Analisis senyawa bisfenol A dari botol susu bayi berbahan plastik polikarbonat secara kromatografi cair kinerja tinggi = Analysis of bisphenol A from baby feeding bottles made of polycarbonate plastics by high performance liquid chromatography

Veronika Violeta Projustitiani, author

Abstrak

ABSTRAK
Bisfenol A adalah bahan dasar pembuatan plastik polikarbonat yang jika masuk ke dalam tubuh dapat mengganggu kerja hormon endokrin. Botol susu bayi berbahan polikarbonat merupakan contoh sumber paparan bisfenol A dengan potensi pelepasan yang cukup tinggi karena pemakaiannya yang seringkali berkontak dengan suhu panas. Penelitian ini bertujuan untuk memperoleh metode analisis yang sensitif, selektif dan valid untuk menganalisis pelepasan bisfenol A menggunakan kromatografi cair kinerja tinggi (KCKT) fase terbalik. Fase gerak yang digunakan adalah metanol-air (60:40) pada elusi isokratik dengan laju alir 0,8 ml/menit dan dideteksi pada panjang gelombang 226 nm. Ekstraksi sampel menggunakan metode ekstraksi cair-cair dengan pelarut etil asetat yang kemudian diuapkan dan residu keringnya dilarutkan kembali dalam metanol. Hasil validasi mencakup akurasi, presisi, linieritas, selektivitas, batas deteksi (LOD), dan batas kuantitasi (LOQ) telah memenuhi syarat keberterimaan dengan batas deteksi (LOD) pada konsentrasi 24,60 ng/mL, dan batas kuantitasi (LOQ) pada konsentrasi 82,02 ng/mL. Hasil penelitian menunjukkan dari 5 jenis sampel yang diuji terdapat 4 jenis yang memenuhi syarat batas pelepasan bisfenol A yaitu sampel 1 (32,07 ppb), sampel 2 (158,95 ppb), sampel 3 (114,14 ppb) dan sampel 5 (107,20 ppb), sedangkan 1 jenis lainnya yaitu sampel 4 (608,51 ppb) menunjukkan pelepasan BPA melebihi persyaratan yang ditetapkan oleh BPOM yaitu sebesar 0,6 bpj
<hr>
ABSTRACT
Bisphenol A is the raw material in production of polycarbonate plastic which could disrupt endocrine hormone system if exposed to the body. Baby feeding bottle is one source of exposure with high risk of releasing bisphenol A due to it?s usage that often in contact with high temperature. The aim of this study is to obtain analytical method which are sensitive, selective and valid to analyze the release of bisphenol A from baby feeding bottles made from polycarbonate using high performance liquid chromatography with reverse phase. The system used methanol-water (60:40) in isocratic elusion as a mobile phase with a flow rate of 0.8 mL/min and detected at wavelength of 226 nm. Sample extraction were carried out by liquid-liquid extraction method with ethyl acetate as solvent which afterward was evaporated and the dry residue was reconstituted in methanol. System validation included accuracy, precision, linearity, selectivity, limit of detection (LOD) and limit of quantitation (LOQ) has met the prescribed conditions with a limit of detection (LOD) at a concentration of 24.60 ng/mL and a limit of quantitation (LOQ) at concentration of 82.02 ng/mL. The results showed from 5 types of samples tested, there are 4 types which still met the prescribed condition of bisphenol A migration, those samples are sample 1 (32.07 ppb), sample 2 (158.95 ppb), sample 3 (114.14 ppb) and sample 5 (107.20 ppb), while other types which is sample 4 (608.51 ppb) showed that it has exceeded the prescribed conditions for bisphenol A migration set by BPOM which was 0.6 ppm.