Pengaruh Penambahan Stabilisator Asam Galat, Asam Kafeat, atau Asam Askorbat terhadap Stabilitas Obat Antituberkulosis Isoniazid dan Pirazinamid = Effect of Gallic Acid, Caffeic Acid, or Ascorbic Acid Stabilizer Addition on Isoniazid and Pyrazinamide Antituberculosis Drugs Stability

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Abstrak

Implan tulang belakang obat antituberkulosis (OAT) berpotensi mengatasi ketidakpatuhan pasien spondilitis tuberkulosis dan meningkatkan daya jangkau obat ke daerah luka. Namun, peningkatan stres oksidatif karena respon tubuh terhadap infeksi patogen berpotensi mengakselerasi degradasi OAT isoniazid (INH) dan pirazinamid (PZA). Uji degradasi paksa dilakukan dengan terlebih dahulu membuat kurva kalibrasi obat dan menstandardisasi H2O2 stok. Sampel INH dan PZA disimpan selama 5 hari dalam media phosphate buffered saline (pH 7,4) dengan kadar H2O2 3% (w/v). Konsentrasi zat diukur dengan instrumen high performance liquid chromatography (HPLC) Shimadzu LC 20AD dengan kolom C18 (250 x 4,6 mm x 5 µm). Sampel INH dan PZA tersebut mengalami degradasi sebesar 54,01% dan 8,67% secara berurutan. Untuk menghambat degradasi, kedua obat ditambahkan stabilisator asam galat (AG), asam kafeat (AK), atau asam askorbat (AA) dengan perbandingan massa 1:1. Hasil uji degradasi menunjukkan bahwa penambahan AG paling signifikan menghambat degradasi INH dan PZA hingga ke angka 4,96% dan 2,27% secara berurutan. .....Orally administered first line antituberculosis drugs (ATD) have risk of low patient adherence and low bioavailability in bone tissue. Unfortunately, elevated oxidative stress around infection area could endanger two ATDs, isoniazid (INH) and pyrazinamide (PZA), stability and further limit its release. Forced degradation study was conducted by prior creation of calibration curves and standardization of H2O2 stock concentration. INH and PZA samples were kept for 5 days in phosphate buffered saline (pH 7.4) aqueous media, H2O2 concentration was adjusted to 3% (w/v). Concentration of analyte was measured with Shimadzu LC 20AD, paired with C18 (250 x 4.6 mm x 5 µm) column, high performance liquid chromatography (HPLC). INH and PZA showed 54.01% and 8.67% degradation, respectively. To inhibit degradation; gallic acid (AG), caffeic acid (AK), and ascorbic acid (AA) stabilisator were added with 1:1 mass ratio to ATD. In both ATDs sample, AG showed the most significant results. Degradation was lowered to 4.96% and 2.27% for INH and PZA, respectively.