasminogen Activated Inhibitor (PAI-1) in COVID-19 patients with comorbidity. This study aims to optimize the SAC content and antioxidant activity of health supplements derived from black garlic (BG). In an early stage of modified peeling process, BG is extracted without undergoing a stripping process. Crushed BG cloves (with skin) are extracted with a water-based solvent and separated using centrifugation. Extraction variables included the ratio of garlic with solvent (1:1, 2:3, 1:2 w/v) and extraction temperature (30°C and 60°C). SAC analysis was performed using High Performance Liquid Chromatography (HPLC), using stationary phase: Phenomenex Luna column C18, and mobile phase: sodium acetate: methanol. Response surace methodology (RSM) was applied in this study to obtain the optimum process condition. The optimum extraction condition from this study are the ratio of garlic to solvent at 1:2, extraction temperature of 60°C and without undergoing a peeling process, which optimum SAC content reached 306,27 ppm. The enhancement of SAC content is anticipated to improve the quality of black garlic extract and can be used to reduce the cost of industrial production process.