Studi pembentukan DNA adduct 8-hidroksi-2 deoksiguanosin (8-OHdG) dari senyawa butylated hidroksianisole (BHA) dan metabolitnya tert butyl hidroquinone (TBHQ) terhadap calf thymus DNA dan 2-deoksiguanosin secara in vitro = In vitro study offormation (DNA) adduct 8 hydroxy 2 deoxyguanosine 8 (OHdG) in calf thymus (DNA) and 2 deoxyguanosine treated with butylated hydroxyanisole (BHA) and tert butyl hydroquinone (TBHQ)

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Abstrak

[ABSTRAK
Butylated Hidroksianisole (BHA) dan metabolitnya tert- Butyl Hydroquinone (TBHQ) merupakan antioksidan sintetis yang banyak digunakan sebagai pengawet dalam berbagai produk makanan juga minuman. Meskipun dinyatakan aman oleh WHO, akan tetapi penggunaan kedua pengawet ini masih kontroversial karena beberapa penelitian menunjukkan BHA dapat memicu terjadinya proliferasi sel pada beberapa hewan uji, sedangkan TBHQ dianggap karsinogenik karena dapat menyebabkan kerusakan DNA. Pada penelitian ini
dianalisis interaksi antara Calf thymus DNA dengan senyawa BHA dan TBHQ yang dimediasi oleh cupri klorida. Hasil studi secara spektrofotometri memperlihatkan terjadinya pergeseran batokromik sebesar 2-3 nm pada perlakuan DNA dengan TBHQ. Analisis kemudian dilanjutkan dengan metode HPLC menggunakan fase diam C18, fase gerak Buffer Natrium Hidrogen Fosfat 10 mM dan Metanol (85 : 15) untuk pembentukan DNA Adduct, 8-Hidroksi-2?-
Deoksiguanosin (8-OHdG) sebagai biomarker resiko kanker. Hasil studi ini menunjukkan terbentuknya DNA Adduct 8-OHdG terhadap DNA dengan TBHQ pada konsentrasi 20 ? 500 ppm. Pembentukan 8?OHDG meningkat seiring
dengan meningkatnya konsentrasi TBHQ. Jumlah relative 8-OHdG yang terbentuk mencapai 946/105 Deoksiguanosin (DG) dari basa DNA. Uji konfirmasi secara LC-MS/MS memperlihatkan munculnya puncak 8-OHdG pada waktu
retensi 3,52 dengan puncak induk (M++1) 284; ion anakan 167,9 dan 139,9. Sedangkan interaksi antara DNA dengan BHA 50 ? 250 ppm tidak memicu terjadinya pembentukan 8-OHdG.
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Butylated Hydroxyanisole (BHA) and its metabolite tert-Butyl Hydroquinone (TBHQ) are synthetic antioxidant commonly used as food and beverage preservatives. Although WHO declared its safety, the use of the
preservatives are still controversial because some studies showed that BHA induced proliferative effects animal testing and TBHQ is considered carcinogenic
caused DNA cleavage. This study is to analyze the interaction between Calf thymus DNA with BHA and TBHQ compound which are mediated by copper (II) chloride. The result of the study in spectrophotometric showed there was bathochromic shift as much as 2-3 nm in DNA and TBHQ treatment. The next analysis

used HPLC method in stationary phase of ODS, mobile phase of 10mM Natrium Hydrogen Phosphate Buffer and Metanol (85 : 15) for DNA adduct, 8- Hydroxy-2-Deoxyguanosine (8-OHdG) as cancer risk biomarker. The result of the
study showed DNA adduct 8-OHdG forming at 20-500 ppm concentration of DNA and TBHQ. 8-0HdG formation was greatly increased by TBHQ in a concentration dependent manner. The relative amount of 8-OHdG which is
formed reach 946/105 deoxyguanosin in DNA bases. Confirmation test by LCMS/ MS was characterized by a base peak (M++1) 284 at 3.52 min. with the detection of the fragment ion at m/z 167.9 and 139.9. Meanwhile the
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